

# MEREENIE METER STATION HAZARDOUS AREA DOSSIER



FYFE REFERENCE: 18756-4-HAD-003

APA REFERENCE: HAD DATA REPOSITORY/ MTP\_00000\_MMS

Prepared by:

\_\_\_\_\_  
Arjun Patel  
Graduate Mechanical Engineer - Fyfe

Date: 19-Sep-2011

Reviewed by:

\_\_\_\_\_  
Tony Bird  
Principal Process Engineer - Fyfe

Date: 19-Sep-2011

Client Accepted:

\_\_\_\_\_  
Anthony Comerford  
Pipeline Engineer – APA Group

Date:

Manager:

\_\_\_\_\_  
Henry Dupal  
Engineering Manager - APA Group Northern Territory

Date:

## Credential Exposure

### PERSONNEL

**Tony Bird** from Fyfe Pty Ltd is a principal process engineer with over ten years of experience in hazardous area classifications of new and existing projects. His experience in the development of retrospective hazardous area classifications includes Palm Valley gas plant, Torrens Island power station, Pelican Point power station and numerous Santos facilities.

His experience covers oil and gas pipeline and facility projects during all stages of design from concept, feasibility, and FEED through to detailed design. He also has experience in procurement, construction supervision, commissioning and operations support of pipeline facilities.

Tony's responsibilities for this project included the examination of site, confirmation of installed equipment, and development of hazardous area classification and hazardous area mapping drawings.

**Daniel Williams** from Sitzler Pty Ltd is a sub-contract industrial/commercial electrician with experience in various hazardous area installations and inspections. His competencies in accordance to AS/NZS 4761 include (Refer attachments):

UTE NES 010 A	Report on integrity of explosion protected equipment in hazardous areas
UTE NES 107	Install explosion-protected equipment and wiring systems (Ex)
UTE NES 214	Maintain equipment in hazardous areas (Ex)
UTE NES 408	Test installations in hazardous areas (Ex)
UTE NES 409	Inspect visually existing hazardous area installations (Ex)
UTE NES 410	Inspect in detail hazardous area installations (Ex)

He was previously an electrical supervisor for the Blacktip gas plant construction, hazardous area inspector / supervisor and leading hand electrician for the Darwin LNG plant, and construction electrician for the Darwin biodiesel plant.

Daniel's role for this project was to perform close inspection of all electrical equipment in accordance to AS/NZS 60079 series on site to verify installation.

**Neville Green** from Sitzler Pty Ltd is an electrical engineer with over ten years of experience in the design, construction, commissioning and inspection of installation in hazardous environment in the oil and gas industry. Neville has the following competencies in accordance to AS/NZS 4761(Refer attachments):

UTE NES 010 A	Report on integrity of explosion protected equipment in hazardous areas
UTE NES 107	Install explosion-protected equipment and wiring systems (Ex)
UTE NES 707	Design electrical installations in hazardous areas (Ex)

Neville's role was to review inspection sheets and provide recommendations for remedial actions to ensure compliance.

**Michael Hayden** from Fyfe Pty Ltd is the surveyor who completed three dimensional (3D) scanning and photography of the facilities. The 3D images were used by Fyfe drafters to update site arrangement drawings. The 3D scan data is retained by Fyfe for future use if required by APA Group.

## METHODOLOGY

The Hazardous Area Verification Dossier is produced to ensure that the installation complies with the appropriate certification documents as well as with AS/NZS 2381.1 and any other relevant part of the AS/NZS 2381 and AS/NZS 60079 series. In addition equipment and installations where hazardous areas exist are required to comply with the applicable regulations of the applicable Australian State or Territory. It should be borne in mind that an installation can come under the jurisdiction of several authorities with different areas of responsibility, e.g. mining, electrical safety, handling and transport of flammable materials and occupational health and safety.

This dossier has been prepared in accordance with the following codes and standards:

- Dossiers AS 2381.1:2005 - Electrical equipment for explosive gas atmospheres - Selection, installation and maintenance Part 1: General requirements
- Hazardous area AS/NZS 60079.10.1:2009 - Explosive atmospheres: Classification of areas - Explosive gas atmospheres (IEC 60079-10-1, Ed. 1.0 (2008) MOD) (2009)
- AS/NZS 60079.17:2009 : Explosive atmospheres - Electrical installations inspection and maintenance (IEC 60079-17, Ed.4.0 (2007) MOD)

Note that a Hazardous Area Verification Dossier is a living document and should be updated by APA and / or its contractors. Any modifications to electrical equipment, including removing an instrument cover should be recorded and stored within the Dossier. Changes to the operation or equipment installed within the station will require a review of the hazardous area classification and may require revision of the classification, hazardous area mapping drawings, hazardous area equipment lists and associated certificates of conformity. An extract from AS 2381.1 (2005) is included STET to provide guidance to APA.

Equipment requires conformity to the following standards:

- AUS Ex
- IEC Ex

Previously AS / NZS Ex and FLP have been recognised certification standards for equipment in hazardous areas and may have been applicable at the time of construction / installation. Equipment that was identified as having any of the certification to show conformity to the above standards was deemed to be acceptable. Where no certification was available or certification was available to standards not recognised in Australia, a conformity assessment document (CAD) is required. The CAD shall be completed by a suitably qualified organisation and the associated residual risk shall be accepted by the head of APA. For new installations, equipment with the correct certificates of conformity should be used unless no item exists and then a CAD should be produced. No information on the date of installation/ of equipment purchase/manufacturer has been provided of the

site. Therefore no checking has been undertaken to determine the currency of the certificate at the time of installation.

## **DISCLAIMER**

Opportunities for improvements (OFI) are provided for items associated with hazardous area and general engineering. The scope of work for the project was to identify hazardous area and provide visual inspection of the equipment. The visual inspection did not include opening of equipment and the OFIs are limited to the level of inspection. General engineering OFIs are non-exhaustive and require APA to confirm the OFI and the recommendation.



## **Extract from AS 2381.1 (2005)**

### **1.6 DOCUMENTATION**

*It is necessary to ensure that any installation complies with the appropriate certification documents as well as with this Standard and any other requirements specific to the plant on which the installation takes place.*

*To achieve this result, a verification dossier shall be prepared for every plant and shall be either kept on the premises or stored in another location in which case a document shall be left on the premises indicating who the owner or owners are and where that information is kept, so that when required, copies may be obtained. This dossier should contain the information detailed in the appropriate Parts of this series of Standards for the types of protection concerned.*

*Up-to-date information typically required is as follows:*

- a) Where applicable a statement of the identity of the person(s) having legal ownership of the installation or parts thereof and where the verification dossier is located.*
- b) The classification of hazardous areas and the Standards used for the classification.*
- c) Equipment group and temperature class.*
- d) Installation instructions.*
- e) Documentation/certification for electrical equipment, including those items with special conditions, for example, equipment with certificate numbers that have the suffix 'X'.*
- f) Descriptive system document for the intrinsically safe system.*
- g) Documentation relating to the suitability of the equipment for the area and environment to which it will be exposed, e.g. T rating, Ex rating, IP rating, corrosion resistance.*
- h) Documentation certifying that the equipment is rated for the voltages and frequency applied during normal operation.*
- i) Manufacturer's/qualified person's declaration, e.g. tradesperson's documentation and inspector's inspection reports.*
- j) Records sufficient to enable the explosion-protected equipment to be maintained in accordance with its type of protection (for example, list and location of equipment, spares, technical information).*
- k) Records covering any maintenance, overhaul and repair of the equipment.*
- l) Records of selection criteria for cable entry systems for compliance with the requirements for the particular explosion technique.*
- m) Drawings and schedules relating to circuit identification (see Clause 3.8.16).*
- n) In New Zealand, the Hazardous Area Statement of Periodic Verification on completion of a periodic inspection. (Refer to Appendix B).*

*Where alternative methods of equipment identification are used for inspection in accordance with Clause 4.3 then additional documentation to support the traceability of the equipment shall be provided.*

*It shall be the responsibility of the person(s) having legal ownership of the installation or parts thereof to ensure that the relevant information is produced but the preparation of the document may be delegated to expert bodies/organizations. The dossier may be kept as hard copy or in electronic form.*

## **1.7 QUALIFICATIONS OF PERSONNEL**

*The design, construction, maintenance, testing and inspection of installations covered by this Standard shall be carried out only by competent persons whose training has included instruction on the various types of protection and installation practices, relevant rules and regulations and on the general principles of area classification. The competency of the person shall be relevant to the type of work to be undertaken.*

*Appropriate continuing education or training should be undertaken by personnel on a regular basis.*

*Competency may be demonstrated in accordance with AS/NZS 4761, Competencies for working with electrical equipment for hazardous areas (EEHA), or equivalent training and assessment framework.*

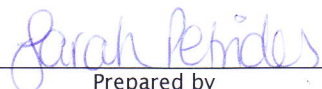
This is a Statement that

Dan Williams

Has been assessed as having fulfilled the following requirements

UTE NES 010 A	Report on the integrity of explosion-protected equipment in hazardous areas
UTE NES 107 TA	Install explosion-protected equipment & wiring systems (Ex mixed)
UTE NES 107 WA	Install explosion-protected equipment & wiring systems (Ex n)
UTE NES 107 XA	Install explosion-protected equipment & wiring systems (Ex i)
UTE NES 107 YA	Install explosion-protected equipment & wiring systems (Ex e)
UTE NES 107 ZA	Install explosion-protected equipment & wiring systems (Ex d)
UTE NES 214 TA	Maintain equipment in hazardous areas (Ex mixed)
UTE NES 214 WA	Maintain equipment in hazardous areas (Ex n)
UTE NES 214 XA	Maintain equipment in hazardous areas (Ex i)
UTE NES 214 YA	Maintain equipment in hazardous areas (Ex e)
UTE NES 214 ZA	Maintain equipment in hazardous areas (Ex d)
UTE NES 408 TA	Test installations in hazardous areas (Ex mixed)
UTE NES 408 WA	Test installations in hazardous areas (Ex n)
UTE NES 408 XA	Test installations in hazardous areas (Ex i)
UTE NES 408 YA	Test installations in hazardous areas (Ex e)
UTE NES 408 ZA	Test installations in hazardous areas (Ex d)
UTE NES 409 TA	Inspect visually existing hazardous area installations (Ex mixed)
UTE NES 409 WA	Inspect visually existing hazardous area installations (Ex n)
UTE NES 409 XA	Inspect visually existing hazardous area installations (Ex i)
UTE NES 409 YA	Inspect visually existing hazardous area installations (Ex e)
UTE NES 409 ZA	Inspect visually existing hazardous area installations (Ex d)
UTE NES 410 TA	Inspect in detail hazardous area installations (Ex mixed)
UTE NES 410 WA	Inspect in detail hazardous area installations (Ex n)
UTE NES 410 XA	Inspect in detail hazardous area installations (Ex i)
UTE NES 410 YA	Inspect in detail hazardous area installations (Ex e)
UTE NES 410 ZA	Inspect in detail hazardous area installations (Ex d)

in partial completion of the following qualification  
**Certificate IV in Electrotechnology (Explosion-protection) UTE 4 07 99**



Prepared by  
Sarah Petrides  
Administration Assistant



Approved by  
Michael Williams  
Certified Trainer and Assessor

National Provider Code 51160

Date of Issue: 31 May 2007



This statement of attainment is recognised within the Australian Qualifications Framework





*This is to certify that*  
**Neville Green**  
*of*  
**GPA Engineering Pty Ltd**

*Completed the 3 day*  
**Electrical Safety in**  
**Hazardous Areas**

*Training Course*  
26th to 28th February 2001

Signed: *CR Baker*

**Colin Baker** CEng, MIEE, MInstMC, FIICA  
Partner, Principal Consultant & H-Class Electrical Inspector

Certificate Number: 2001.02.26-28/05

This 24 hour short course is recognised by  
The Institution of Engineers, Australia, for Continuing Professional Development (CPD) purposes

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**Explosion Protection Technology**, 8 Kirkfell Court, Berwick, Victoria 3806, Australia

This is a Statement that

## Neville Owain Green

has been assessed as having fulfilled the following requirements

UTE NES 010 A	Report on the integrity of explosion-protected equipment in hazardous areas
UTE NES 107 TA	Install explosion-protected equipment & wiring systems (Ex mixed)
UTE NES 107 WA	Install explosion-protected equipment & wiring systems (Ex n)
UTE NES 107 XA	Install explosion-protected equipment & wiring systems (Ex i)
UTE NES 107 YA	Install explosion-protected equipment & wiring systems (Ex e)
UTE NES 107 ZA	Install explosion-protected equipment & wiring systems (Ex d)
UTE NES 707 TA	Design electrical installations in hazardous areas (Ex mixed)
UTE NES 707 WA	Design electrical installations in hazardous areas (Ex n)
UTE NES 707 XA	Design electrical installations in hazardous areas (Ex i)
UTE NES 707 YA	Design electrical installations in hazardous areas (Ex e)
UTE NES 707 ZA	Design electrical installations in hazardous areas (Ex d)

in partial completion of the following qualification  
Certificate IV in Electrotechnology (Explosion-protection) UTE 4 07 99

  
Prepared by  
Sarah Petrides  
Administration Assistant

  
Approved by  
Sam Zacha  
Managing Director

National Provider Code 51160

Date of Issue: 5 December 2007



This statement of attainment is recognised within the Australian Qualifications Framework

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### Revision History:

Rev.	Status	Date	Prepared	Reviewed	QA
A	Preliminary issue for client's review	26-Aug-2011	SNT	RDK	
0	Original Issue	19-Sep-2011	AZP	TCB	EZG



## 1 Site Information

An inspection on the Mereenie meter station site was performed on 2 August 2011 by Tony Bird, a principle process engineer from Fyfe and Daniel Williams, a sub-contract industrial/commercial electrician from Sitzler.

The Mereenie meter station is located at KP0000 on the Mereenie to Tylers Pass Junction pipeline. Gas to the Mereenie meter station comes from the Santos operated Mereenie gas plant. Currently there is no contract for the supply of gas from Mereenie, however the station remains pressurised and can be returned to operation if required.

The station consists of DN 200 above ground connection to the Mereenie gas plant. Close to the connection point are temperature and pressure transmitters and high temperature and pressure trips. A station limit valve (SLV) is installed at the inlet. The SLV is pneumatically actuated from instrument gas produced locally. The instrument gas system is provided with a local PSV that vents to atmosphere.

The gas then passes to two parallel filter separators. The filter separators are horizontal and fitted with quick opening closures to allow removal of the filter elements. The filter separators have been swapped with the filters originally installed at Palm Valley and this required some pipework modifications. The liquids removed from the gas are collected in a drain boot underneath the filter separator. The liquids are drained back to the Mereenie production facility. The filter separators are fitted with the following instrumentation; pressure indicator, differential pressure transmitter, level glasses, high level switches and a PSV.

From each filter separator the gas flows to a meter run. The flow meters are orifice meters that are fitted with flow conditioners pressure transmitter, a low range and high differential pressure transmitter and a temperature transmitter. A blowdown point is provided on each meter run that can blow down the meter run and filter separator.

The pipework downstream of each meter run joins to a common line. There is a DN 20 blowdown point and an insertion sample probe installed to provide gas samples for the gas chromatograph and dew point analyser.

The gas then passes underground through a manual station limit valve to the Mereenie to Tylers Pass pipeline. There is a scraper launcher installed with quick opening closure, pressure indicator, blow down vent and associated valving for the launching of pigs.

The site arrangement drawings and P&IDs for the Mereenie meter station can be found overleaf.

<b>Drawing Number</b>	<b>Description</b>	<b>Revision</b>
<b><i>APA Group Arrangement Drawing</i></b>		
MT 0000-3000	Mereenie Meter Upgrade General Arrangement	0
MT 0000-6001	Mereenie Station Piping Arrangement	0
MT 0000-6003	Mereenie Station (250 NS) Launching Trap Arrangement	0
<b><i>Fyfe Updated Plot Plan</i></b>		
MT 0000-6004	Mereenie Meter Station Plot Plan	0
<b><i>P&amp;IDs</i></b>		
MT 0000-7001	Mereenie Meter Station Mainline Valve and Launcher	1
MT 0000-7002	Mereenie Meter Station Inlet and Station Limit Valve	0
MT 0000-7003	Mereenie Meter Station Metering and Gas Analysis	1

FS\_ FILTER SEPARATOR CONCRETE FOUNDATION  
 MS\_ METER RUN CONCRETE FOUNDATION  
 PS\_ PIPE SUPPORT CONCRETE FOUNDATION

INLET MANIFOLDS  
 ISO ADM 0001

SPOOLS FROM PALM VALLEY

NEW BALL VALVES

METER RUNS FROM PALM VALLEY

OUTLET MANIFOLDS  
 ISO ADM 0002

CONCRETE PATH

FLANGE 'A'

METER RUN

FLANGE 'B'

ORIGINAL FILTER SEPARATORS  
 AND METER RUNS REMOVED  
 AND INSTALLED AT PALM VALLEY

PLAN

NOTE:-

DIMENSIONS OF THE NEWLY INSTALLED FILTER SEPARATORS  
 AND METER RUNS BETWEEN THE BALL VALVES ARE IDENTICAL  
 TO THEIR ORIGINAL INSTALLATION AT PALM VALLEY (EXCEPT  
 FOR RLs) REFER TO THE ORIGINAL DRAWINGS AT PALM  
 VALLEY FOR DETAILS.

NEW INSTALLATION BETWEEN FLANGES 'A' AND 'B'  
 USING FILTER SEPARATORS AND METER RUNS FROM PALM VALLEY

CONTROL  
 BUILDING


FLANGE 'A'

FLANGE 'B'

GROUND LEVEL  
 VARIES

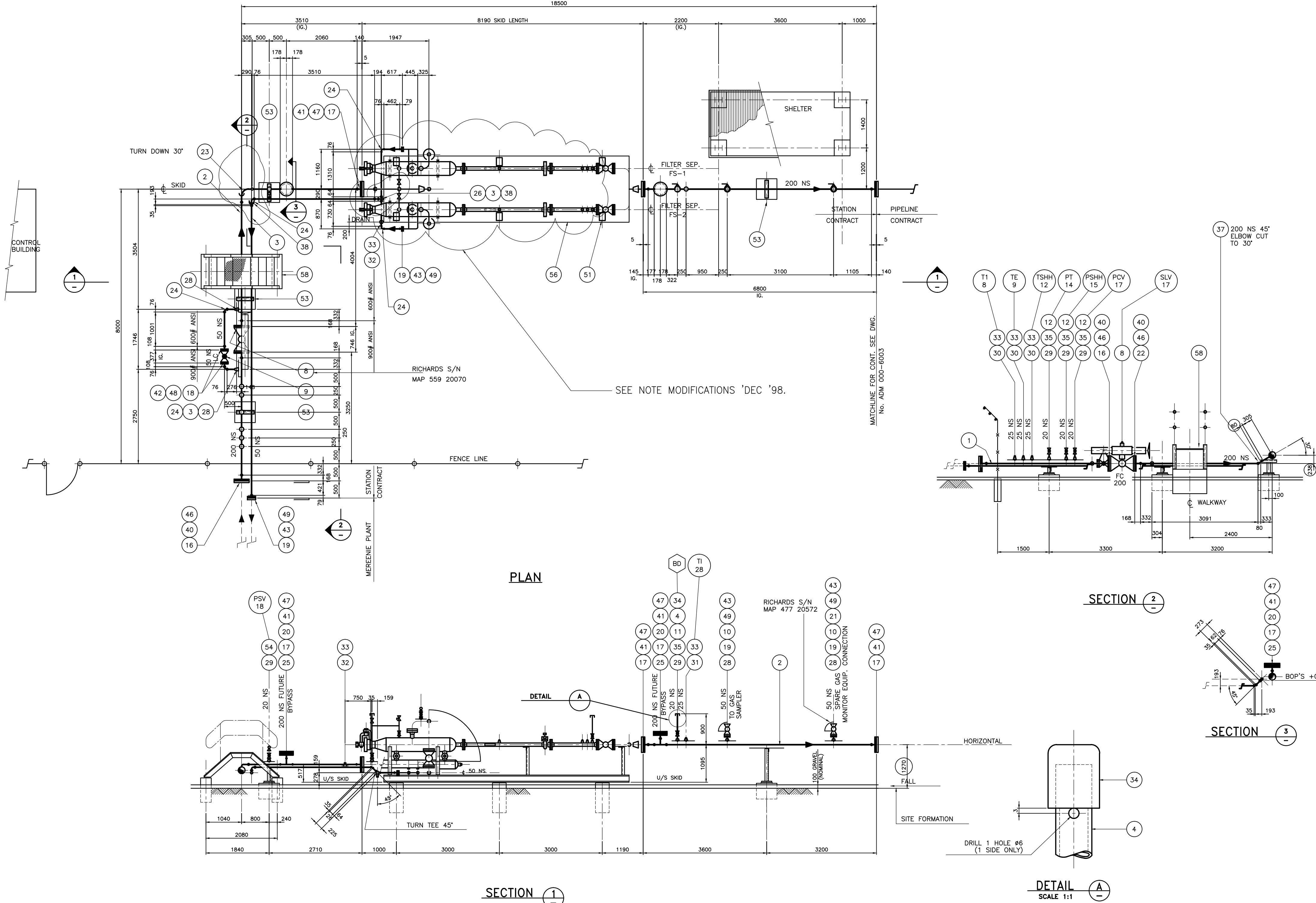
AS BUILT

ELEVATION

						ISO ADM 0002	MEREENIE UPGRADE OUTLET UPGRADE		INIT.	SIGNATURE	DATE	 <b>N.T. GAS</b> Pty. Limited ACN 050 221 415 16 Georgina Crescent PALMERSTON NT PD Box 7 PALMERSTON NT 0831 Telephone: (08) 8935 1611 Facsimile: (08) 8932 1663	<b>TITLE</b> MEREENIE METER UPGRADE GENERAL ARRANGEMENT					
					ISO ADM 0001	MEREENIE UPGRADE INLET MANIFOLD	DRAWN	GDS		10/98	DRG. SIZE A3					SCALE N.T.S.	DRAWING NUMBER MT0000-3000	REV. 0
					ADM000-3003	MEREENIE METER UPGRADE FOUNDATION DIMENSIONS	DESIGN CHECKED											
					ADP000-6001	PALM VALLEY STATION PIPING ARR.	DRAWING CHECKED											
					ADM000-6002	MEREENIE STATION METERING & FILTER SKID	APPROVED											
0	SUPERSEDED DRG ADM000-3000 REV 2 TO NEW DRG MT0000-3000	DCH	BP	HD	21.6.08	ADM000-3001	MEREENIE METER UPGRADE FOUNDATIONS LAYOUT											
REV.	REVISION DESCRIPTION	DRAWN	CHECKED	APP'D	DATE	REFERENCE DRAWINGS												
						3	4	5	6	7	8							



NOTE: MODIFICATIONS DEC '98  
 ORIGINAL FILTERS AND METERS EXCHANGED WITH  
 THE ONES FROM PALM VALLEY  
 FOR GENERAL ARRANGEMENT SEE DWG ADM000-3000  
 AND OTHER DRAWINGS REFERENCED.



BILL OF MATERIAL				
ITEM	QTY.	DESCRIPTION	CODE No.	
* INDICATES MATERIAL TO BE SUPPLIED BY PRINCIPAL				
* 1	3.5m	PIPE 200 NS SCH 120 ASTM A106 B	C0071	
* 2	12.5m	PIPE 200 NS SCH 80 ASTM A106 B	C0063	
* 3	17.0m	PIPE 50 NS SCH 80 ASTM A106 B	C0067	
* 4	0.7m	PIPE 20 NS SCH 80 ASTM A106 B		
5				
6				
7				
* 8	1	VALVE BALL 200 NS 900# FE RF	C0131	
PNEUMATIC OPER.				
* 9	1	VALVE GLOBE 50 NS 900# FE RF	C0128	
* 10	2	VALVE BALL 50 NS 600# FE RF WRENCH	C0213	
* 11	1	VALVE BALL 20 NS 600# SW WRENCH	C0229	
* 12	3	VALVE BALL 20 NS 1500# SW/NPT WRENCH	C0138	
13				
14				
15				
* 16	2	FLGE WN 200 NS 900# RF SCH 120 ASTM A105	C0504	
* 17	5	FLGE WN 200 NS 600# RF SCH 80 ASTM A105	C0537	
* 18	2	FLGE WN 50 NS 1500# RF SCH 80 ASTM A105	C0508	
* 19	4	FLGE WN 50 NS 600# RF SCH 80 ASTM A105	C0541	
* 20	2	FLGE BLIND 200 NS 600# RF ASTM A105	C0561	
* 21	2	FLGE BLIND 50 NS 600# RF ASTM A105	C0565	
* 22	1	FLGE WN 200 NS 900# RF SCH 80 ASTM A105	C0512	
* 23	1	ELBOW 90° LR 200 NS SCH 80 ASTM A234 WP8	C0729	
* 24	3	ELBOW 90° LR 50 NS SCH 80 ASTM A234 WP8	C0733	
* 25	2	TEE EQUAL 200 NS SCH 80 ASTM A234 WP8	C0754	
* 26	1	TEE EQUAL 50 NS SCH 80 ASTM A234 WP8	C0758	
27				
* 28	4	WOL 250-200x50 NS SCH 80 ASTM A105	C0772	
29	5	SOL 300-150 20 NS SCH 80 ASTM A105		
30	3	TOL 250-80 x25 NS 3000# ASTM A105		
31	1	TOL 250-150 x25 NS 3000# ASTM A105		
32	2	TOL 50x25 NS 3000# ASTM A105		
33	6	FLUG. HEX. HD. 25 NS SCR NPT ASTM A105		
34	1	CAP 20 NS 3000# SCH 160 SCR NP ASTM A105		
35	4	NIPPLE 20 NSx75 SCH 160 PBE ASTM A106B		
36				
* 37	1	ELBOW 45° 200 NS SCH 80 ASTM A234 WP8	C0737	
* 38	2	ELBOW 45° 50 NS SCH 80 ASTM A234 WP8	C0741	
39				
40	36	STUDBOLT 1 3/8" UNS x 220 ASTM A193-87		
			C/W 2 NUTS ASTM A194-2H	
41	60	STUDBOLT 1 1/8" UNSx195 ASTM A193-87		
			C/W 2 NUTS ASTM A194-2H	
42	16	STUDBOLT 7/8" x 145 ASTM A193-87		
			C/W 2 NUTS ASTM A194-2H	
43	48	STUDBOLT 5/8" x 110 ASTM A193-87		
			C/W 2 NUTS ASTM A194-2H	
44				
45				
46	3	GASKET 200 NS 900# 4.4 THK. METAFLEX SGIR		
47	5	GASKET 200 NS 600# 4.4 THK. METAFLEX SGIR		
48	2	GASKET 50 NS 1500# 4.4 THK. METAFLEX SGIR		
49	6	GASKET 50 NS 600# 4.4 THK. METAFLEX SGIR		
50				
51	6	SKID HOLDING DOWN ASSY. DWG.No. AD0000-1052		
52				
53	4	PIPE SUPPORT DWG. No. AD0000-6143		
54	1	PIPE ASSY. DWG. No. AD0000-6113		
55				
* 56	1	METERING FILTER / SEP. SKID DWG. No. ADM000-6002	C1129	
57				
58	1	WALKWAY DWG. No. AD0000-6154		
59				
60				

APPROVED FOR CONSTRUCTION

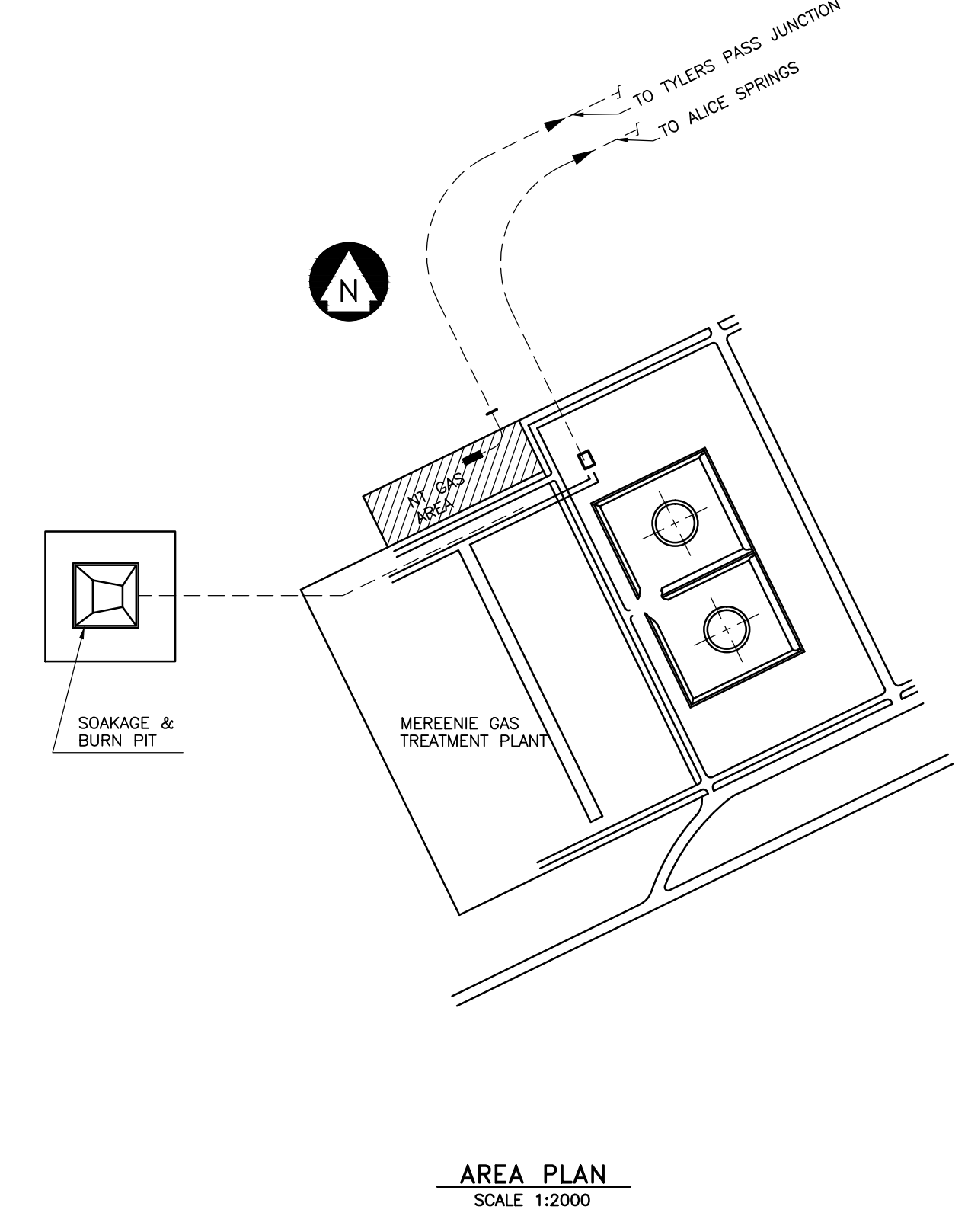
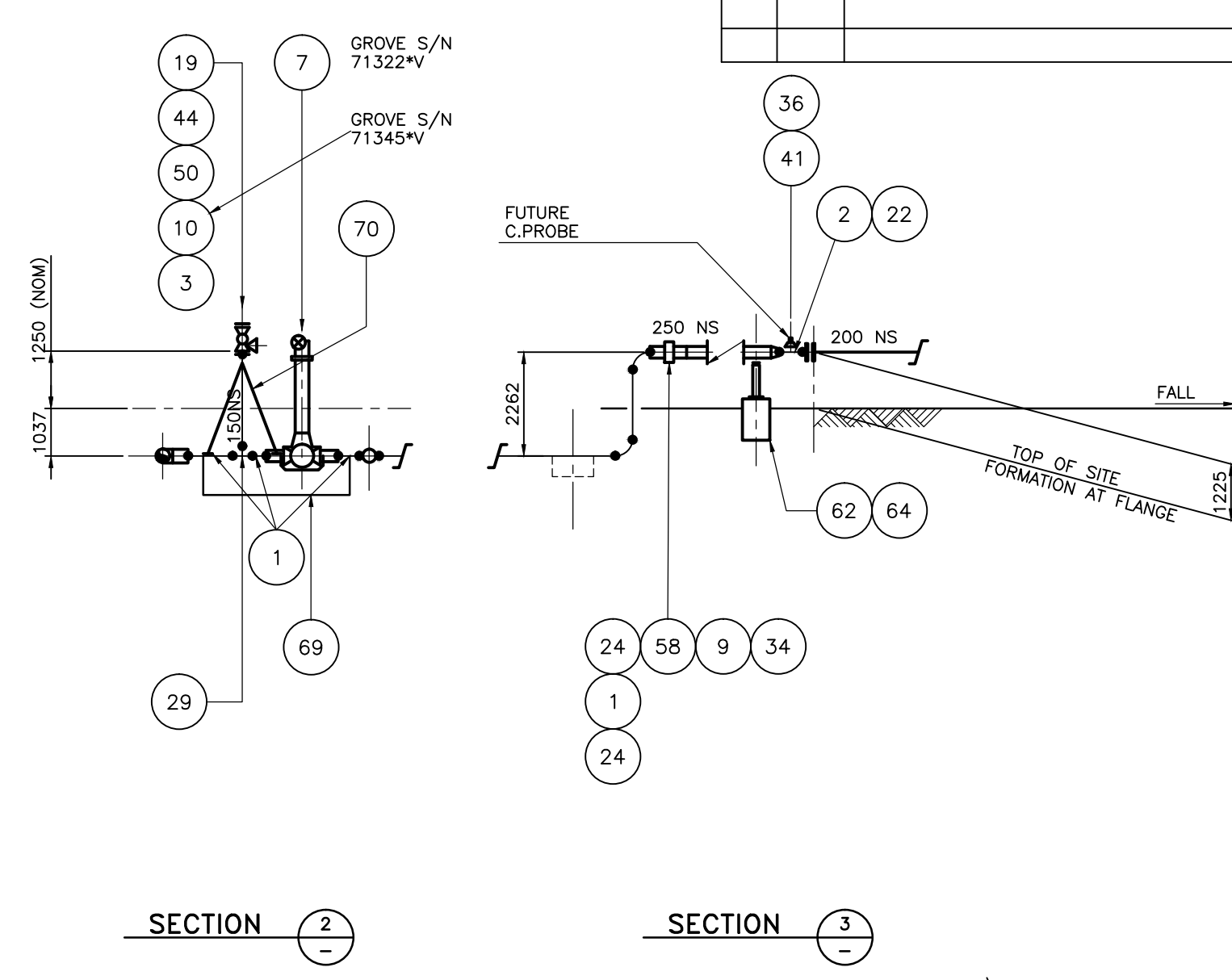
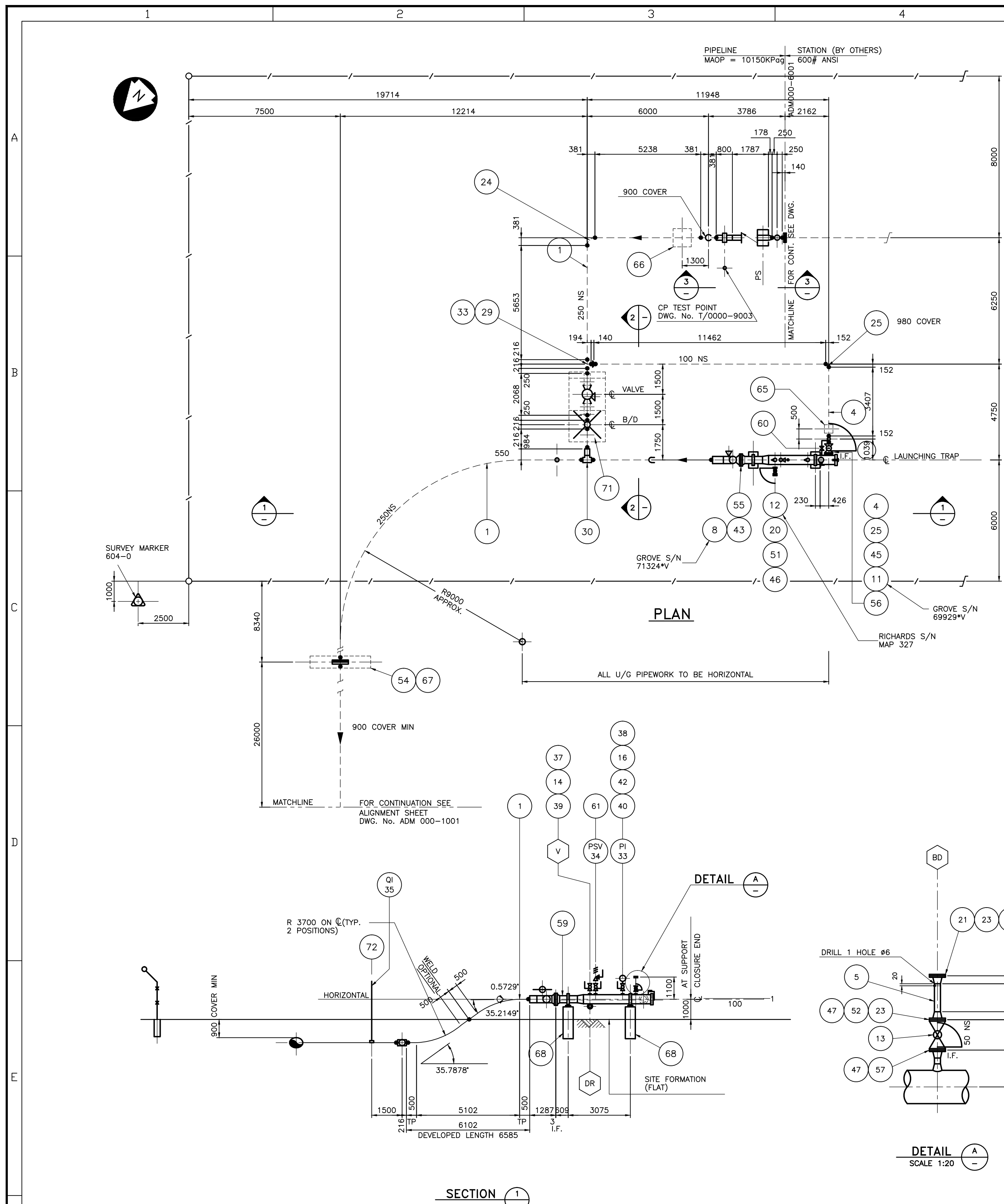
REV.	REVISION DESCRIPTION	DRAWN	CHECK'D	APP'D	DATE	REFERENCE DRAWINGS	APPROVED
0	NEW DWG NO. REF ADM000-6001 REV 6	BP	ML	HD	11/2/10	MT0000-3000 ADM000-1001 MT0000-7003 MT0000-7002 MT0000-7001	
						GENERAL ARRANGEMENT SITE PLAN & CIVIL DETAILS P & I DIAGRAM P & I DIAGRAM P & I DIAGRAM	DRAWN DESIGN CHECKED DRAWING CHECKED

INITS. SIGNATURE DATE

**N.T. GAS**  
 Pty. Limited  
 ACN 050 221 415

16 Georgina Crescent PALMERSTON NT  
 PO Box 7 PALMERSTON NT 0831  
 Telephone: (08) 8935 1611  
 Facsimile: (08) 8932 1663

TITLE AMADEUS BASIN TO DARWIN PIPELINE MEREENIE STATION PIPING ARRANGEMENT			
DRG. SIZE	SCALE	DRAWING NUMBER	REV.
A1	1:50	MT0000-6001	0



ITEM	QTY.	DESCRIPTION	CODE No.
* INDICATES MATERIAL TO BE SUPPLIED BY PRINCIPAL			
67	1	ANCHOR BLOCK ITEM 3 DWG.No. MT0000-1006	
68	2	FOUNDATION ITEM ITEM 2 DWG.No. MT0000-1006	
69	1	FOUNDATION DWG.No. MT0000-1004	
70	1	PIPE BRACE DWG.No. AD0000-6139	
71	3	PIPE CLAMP DWG.No. MT0000-6110	
72	1	PIG SIG. EXTENDED 1.8m (250 NS)	C1024

ITEM	QTY.	DESCRIPTION	CODE No.
* INDICATES MATERIAL TO BE SUPPLIED BY PRINCIPAL			
1	65.4m	PIPE 250 NS 7.09 WT. API 5LX-60	C0014
2	0.5m	PIPE 200 NS SCH 80 ASTM A106B	C0063
3	2.1m	PIPE 150 NS SCH 80 ASTM A106B	C0064
4	17m	PIPE 100 NS SCH 80 ASTM A106B	C0065
5	0.3m	PIPE 50 NS SCH 80 ASTM A106B	C0067
6			
7	1	VALVE BALL 250 NS 600# WE. FULL BORE 2068 C/A LGTH. c/w PUPS & GEAR OPERATED. MOUNTED ON EXTENSION 2100 ABOVE @ VALVE	C0162
8	1	VALVE BALL 250 NS 600# FERF/WE XS C/W ONE PUP 500LG. & WITH GEAR OPERATOR	C0168
9	1	VALVE CHECK 250 NS 600# WE. 7.1WT. SWING C/W PUPS 500LG.	C0403
10	1	VALVE BALL 150 NS 600# WE XS/FE RF GEAR OPERATED	C0180
11	1	VALVE BALL 100 NS 600# WE XS/FE/RF	C0186
12	1	VALVE BALL 80 NS 600# FE RF	C0212
13	1	VALVE BALL 50 NS 600# FE RF	C0213
14	1	VALVE BALL 25 NS 600# SW/NPT	C0240
15			
16	1	VALVE GAUGE 15 NS 600# SCR, NPT M/F c/W BLEED	C0247
17			
18			
19	1	FLGE BLIND 150 NS 600#RF ASTM A105	C0562
20	1	FLGE BLIND 80 NS 600#RF ASTM A105	C0564
21	1	FLGE BLIND 50 NS 600#RF ASTM A105	C0565
22	1	FLGE WN 200NS 600# RF SCH 80 ASTM A105	C0537
23	2	FLGE WN 50NS 600# RF SCH 80 ASTM A105	C0541
24	3	ELBOW 90°LR 250 NS STD.WT. MSS SP75 WPHY-52	C0654
25	3	ELBOW 90°LR 100 NS XS ASTM A234 WPB	C0731
26			
27			
28			
29	2	TEE RED. 250x150 NS STD. WT. MSS SP75 WPHY-52	C0674
30	1	TEE BARRED 250 NS DWG. No. ADM000-6102	
31			
32			
33	1	RED. CON. 150 x 100 NS XS ASTM A234 WPB	C0821
34	1	RED. CON. 250 x 200 NS STD. WT. MSS SP75 WPHY-52	C0686
35			
36	1	PLUG HEX. 50 NS SCR NPT ASTM A105	
37	1	PLUG HEX. 25 NS SCR NPT ASTM A105	
38	1	PLUG HEX. 15 NS SCR NPT ASTM A105	
39	1	NIPPLE 25 NS x 100 SCH 160 PBE ASTM A106 B	
40	1	NIPPLE 15 NS x 75 SCH 160 POE/TOE ASTM A106 B	
41	1	TOL 250x200x50NS 3000# NPT ASTM A105	
42	1	COUPLING 15 NS 3000 # SCR NPT ASTM A105	
43	16	STUDBOLT 1 1/4" UNS x 215 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
44	12	STUDBOLT 1" UNC x 170 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
45	8	STUDBOLT 7/8" UNC x 145 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
46	16	STUDBOLT 3/4" UNC x 125 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
47	24	STUDBOLT 5/8" UNC x 110 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
48			
49			
50	1	GASKET 150 NS 600# 4.4 THK. METAFLEX SG	
51	2	GASKET 80 NS 600# 4.4 THK. METAFLEX SG	
52	2	GASKET 50 NS 600# 4.4 THK. METAFLEX SG	
53			
54	1	FLANGE ANCHOR 250 NS DWG. No. ADM000-6101	C0996
55	1	INSULATING KIT 250 NS 600# RF	C1012
56	1	INSULATING KIT 100 NS 600# RF	C1015
57	1	INSULATING KIT 50 NS 600# RF	C1017
58	1	INSULATING JOINT 250 NS 600#	C1006
59	1	TRAP LAUNCHING 250 NS DWG. No. ADM000-6121	
60	1	PIPE ASSY DWG. No. AD0000-6157	
61	1	PIPE ASSY DWG. No. AD0000-6112	
62	1	PIPE SUPPORT DWG. No. AD0000-6114	
63			
64	1	FOUNDATION ITEM-4 DWG. No. ADM000-1005	
65	1	FOUNDATION ITEM-6 DWG. No. ADM000-1008	
66	1	FOUNDATION ITEM-5 DWG. No. ADM000-1008	

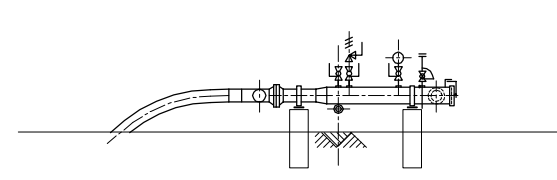
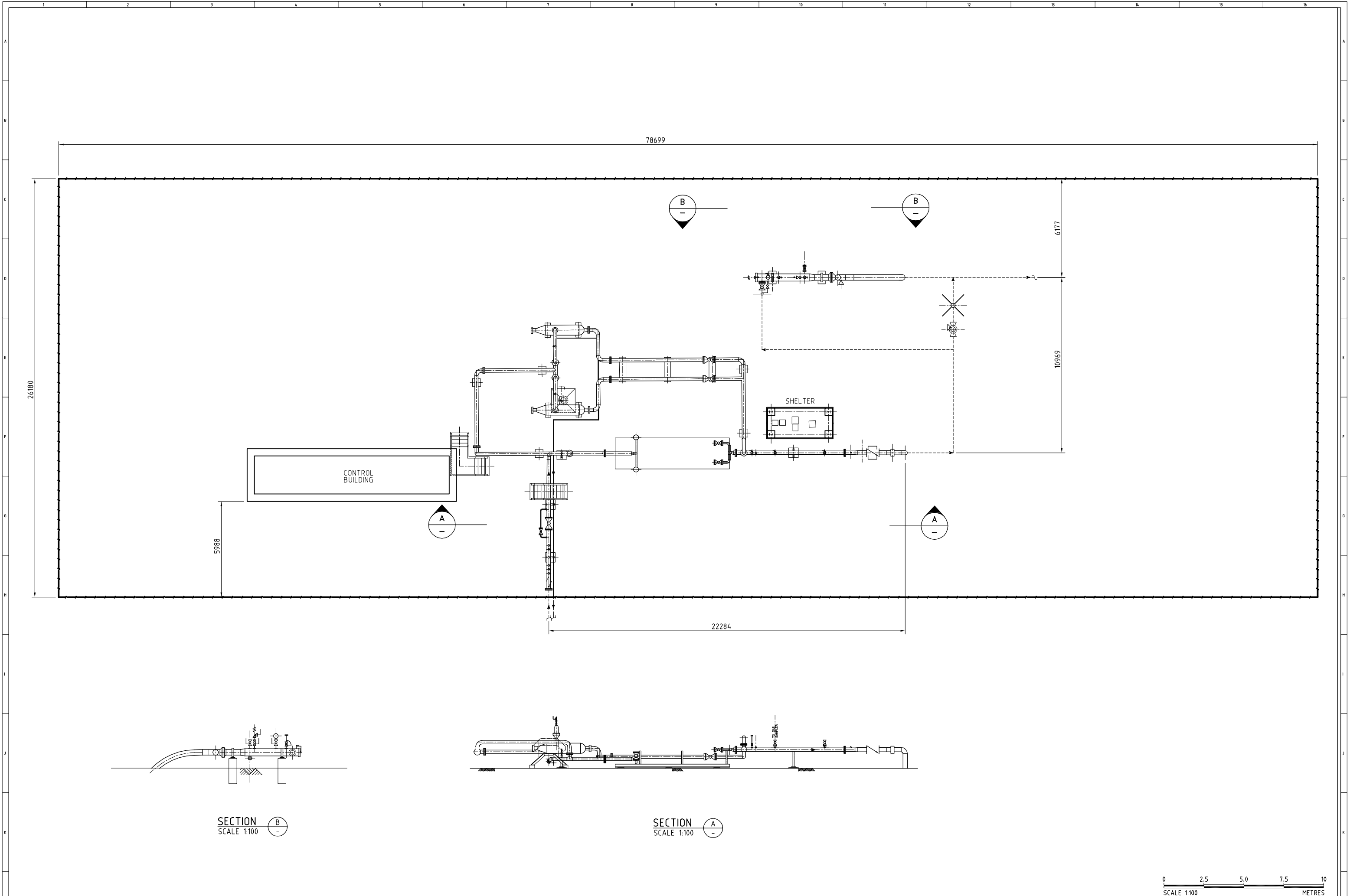
APPROVED FOR CONSTRUCTION

REV.	REVISION DESCRIPTION	DRAWN	CHECK'D	APP'D	DATE	REFERENCE DRAWINGS	APPROVED
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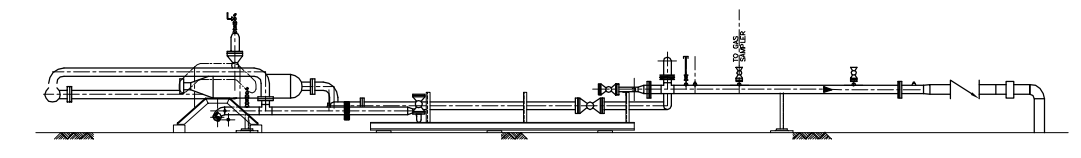
**N.T. GAS**  
Pty. Limited  
ACN 050 221 415

16 Georgina Crescent PALMERSTON NT  
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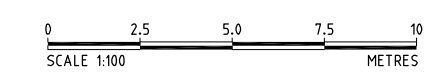
TITLE AMADEUS BASIN TO DARWIN PIPELINE MEREENIE STATION (250 NS) LAUNCHING TRAP ARRANGEMENT			
DRG. SIZE	SCALE	DRAWING NUMBER	REV.
A1	1:100	MT0000-6003	0



SECTION B  
SCALE 1:100



SECTION A  
SCALE 1:100



REV	DESCRIPTION	DATE	CHKD	APPD	REFERENCE DRAWINGS
1					
2					

NOTES:  
 1. LOCATION OF UNDERGROUND SERVICES NOT CONFIRMED AND NOT SHOWN ON THIS DRAWING, REFER TO DRAWING MT0000-3000 ALL FOR PIPING DETAILS.  
 2. ALL DIMENSIONS ARE BASED ON 3D SCAN DATA. ALL 3D DATA RETAINED BY FYFE

NO.	DESCRIPTION	DATE	CHKD	APPD	REFERENCE DRAWINGS
1					
2					

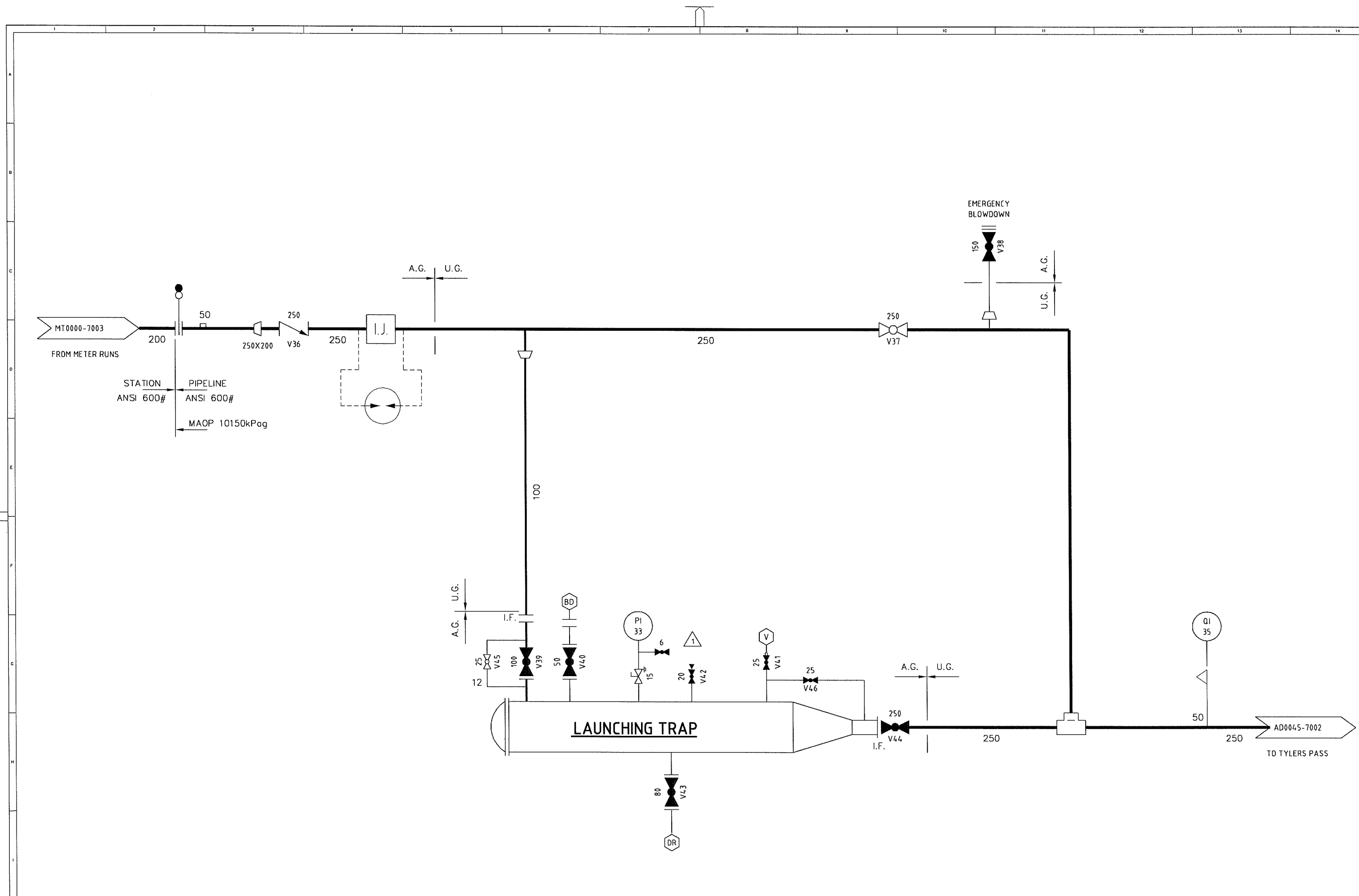
**FYFE Earth Partners**  
 ADVOK 112 100

**FYFE**  
 Earth Partners  
 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200

**APA Group**

SHEET NO.	SCALE	TITLE	PROJECT NO.	DRAWING NO.	REV
1	1:100	AMADEUS BASIN TO DARWIN PIPELINE MEREENIE METER STATION PLOT PLAN - MEREENIE		MT0000-3000	0





DWG No.	REFERENCE DRAWINGS
MT0000-7003	P & I DIAGRAM METERING/GAS ANALYSIS
MT0000-7002	P & I DIAGRAM MLET & SLV

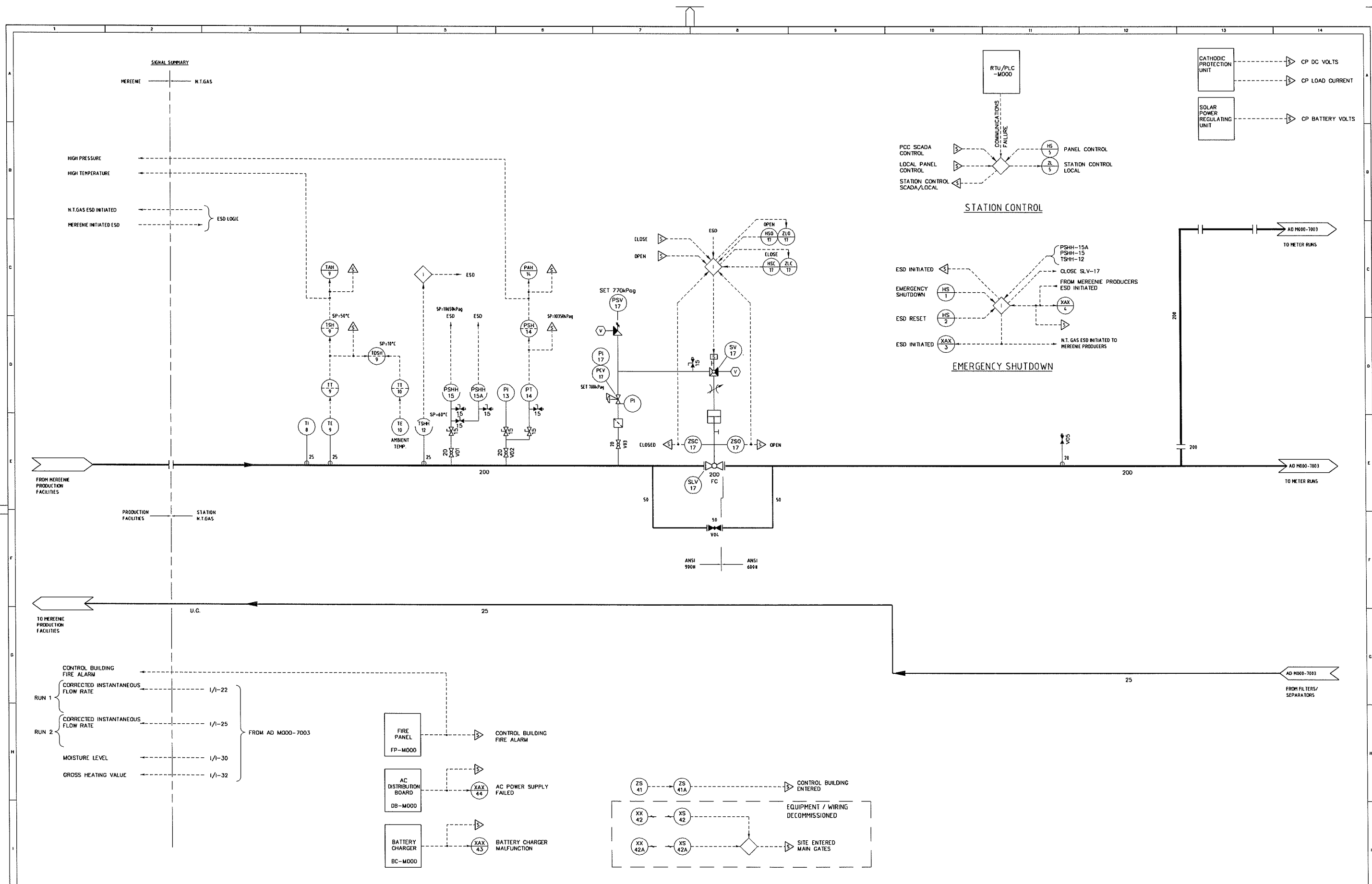
NOTES  
 1 ALL EQUIPMENT / INSTRUMENT TAG NUMBERS SHALL BE SUFFIXED WITH THE STATION NUMBER eg PI-33-M000

No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APP'D
1	SEP'09	PSV REMOVED	ML	BP				HD
0	OCT'07	NEW DRAWING NUMBER, REFERENCE PREVIOUS DRG NO AD0045-7001 REV 7	DIH	BP				HD

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CLIENT	<b>N.T. GAS</b>
TITLE	<b>AMADEUS BASIN TO DARWIN PIPELINE MEREENIE METER STATION P &amp; I DIAGRAM MAINLINE VALVE AND LAUNCHER</b>
DWG. SIZE	B1
SCALE	NTS
JOB No.	6850-000
DRAWING No.	<b>MT0000-7001</b>
REV.	<b>1</b>



DWG No.	REFERENCE DRAWINGS
AD M000-7001	P & I DIAGRAM M.V. & LAUNCHER
AD M000-7003	P & I DIAGRAM METERING / GAS ANALYSIS
AD M000-7001	SIMPLIFIED P & I DIAGRAM

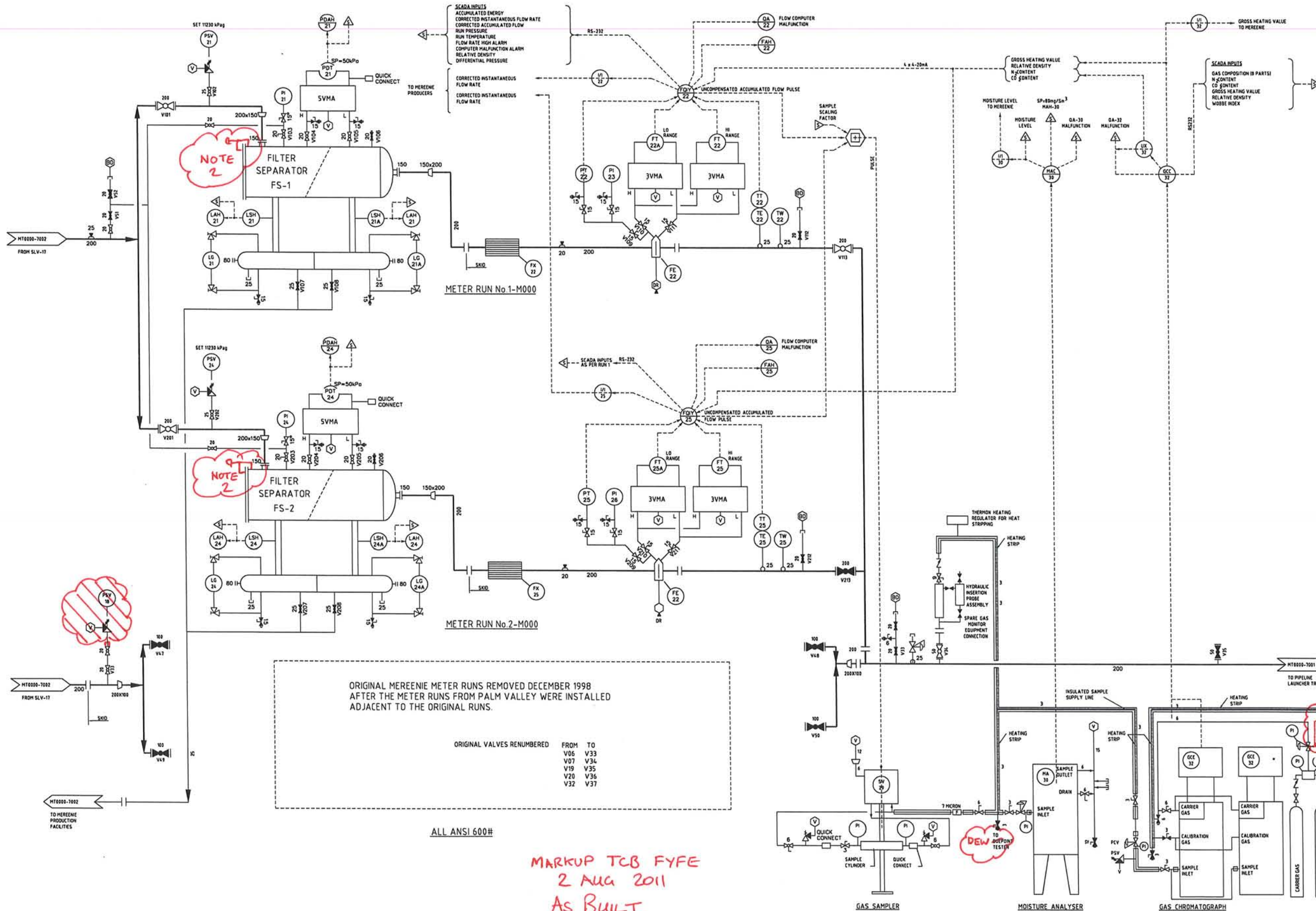
**NOTES**  
 1. ALL EQUIPMENT/INSTRUMENT TAG NUMBERS SHALL BE SUFFIXED WITH THE STATION NUMBER eg TI-9-M000

No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APPD
1	OCT 97	NEW DRAWING NUMBER, REFERENCE PREVIOUS DRG NO AD M000-7002 REV 9	DCH	BP	H.D.			

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CLIENT		<b>N.T. GAS</b>	
TITLE		<b>AMADEUS BASIN TO DARWIN PIPELINE MEREENIE METER STATION P &amp; I DIAGRAM INLET &amp; STATION LIMIT VALVE</b>	
DWG. SIZE	SCALE	JOB No.	DRAWING No.
B1	NTS	6850-000	<b>MT0000-7002</b>
REV.			<b>0</b>



NOTES  
1 ALL EQUIPMENT/INSTRUMENT TAG NUMBERS SHALL BE SUFFIXED WITH THE STATION NUMBER eg P1-22-M000  
2. QUICK OPENING CLOSURE WITH DAVIT

DWG No.	REFERENCE DRAWINGS
MT0000-7002	P & I DIAGRAM INLET & SLV
MT0000-7001	P & I DIAGRAM HLV & LAUNCHER

No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APP'D	No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APP'D	
1	OCT-99	ADDED VALVE DETAILS TO RUN 2, UPDATED CONTRIBUANCE DRAWING NUMBERS	BP	ML				H.D.										
0	OCT-97	NEW DRAWING NUMBER, REFERENCE PREVIOUS DRG NO AD0000-7003 REV11	DCH	BP				H.D.										

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CLIENT  
**N.T. GAS**

TITLE  
**AMADEUS BASIN TO DARWIN PIPELINE MEREENIE METER STATION P & I DIAGRAM METERING AND GAS ANALYSIS**

DRG. SIZE/SCALE: B1 NTS  
JOB No.: 6850-000  
DRAWING No.: MT0000-7003  
REV 1

## **2 Hazardous Area Classification Report**

This section contains the hazardous area classification report written for the Amadeus Basin to Darwin pipeline facilities.



# AMADEUS BASIN TO DARWIN PIPELINE HAZARDOUS AREA CLASSIFICATION



FYFE REFERENCE: 18756-4-HAD-001

APA REFERENCE: HAD DATA REPOSITORY/ADP\_18756\_HADC

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Date: 24-Nov-2011

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**Revision History:**

Rev.	Status	Date	Prepared	Reviewed	QA
A	Preliminary Issue	30/08/2010	YZW	TCB	
B	Revised to Incorporate Information from 2011 Part 1 Site Inspection	24/08/2011	TCB	RDK	
C	Revised to Incorporate Comments from Client	19/09/2011	TCB	RDK	
D	Revised to following 2011 Part 3 and Part 4 site inspections	26/09/2011	TCB	RDK	
E	Revised following 2011 Part 2 site inspections	10/10/2011	TCB	RDK	
0	Original Issue	24/11/2011	TCB	RDK	EZG

## 2.1 INTRODUCTION

### 2.1.1 OBJECTIVE

The hazardous area classification covers the above ground gas regulating and metering stations, scraper stations and mainline valves in the Northern Territory Gas Network.

The pipeline and facilities were originally constructed in 1985 with the additional facilities added to supply new users and supply points. No hazardous area documentation was completed at the time of the construction as there were no Australian Standards for hazardous area classification in 1985. The selection, installation and maintenance of electrical equipment were covered by AS 1076 series (1977).

This report documents the results of a Hazardous Area Classification undertaken for the facilities mentioned in Section 2.4.

The interpretation and application of this classification should take into account that Hazardous Area Classifications are inherently “imprecise” and involve assumption based estimates, code interpretation and engineering judgement.

## 2.1.2 SCOPE OF STATIONS

The scope of stations covered by this hazardous area classification is shown below:

Station	Description	KP
Palm Valley	Meter Station	0000
Palm Valley Alice Springs	Meter Station	0000
Mereenie	Meter Station	0000*
Tylers Pass	Transfer Station	0045
Tanami Road	Scraper Station	0161
Aileron	Mainline valve	0241
Ti Tree	Scraper Station	0316
Barrow Creek	Mainline Valve	0401
Wauchope	Scraper Station	0458
Kelly Well	Mainline Valve	0546
Tennant Creek	Meter Station	0025†
Warrego	Scraper Station ONLY	0610
Morphett Creek	Mainline Valve	0660
Renner Springs	Scraper Station	0733
Fergusson	Mainline Valve	0791
Elliott Meter Station	Meter Station	0003‡
Daly Waters	Meter Station	0982
Newcastle Waters	Scraper Station	0844
Katherine Offtake	Scraper Station	0000**
Katherine	Meter Station	0005**
Larrimah	Mainline Valve	1053
Mataranka	Scraper Station ONLY	1108
Tindal	Mainline Valve	1209
Helling	Scraper Station	1243
Pine Creek	Meter Station	1317
Ban Ban Springs	Scraper Station	1378
Batchelor	Mainline Valve	1441
Acacia	Mainline Valve	1465
Berry Springs	Mainline Valve	1486
Darwin City Gate	Meter Station	1498
Channel Island	Meter Station	1510

\* On Mereenie to Tylers Pass Pipeline

\*\* On ADP to Katherine Pipeline

† On ADP to Tennant Creek Pipeline

‡ On ADP to Elliott Pipeline

### 2.1.3 EXCLUSIONS

The following stations are excluded from this hazardous area classification

- Alice Springs facilities (owned and operated by Envestra),
- McArthur River Mine pipeline lateral facilities,
- Warrego compression facilities (scraper facilities are included),
- Tenant Creek offtake,
- Helling scraper station training pipework,
- Cosmo Howley facilities,
- Mt Todd facilities,
- Weddell facilities,
- Mataranka meter station.

The hazardous area classification does not consider the hazardous area associated with equipment not included in the pipeline licence, e.g. gas plants at Mereenie and Palm Valley, and the gas reticulation facilities at Darwin.

### 2.1.4 REVISION HISTORY

#### 2.1.4.1 *Revision A*

The hazardous area classification was raised and issued following the inspection of four sites on the Amadeus Basin to Darwin Pipeline in 2010, as listed below:

- Darwin City Gate Station
- Channel Island Station
- Helling Scraper Station
- Pine Creek Station

#### 2.1.4.2 *Revision B*

Further inspection of sites was undertaken in August 2011 and the hazardous area classification updated to incorporate sources of hazardous release from the equipment at these sites. The additional sites inspected were:

- Mereenie Station
- Palm Valley Meter Station
- Palm Valley Interconnect / Alice Springs Meter Station
- Tylers Pass Station
- Tanami Road Scraper Station
- Aileron Valve Site
- Ti Tree Scraper Station

#### 2.1.4.3 *Revision C*

The hazardous area classification updated to incorporate comments and recommendations from APA.

#### 2.1.4.4 *Revision D*

Further inspection of sites was undertaken in September 2011 and the hazardous area classification updated to incorporate sources of hazardous release from the equipment at these sites. The additional sites inspected were:

- Katherine Meter Station
- Mataranka Scraper Station
- Ban Ban Springs Scraper Station
- Batchelor Valve Site
- Berry Springs Valve Site

In addition there were some revisions to site descriptions for the stations included at revision to ensure consistency.

#### 2.1.4.5 *Revision E*

Further inspection of sites was undertaken in October 2011 and the hazardous area classification updated to incorporate sources of hazardous release from the equipment at these sites. The additional sites inspected were:

- Wauchope Scraper Station
- Tennant Creek Meter Station
- Warrego Springs Scraper Station
- Renner Springs Scraper Station
- Elliott Meter Stations
- Newcastle Waters Scraper Station
- Daly Waters Meter Station

#### 2.1.4.6 *Revision 0*

- Original Issue for use.

## 2.2 METHODOLOGY

This Hazardous Area Classification has been carried out in accordance with the “source-by-source” guidance taken from AS/NZS 60079.10.1 (Standards Association of Australia and New Zealand), in association with IP Code Part 15 (Institute of Petroleum – UK) and API RP 505 (American Petroleum Institute – USA).

The potential leaks that can be anticipated in both normal and abnormal operations have been considered, such as the failure of a valve gland and the partial failure of a gasket flange. The application of explosion proof (Ex) equipment will make sure that ignition does not take place. The classification does not allow for catastrophic failure of pipework or equipment where the associated mechanical effects are almost certain to cause ignition.

The extent of Zone 0, 1 and 2 areas has been identified by investigating each relevant source or type of source.

Due to the imprecision inherent in hazardous area classification, the designation of small non-hazardous area within larger hazard areas has been avoided.

Natural boundaries have been used to define zone limits where reasonably practical. In some cases, where believed adequate, this has reduced the assigned area to some extent. In other cases, where there is no economic disadvantage, the zone areas have been extended to simplify their arrangement.

The equipment and pipework in the stations are installed in open outdoor (all sides of the compounds are open and the stations are not installed in natural depressions), therefore they are considered adequately ventilated. This classification assumes that all stations on the ADP covered by this report are well maintained at all times.



## 2.3 REFERENCES

### 2.3.1 AUSTRALIAN STANDARDS

AS/NZS 60079.10.1:2009	Explosive atmospheres Part 10.1: Classification of areas – Explosive gas atmospheres (IEC 60079-10-1, Ed.1.0(2008) MOD)
AS/NZS 60079.20:2000	Electrical apparatus for explosive gas atmospheres Part 20: Data for flammable gases and vapours, relating to the use of electrical apparatus

### 2.3.2 INTERNATIONAL STANDARDS

IP 15 Third Edition, 2005	Model code of safe practice Part 15: Area classification code for installations handling flammable fluids
API RP 505 First Edition, 1997	Classification of locations for electrical installations at petroleum facilities classified as Class I, Zone 0, Zone 1, and Zone 2

## 2.4 PROCESS DESCRIPTION AND OPERATIONS

### 2.4.1 PROCESS DESCRIPTION

#### 2.4.1.1 Overview

The Amadeus Darwin Pipeline (ADP) was constructed to deliver gas from the Palm Valley and Mereenie gas plants in the south of the Northern Territory to Darwin in the north of the territory. Several offtakes have been added to supply users along the length of the pipeline. The pipeline is approximately 1,513 km long.

Currently, the majority of the gas is supplied to the ADP from Wadeye via the Bonaparte pipeline. The Bonaparte pipeline connects in to the ADP at Ban Ban Springs.

Typically drains and vents in the facilities are fitted with plugs or caps and therefore are not a source of release during normal operation. Drains are operated only when then the pipeline is depressured and do not require further consideration, vent points marked with BD on the P&IDs are assumed to be operated during routine operation and maintenance of the station and require consideration as a source of release.

#### 2.4.1.2 Mereenie

Gas to the Mereenie station comes from the Santos operated Mereenie gas plant. Currently there is no contract for the supply of gas from Mereenie, however the station remains pressurised and can be returned to operation if required.

The station consists of DN 200 above ground connection to the Mereenie gas plant. Close to the connection point are temperature and pressure transmitters and high temperature and pressure trips and a station limit valve (SLV). The SLV is pneumatically actuated from instrument gas conditioned locally. The instrument gas system is provided with a local PSV that vents to atmosphere.

The gas then passes to two parallel filter separators. The filter separators are horizontal and fitted with quick opening closures to allow removal of the filter elements. The filter separators have been swapped with the filters originally installed at Palm Valley and this required some pipework modifications. The liquids removed from the gas are collected in a drain boot underneath the filter separator. The liquids are drained back to the Mereenie production facility. The filter separators are fitted with the following instrumentation; pressure indicator, differential pressure transmitter, level glasses, high level switches and a PSV.

From each filter separator the gas flows to a meter run. The flow meters are orifice meters that are fitted with flow conditioners, pressure transmitter, a low range and a high range differential pressure transmitter and a temperature transmitter. A blowdown point is provided on each meter run that can blow down the meter run and filter separator.

The pipework downstream of each meter run joins to a common line. There is a DN 20 blowdown point and an insertion sample probe installed to provide gas samples for the gas chromatograph and dew point analyser.

The gas then passes underground through a manual station limit valve to the Mereenie to Tylers Pass pipeline. There is a scraper launcher installed with quick opening closure, pressure indicator, blow down vent and associated valving for the launching of pigs.

### 2.4.1.3 *Palm Valley*

The Palm Valley metering station receives gas from the Magellan Petroleum operated Palm Valley gas plant.

The station consists of DN 300 above ground connection to the Palm Valley gas plant. Close to the connection point are temperature and pressure transmitters and high value trips and a station limit valve (SLV). The SLV is pneumatically actuated from instrument gas conditioned locally. The instrument gas system is provided with a local PSV that vents to atmosphere.

The gas then passes to two parallel filter separators. The filter separators are horizontal and fitted with quick opening closures to allow removal of the filter elements. The filter separators have been swapped with the filters originally installed at Mereenie; the filters are installed in the same location and have required minimal pipework modifications. The liquids removed from the gas are collected in a drain boot underneath the filter separator. Liquids are removed to temporary containers. The filter separators are fitted with the following instrumentation; pressure indicator, differential pressure transmitter, level glasses, high level switches and a PSV.

From each filter separator the gas passes to a meter run. The flow meters are orifice meters that are fitted with flow conditioners, pressure transmitter, a low range and a high range differential pressure transmitter and a temperature transmitter. A blowdown point is provided on each meter run that can blow down the meter run and filter separator.

The pipework downstream of each meter run joins to a common line. There is a DN 20 blowdown point and an insertion sample probe installed to provide gas samples for the gas chromatograph and dew point analyser.

The gas then passes underground through a manual station limit valve to the Palm Valley to Tylers Pass pipeline. The underground section of pipe is fitted with a blowdown point. A connection point and additional valve has been installed on the blowdown stack to provide gas to the Palm Valley to Alice Springs station. The connection point for the gas analyser has been relocated to this section of pipework to allow measurement of the gas that passes from the Amadeus Darwin Pipeline to the Alice Springs Pipeline. The pipework to the Palm Valley to Alice Springs Pipeline passes underground to a point adjacent to the Palm Valley to Alice Springs compound. There is a flanged connection to the compound fence line.

There is a scraper launcher installed with quick opening closure, pressure indicator, blow down vent and associated valving for the launching of pigs to the ADP.

### 2.4.1.4 *Palm Valley Alice Springs*

The Palm Valley Alice Springs site, also referred to as the Palm Valley Interconnect receives gas from either the Magellan operated Palm Valley gas plant or from the ADP via the Palm Valley metering station.

The gas supply from the ADP is fed to a skid. The skid has recently been modified by APA, although no information is available. From the existing P&IDs and inspection; the pipe from the Palm Valley station is DN 100. The pipe decreases to DN 80 on the skid. At the inlet to the skid there is a pressure transmitter and indicator. The gas passes to a flow meter with pressure and temperature correction. Isolation valves and a manual bypass are provided. The skid is supplied with two pressure control valves, the main one is electro-pneumatic and the stand-by one is pneumatic controlled and actuated. Downstream of the control valves is an actuated valve fitted with pressure pilots and solenoids. The instrument gas for the control valves is conditioned from the transmission gas. The instrument gas is fitted with dual pressure regulators, knock out pot, filter, a PSV and high and low pressure pilots that close the actuated valve. The vents from all two valve instrument manifolds are tubed to a location at the edge of the skid roof.

The line from the Palm Valley gas plant is DN 100 which increases to DN 200. The gas then passes to a restriction orifice (RO). Upstream of the RO is the DN 50 kicker line connection to the scraper launcher. Downstream of the RO is the connection from the ADP. Next there is a station limit valve (SLV) that isolates Palm Valley to Alice Springs pipeline from both gas feeds. The SLV is pneumatically actuated from instrument gas conditioned locally and closes when a low pressure is sensed in the pipeline.

The scraper launcher is fitted with a quick opening closure, a pressure indicator, pressure relief valve and valves to allow operation.

Parallel to the scraper launcher is a wall. The wall is 1.8 m away from the centre line of the scraper launcher. The impact of the wall on the hazardous zones will be to extend the size of the hazardous area zone (refer section 2.7.12).

#### 2.4.1.5 *Tylers Pass*

At Tylers Pass the gas from Mereenie and Palm Valley are commingled and odorant is added. The DN 250 pipeline from Mereenie passes to an above ground scraper receiver, fitted with pig sig, vent, pressure indicator, quick opening closure and valving to allow operation. During normal operation the gas bypasses the scraper vessel via underground pipework. A pipeline riser is fitted with pressure transmitter, pressure indicator and high pressure trip. Downstream, there is a buried valve with above ground pneumatic actuator. The actuator is powered by instrument gas conditioned locally from the transmission gas.

The gas from Palm Valley is similar to the Mereenie connection but does not have a scraper receiver. The pipeline is DN 350 and includes a riser with pressure transmitter and pressure indicator upstream of a buried valve with above ground pneumatic actuator. The actuator is powered by instrument gas conditioned locally from the transmission gas.

There is a DN 200 vertical blowdown stack fitted with quick opening closure. The stack has buried connections and valves to the pipeline sections to Mereenie, Palm Valley and Tanami Road, as well as the scraper receiver.

Downstream of the two actuated valves the two pipeline sections join and are fitted with a temperature transmitter, pressure transmitter, pressure indicator, instrument gas offtake and odorant injection point.

The odorant injection package consists of an odorant storage pressure vessel, instrument gas conditioning and control and odorant dosing pumps. The storage vessel is fitted with a pressure relief valve, pressure indicator, two level glasses, a level transmitter and a continuous vent fitted with adsorption vapour filter. The vent from the tank is fitted with a cap so that the discharge point is vertically downwards. The instrument gas conditioning equipment comprises two regulators to reduce the pressure to 400 kPag. The tank blanket instrument gas is regulated to 15 kPag by a pressure regulator / over pressure shut off (OPSO) valve. The injection pump instrument gas is regulated to 400 kPag by a regulator. Control of the odorant injection pumps is by solenoid valves. The odorant dosing pumps suction is connected to the bottom of the odorant storage vessel. The discharge of each odorant dosing pump is fitted with a flow switch and pressure relief valve. The odorant injection point is fitted with an averaging chamber and a site flow indicator.

Note that there is no gas supply from Mereenie or Palm Valley and the gas flow through Tylers Pass is in the reverse direction. At the time of inspection the odorant plant was not operating.

#### 2.4.1.6 *Tennant Creek Metering Station*

The Tennant Creek pressure reduction and metering station receives gas from ADP to Tennant Creek Pipeline, approximately 25 km long, and supplies the Tennant Creek power generation site. The Tennant Creek Station comprises of two filter separators, two water bath heaters, an atmospheric slop tank, control valves, pressure regulators, pressure relief valves, and the related pipework, instrumentation and valving.

The inlet to the station is DN 100 and consists of a scraper receiver vessel. The scraper vessel is fitted with local vent, PSV, pressure indicator and associated pipework and valving. The closure on the vessel is a blind flange.

The piping in parallel to the scraper receiver is fitted with a pressure transmitter, pressure gauge and a buried mainline valve. The valve has an aboveground gas over oil hydraulic actuator.

The gas then passes through two parallel filter separators. Upstream of both filter separators are temperature control valves that reduce the pressure to 5,200 kPag / 17°C [based on operating conditions at the time of the site visit]. The temperature control valves are provided with cascade control for pressure and temperature. The filter separators are fitted with a differential pressure transmitter, pressure indicator, high liquid level switches and high-high liquid level switches. The liquids are drained manually to an elevated slops tank. The slop tank is fitted with a liquid level glass and hose to allow emptying.

Gas from the filter separators is then heated by indirect fired water bath heaters to approximately 60 °C. The water bath heaters are operated as duty - standby, with the standby heater remaining 'hot' to allow quick change over, controlled by the actuated valves on the inlet to each heater.

The heated gases from heaters pass through two parallel regulator / meter runs. The regulator / meter runs are operated in duty - standby and each contains active - monitor pressure regulators. The meter skids are provided with two actuated valves that close on high pressure downstream of the regulators. Additional high pressure switches at the station outlet initiate a station ESD. Further over pressure protection is provided by a PSV at the station outlet. A meter is provided in each run. The meters are orifice meters with upstream flow conditioners, temperature transmitters, pressure transmitters and high and low range differential pressure transmitters. Each run is provided with a local blowdown point, pressure indicators and valving.

The station outlet is provided with a temperature indicator, temperature transmitter and low temperature switches. There is also provision for the installation of a future gas sampler. The connection to the Tennant Creek power generation site is DN 100.

Pipework downstream of the heater is fitted with insulation up to the station outlet.

Instrument gas is conditioned locally for each actuated valve and temperature control valve. Gas is conditioned at each water bath heater to provide fuel gas for the pilot and main burners. The fuel gas conditioning trains comprise of a pre-heat coil, strainer, primary pressure regulating valve, actuated ESD valves, secondary pressure regulating valve, meter and a temperature control valve.

A control system provides control and telemetry for the various process measurement parameters. The control system provides flow control and high pressure automatic shutdown functionality and allows remote operator shutdown. The control system is powered by single phase 230 VAC power supply, with back up batteries.

#### 2.4.1.7 *Elliott Meter Station*

The Elliott Meter Station receives gas from a DN 50 lateral from the ADP. The lateral is approximately 4 km long and provides gas for the Elliott power generation site. The station consists of a scraper receiving vessel, dry gas filter, filter separator, knock out pot, two stages of pressure regulation, a catalytic heater, metering run, slop tank, atmospheric vent stack and the associated pipework, valves and instrumentation.

At the inlet to the station is a scraper receiving vessel. The scraper vessel is fitted with local vent, PSV, pressure indicator and associated pipework and valving. The closure on the vessel is a blind flange.

The main gas flow to the skid passes to an actuated valve. The gas is then filtered in a dry gas filter. The filter is horizontal and fitted with a quick opening closure, differential pressure gauge, PSV and vent.

The gas then passes to a temperature gauge and then two parallel pressure regulators that operate in duty and standby that reduce the gas pressure to 3,000 kPag.

The gas passes to a filter separator fitted with a differential pressure gauge with inductive high differential pressure switch, level gauge, pneumatic liquid level controller and control valve and high liquid level switch, pressure relief valve.

The gas from the filter separator passes to a knock out pot and then to a catalytic heater. The catalytic heater is decommissioned and has not operated for some time.

From the heater the gas passes to the second stage pressure regulators. The gas is reduced in pressure to 500 kPag in the parallel pressure regulators, operating in a duty-standby arrangement.

The gas is then metered in a rotary positive displacement meter that is corrected for temperature and pressure. Upstream of the meter is a second pressure relief valve.

Instrument gas for the site instrumentation and fuel gas for the catalytic heater are conditioned in an offtake from the outlet of the skid and distributed as required.

A control system provides control and telemetry for the various process measurement parameters. The control system provides flow control and high pressure automatic shutdown functionality and allows remote operator shutdown. The control system is powered by single phase 230 VAC power supply, with back up batteries.

#### 2.4.1.8 *Daly Waters Scraper and Meter Station*

The Daly Waters Scraper and Meter Station is located at KP 0982 on the ADP and consists of a scraper receiver, scraper launcher and a filter, meter and pressure regulator station. The scraper part of the station is on the ADP and is the same as the scraper stations described in section 2.4.14. The meter part of station provides filtration and metering for the McArthur Mine River Pipeline. The meter station consists of gas over oil hydraulically actuated mainline, filter separators, metering, pressure regulation, a scraper launcher and associated pipework, valving and instrumentation.

The connection to the meter station is from the underground future compressor connection on the southern side (nominally upstream) of the scraper station. An above ground DN 350 blank flange has been provided for future connections. The connection to the meter station is DN 150 and consists of a ball valve with pressurising bypass and a downstream blank flange. The connection to the meter skid is by approximately 50 m of DN 150 welded pipe across the station.

The metering station is installed on two skid frames. The first comprises of an actuated valve, two dry gas filters, two meters, pressure control valves, instrument gas conditioning system and a scraper launcher.



The actuated valve is gas over oil actuated. Downstream of the actuated valve are two dry gas filters. Each dry gas filter is fitted with a differential pressure transmitter, manual vent and a drain. The gas from each filter passes to a meter run that comprises of a flow conditioner, orifice plate and thermowells. One of the meter runs is not fitted with instruments. The other is fitted with pressure transmitter, differential pressure transmitter and temperature transmitter.

#### 2.4.1.9 *Katherine Offtake*

The Katherine Offtake is installed on the ADP at approximately KP 1,221. The site consists of a take-off from the mainline. The offtake is fitted with a DN 100 buried valve. The valve is manual operated and has above ground gear box, maintenance ports and a cavity bleed. The valve has DN 50 risers either side of the valve, fitted with manual valves. A scraper launcher is installed at the site. The scraper vessel is fitted with pressure indicator, PSV and local vent. An above ground DN 100 valve with DN 50 bypass is also provided at the station. The valve may be a plug valve, a ball valve or a globe valve in accordance with the P&ID, details drawing or site photographs respectively.

#### 2.4.1.10 *Katherine Meter / Regulating Station*

The Katherine Meter/Regulating Station includes two filter separator, two water bath heaters, a slop tank, main line valve, control valves, pressure relief valves and the related pipework, instrumentation and valving.

The inlet to the station is DN 100 and consists of a buried station limit valve (MLV 11) with above ground actuator, maintenance ports and cavity bleed. A scraper receiver vessel is installed in parallel to MLV 11. The scraper vessel is fitted with a local vent, PSV, pressure indicator and associated pipework and valving. The closure on the vessel is a blind flange.

The following instrumentation is installed at the inlet; pressure indicator, a pressure transmitter and a temperature indicator.

The gas then passes through two parallel filter separators. Upstream of both filter separators are temperature control valves that reduce the pressure to 4,400 kPag / 16°C [based on operating conditions at the site visit]. The temperature control valves are provided with cascade control for pressure and temperature. One valve is fitted with a pneumatic controller to continue supply during outage of the electronic control system. The filter separators are fitted with differential pressure transmitter, pressure indicator, high liquid level switches and high-high liquid level switches. The liquids are drained manually to an elevated slops tank. The slop tank is fitted with a liquid level glass and a hose to allow emptying. Gas from filter separators is then heated by indirect fired water bath heaters up to approximately 60 °C. The water bath heaters are operated as duty - standby, with the standby heater remaining 'hot' to allow quick change over of the that is controlled by actuated valves on the inlet to each heater.

The heated gases from the heaters pass through two parallel regulator / meter runs. The regulator / meter runs are operated in duty - standby and each contains active - monitor pressure regulators. The meter skids are provided with two actuated valves that close on high pressure downstream of the regulators. Additional high pressure switches at the station outlet provide a station ESD. Further over pressure protection is provided by a PSV at the station outlet. A meter is provided in each run. The meters are orifice meters with upstream flow conditioners, temperature transmitters, pressure transmitters and high and low range differential pressure transmitters. Each run is provided with a local blowdown point, pressure indicators and valving.

The station outlet is provided with a temperature indicator, temperature transmitter and low temperature switches. There is also provision for the installation of a future gas sampler. The connection to the Katherine power generation site is DN 100.

Instrument gas is conditioned locally for each actuated valve and temperature control valve. Gas is conditioned at each water bath heater to provide fuel gas for the pilot and main burners. The fuel gas conditioning trains comprise of pre-heat coil, strainer, primary pressure regulating valve, actuated ESD valves, secondary pressure regulating valve, meter and temperature control valve.

The gas released in emergency directs to the vent stack that discharges to atmosphere and the liquid removed from the gas flows to the slop tank. The maximum PSV set point is 3,200 kPag and the temperature limit is set at 60 °C in the station.

A control system provides control and telemetry for the various process measurement parameters. The control system provides flow control and high pressure automatic shutdown functionality and allows remote operator shutdown. The control system is powered by single phase 230 VAC power supply, with back up batteries.

#### 2.4.1.11 Pine Creek

The Pine Creek pressure reduction and metering station receives gas from ADP to supply the Pine Creek power generation site. The Pine Creek Station comprises of a dry gas filter vessel, a filter separator, a knockout pot, two water bath heaters, an atmospheric slop tank, control valves, pressure relief valves, and the related pipework, instrumentation and valving.

The Pine Creek station is located close to the ADP and a mainline valve is located within the station. The inlet connection to the station has two DN 80 manual valves. One valve is fitted with an insulation flange and a surge arrestor, the second is fitted with a pressurising bypass. Downstream of the manual valves is an actuated valve that is also fitted with a pressurising bypass. The gas then passes to a dry filter vessel that is fitted with a pressure indicator, PSV, a vent valve, pressurising line and a bypass line to allow maintenance of the filter. From the filter, the gas passes to a duty standby temperature control valve that drops the gas pressure from 7,800 to 4,200 kPag and a temperature of 16°C [based on observations during the site visit]. The gas then passes to a filter separator that is fitted with level gauge, level controller, level control valve, high level switch, pressure indicator, PSV, vent valve and differential pressure transmitter. In parallel to the filter separator is a knock out pot to allow maintenance on the filter separator. The knock out pot is fitted with level gauge, pressure indicator, PSV, vent valve and drain valve.

Gas from filter separator / knock out pot is then heated by indirect fired water bath heaters up to approximately 60 °C. The water bath heaters are operated as duty - standby, with the standby heater remaining "hot" to allow quick change over of the that is controlled by actuated valves on the inlet to each heater.

The heated gas then passes to parallel pressure control valves. The valves are operated as duty and standby. The valves are pneumatically controlled. Over pressure protection is provided by a PSV downstream of the pressure control valves. Gas metering is by a single orifice meter fitted with a pressure transmitter; high and low range differential pressure transmitters and a temperature transmitter. A bypass is provided around the meter for maintenance.

Metered gas then passes to a second knock out pot fitted with a drain valve, PSV and level gauge. The piping from the knock out pot contains a temperature transmitter, temperature indicator, high pressure switches and a pressure transmitter. A double block and bleed valving arrangement is provided. The connection to the Pine Creek power generation site is via an underground pipework and the above ground flange is provided with an insulation



gasket. A spare flange is provided at the connection point for a future connection to the Pine Creek power generation site, the flange is fitted with a blind flange, insulation gasket and a surge arrestor.

Liquids collected from the dry filter, filter separator and knock out pots is sent to an elevated slops tank. The slops tank is fitted with a safety relief valve (SRV), pressure vacuum vent valve, flame arrestor, pressure indicator, high liquid level switch and hose for emptying.

Vents and PSV discharges from the dry filter, filter separator and knock out pots and vents from instrument manifolds and pneumatic controllers are sent to a local vent stack. The vent stack is fitted with a flame arrestor.

Instrument gas is conditioned centrally for the site from a connection from the outlet knock out pot.

Gas is conditioned at each water bath heater to provide fuel gas for the pilot and main burners. The fuel gas conditioning trains comprise of pre-heat coil, strainer, primary pressure regulating valve, actuated ESD valves, secondary pressure regulating valve, meter and temperature control valve. A control system provides control and telemetry for the various process measurement parameters. The control system provides flow control and high pressure automatic shutdown functionality and allows remote operator shutdown. The control system is powered by single phase 230 VAC power supply, with back up batteries.

#### 2.4.1.12 Darwin City Gate

Darwin City Gate receives gas from the ADP. Gas flows to three locations, Wickham Point, Channel Island and Trunk Package Offtake Station (TPOTS). The Wickham Point (Corroco Philips, Darwin LNG plant) pipeline can be reversed to ensure gas supply to Darwin/Channel Island. The gas supply to Wickham point is fitted with an actuated valve. The gas supply to Channel Island and TPOTS is filtered, reduced in pressure to 5,800 kPag and the gas composition and moisture dew point is analysed. The gas to TPOTS is regulated to a 850 kPag and metered.

The Darwin City Gate Station comprises of scraper vessels, a multicyclone, two filter separators, an atmospheric slop tank, gas chromatograph system, moisture analyser, control valves, pressure regulator, pressure relief valves, blowdown stack and the related pipework. Liquids (condensate, water and compressor lube oil) removed from the gas is stored in the slop tank for batch treatment.

The station consists of DN 300 above ground connection. A scraper receiver is installed with buried hydraulically actuated valve. The actuated valve includes electric solenoids to allow remote operation. During normal operation gas bypasses the scrapers and flows through the actuated valve, the scraper vessels are closed and isolated from the pipeline. At the station inlet, the pipeline divides in two, with one supplying gas to Weddell interconnect and one supplying to the City Gate station. The main line is installed with DN20 blowdown, temperature transmitter and pressure transmitter. The line then divides in two, the normal flow is through the multi-cyclone to remove solids. The multicyclone is fitted with a PSV with a set point of 9,650 kPag. Both parallel streams include a temperature control valve and a filter separator. The filter separators are horizontal and fitted with quick opening closures to allow removal of the filter elements. The liquids removed from the gas are collected in a drain boot underneath the filter separator and flow under level control to a slop tank. The filter separators are fitted with the following instrumentation and connections; pressure indicator, differential pressure transmitter, level glasses, high level switches, high high level switches, local drains and level controllers. The

temperature and level control valves are pneumatically controlled and actuated. Local instrument gas conditioning skid is provided with PSV to provide over pressure protection.

Common line of the outlet from the filter separators is installed with temperature indicators, temperature transmitter, pressure indicators, and pressure transmitters. The connection point for the gas chromatograph and dew point analyser has been installed to this section of pipework to allow analysis of the gas. The gas chromatograph and dew point analyser are installed in a shelter adjacent to the filter skid. The chromatograph receives a sample of the transmission gas at a pressure of approximately 140 kPag from an insertion regulator installed in the pipe. The carrier and calibration gases are stored in gas bottles and regulated for use at 140 kPag. The chromatograph vents gas to exhaust vents above the analyser shelter roof. The mainline then passes through a mainline valve. Downstream of the mainline valve is installed with pressure indicator and transmitter before the pipeline directed to Channel Island meter station.

A separate offtake to TPOTS passes gas to a DN 50 pressure regulation and metering skid. The skid has duty and standby arrangement with each containing active and monitor pressure regulators and turbine meters. A high pressure trip is provided that closes an actuated valve at the inlet. The meter runs, with one serving as duty run and other as standby run. The gas is then directed to Berrimah Road.

A control system provides measurement and telemetry for the various process instruments. The control system allows remote operator shutdown. The control system is powered by single phase 230 VAC power supply, with back up batteries.

#### 2.4.1.13 Channel Island

Channel Island regulating and metering station receives gas from Darwin City Gate meter station. The Channel Island Regulating Meter Station consists of two water bath heaters, solids filter, four filter separators, slam shut valves, active and monitor regulators, meters, pressure relief valves, local vent points and the associated valving and pipework.

The gas passes to a solids filter. The filter is fitted with a pressure indicator, differential pressure transmitter, local vent point and local drain. The filter has a quick opening closure and a bypass, with manual valving. The filtered gas is then heated to approximately 60°C in two parallel water bath heaters. One water bath heater is operating and the other is in hot-standby. Actuated valves at the heater inlets control the gas flow.

The combined outlet line from the water heaters as a high temperature switch, temperature indicator and temperature transmitter. The line then passes to one of two filter, regulation and metering runs to supply gas to either Unit 1 or Unit 7 at the Channel Island Power Generation Site.

The Unit 1 filter, regulation and metering run comprises of two parallel runs each containing actuated valve, active-monitor pressure regulators, filter separators and meters. The actuated valves are both normally open and are closed on either signal from the control system or high pressure downstream of the regulators. The pressure regulators are self acting and externally sensed. The gas of each regulator pair flows to the corresponding filter separator. The filter separators are horizontal and fitted with quick opening closures to allow removal of the filter elements. The liquids removed from the gas are collected in a drain boot underneath the filter separator. No slops tank is installed at site at liquids are drained from the filter separators manually. The filter separators are fitted with the following instrumentation and connections; pressure indicator, differential pressure transmitter, level glasses, high-high level switches, local drains and level controllers. The filtered gas is metered in orifice meters, each meter is fitted with flow conditioner, pressure transmitter, high and low range differential pressure transmitters and temperature transmitters. Additional overpressure protection is provided by a PSV. The combined outlet from the Unit

1 regulation, filter and metering runs is fitted with low pressure switch and high pressure switches that all initiate an ESD, and a pressure transmitter, pressure indicator, temperature transmitter, temperature indicator, low temperature switch connection for future gas analysis and an isolation valve.

The Unit 7 filter, regulation and metering run comprises of two parallel runs each consisting of filter separator, pressure regulators, metering and associated instrumentation and valving. There is an actuated valve at the inlet before a split to two filters. The filters are fitted with pressure indicator and differential pressure transmitter. Downstream of each filter is an actuated valve. The valves are normally open and are closed on signal from the control system or high pressure downstream of the pressure regulators. Metering is provided by a Coriolis meter and a AVT turbine meter. The primary duty meter is the Coriolis meter, but the turbine meter can be operated in series or parallel. Both meters are provided with temperature and pressure correction. Downstream of the meters the combined outlet has a PSV, local manual vent, temperature transmitter and pressure transmitter.

Instrument gas is conditioned locally for each actuated valve.

A control system provides measurement and telemetry for the various process instruments. The control system allows remote operator shutdown. The control system is powered by single phase 230 VAC power supply, with back up batteries.

#### 2.4.1.14 *Scraper Stations*

The scraper stations are provided along the length of the pipeline to allow cleaning and inspection of the pipeline. The scrapers stations are installed at Tanami Road, Ti Tree, Wauchope, Renner Springs, Newcastle Waters, Helling and Ban Ban Springs. Additionally scraper vessels are included at some of the stations along the pipeline. A scraper receiver and launcher are installed at each site along with a buried hydraulically actuated valve. The actuated valve includes electric solenoids to allow remote operation. During normal operation gas bypasses the scrapers and flows through the actuated valve, the scraper vessels are closed, isolated from the pipeline and depressured.

The pipeline is provided with buried isolation valves. A pressure transmitter and indicator are installed on a pipe riser either side of the actuated valve. A temperature transmitter is installed downstream of the actuated valve.

The scraper vessels are fitted with quick opening closures, a DN 25 local vent, a pressure gauge and connections with valves to allow operation. The vessels also include connections for pressure relief valves that have been removed on some / all scraper vessels. Pig passage indicators are installed on the pipeline and scraper vessels.

There is also a pipeline vent installed at the site within a separate compound. During normal operation the vent is closed with a quick opening closure.

#### 2.4.1.15 *Ban Ban Springs Scraper Station*

The scraper station at Ban Ban Springs also includes an off take connection to Cosmo-Howley and a supply connection from the Wadeye pipeline. The off take to Cosmo Howley is a blind flange on a pipeline riser. The pipeline is decommissioned and the meter station has been removed. The connection from the Wadeye pipeline is underground pipework from the Ban Ban Springs meter station. The pipeline connections is to the upstream connection for a future compressor. There is an above ground valve with bypass installed adjacent to the connection.

At the Helling scraper station there are pipework and vents that are used for training. The training pipework is not connected to the station pipework during normal operation of the pipeline and the training pipework is unpressurised. No records have been provided for the training pipework and it is not included in the hazardous area classification.

#### 2.4.1.16 Warrego Scraper Station

The scraper station at Warrego is also the site of a compressor. The compressor is connected to underground connections either side of the mainline valve. An actuated valve with manual bypass / pressuring line is installed at each connection. The actuated valves are provided with an instrument gas connection from the Warrego compressor site.

The remainder of the Warrego compressor site is not considered within this hazardous area classification.

#### 2.4.1.17 Mainline Valves

There are several mainline valve sites located at Aileron, Barrow Creek, Kelly Well, Morphett Creek, Fergusson, Larrimah, Tindal, Acacia and Berry Springs. The data used for classifying the mainline valves' hazardous area is obtained solely from the Aileron site. Each of the sites is assumed to be identical and comprises of a buried valve with an above ground bypass and vent points with no instrumentation installed on the mainline valve. The buried valve has a manual actuator and gear box, injection ports and cavity bleed extended above ground. This is shown in the photograph below.





#### 2.4.1.18 Bachelor Mainline Valve

The Bachelor mainline valve site is located at KP 1441 between Ban Ban Springs and Darwin City Gate. The Bachelor Mainline valve site is similar to other mainline valve sites but the mainline valve has an actuator, similar to the scraper stations. The mainline valve consists of a DN300 underground valve with an above ground actuator, maintenance ports and cavity bleed. The valve has an above ground DN100 bypass. Pressure transmitters are fitted either side of the valve. The site also has a control room.

### 2.4.2 OPERATING CONDITIONS

The maximum operating pressures and temperatures at the stations are summarised in Table 1.

**Table 1 Operating pressures and temperatures**

Temperature	Pressure (Process)	Pressure (Fuel gas)	Pressure (Instrument gas)
Max. (°C)	Max. (kPag)	Max. (kPag)	Max. (kPag)
60	9,650	≤ 650	770

### 2.4.3 VENTILATION

Each of the sites is in the open air and is considered to have good ventilation. Some equipment is installed in open-sided shelters. These are not considered to have any impact on ventilation.



## 2.5 PROPERTIES OF HAZARDOUS MATERIALS

### 2.5.1 GASES HANDLED

The gas processed through the regulating and metering stations contains mainly methane (typically 87 mol%) and nitrogen (about 8 mol%), along with small quantities of hydrocarbons (C2+) and carbon dioxide (totally < 5 mol%). The specific gravity of the gas is 0.62, which is lighter than air (SG=1.0). It is classified as a Category G(i) fluid in accordance with IP15 Section 1 (Table 1.2 – fluid categories) and as a Group IIA in accordance to AS/NZS 60079.20 section 4.6. The composition of the gas is shown in Table 2.

Note that the gas composition in the pipeline can vary from the typical figures shown in Table 2. However, methane will remain the predominant component and the properties of the gas will remain the same and will be the same as methane. Australian standard AS 4564 (AG 865) Specification for general purpose natural gas, provides information of the allowable properties of natural gas. Similarly, APA will have a Sales / Shipping Agreement for the injection of gas into the pipeline that should be observed. The limitations are summarised in Table 3.

Note that on release from high pressure, the gas will be cooled due to Joule-Thomson cooling. At lower temperatures the gas is less dense and the dispersion in air will be slightly impacted, but the flammable range is reduced. Similarly, for higher temperatures the flammable range is increased, but the dispersion is increased. At the dilute concentrations at the lower explosive limit, the gas-air mixture temperature will be close to ambient temperature therefore, there will be no additional consideration for temperature effects.

**Table 2 Typical Gas Composition**

Component	Symbol	mol%
Methane	CH <sub>4</sub>	87.0
Ethane	C <sub>2</sub> H <sub>6</sub>	2.6
Propane	C <sub>3</sub> H <sub>8</sub>	0.8
i-Butane	C <sub>4</sub> H <sub>10</sub>	0.1
n-Butane	C <sub>4</sub> H <sub>10</sub>	0.2
i-Pentane	C <sub>5</sub> H <sub>12</sub>	0.07
n-Pentane	C <sub>5</sub> H <sub>12</sub>	0.05
n-Hexane	C <sub>6</sub> H <sub>14</sub>	0.07
n-Heptane	C <sub>7</sub> H <sub>16</sub>	0.02
n-Octane	C <sub>8</sub> H <sub>18</sub>	0.004
n-Nonane	C <sub>9</sub> H <sub>20</sub>	0.004
Carbon Dioxide	CO <sub>2</sub>	0.95
Nitrogen	N <sub>2</sub>	8.2
<b>Total</b>		<b>100</b>
<b>Specific Gravity (mixture)</b>		<b>0.62</b>

**Table 3 Gas specification limits**

Characteristic	APA Schedule 4 Limits	AS 5654 Limits
HHV	Minimum 33.0 MJ/Sm <sup>3</sup> Maximum 42.0 MJ/Sm <sup>3</sup>	-
Wobbe Index	Minimum 44.0 MJ/Sm <sup>3</sup> Maximum 51.0 MJ/Sm <sup>3</sup>	Minimum 46.0 MJ/m <sup>3</sup> Maximum 52.0 MJ/m <sup>3</sup>
Oxygen	Maximum 0.2 mol%	Maximum 0.2 mol%
Hydrogen Sulphide	Maximum 10.0 ppmw	Maximum 5.7 mg/m <sup>3</sup>
Total Sulphur	Maximum 50 mg/Sm <sup>3</sup>	Maximum 50 mg/m <sup>3</sup>
Water Content	Maximum 80 mg/Sm <sup>3</sup>	Maximum – Dewpoint 0°C at the highest MAOP in the relevant transmission system (in any case, no more than 112.0 mg/m <sup>3</sup> )
Cricondentherm	Maximum 10.0°C	
Hydrocarbon Dewpoint		Maximum 2.0°C at 3,500 kPa
Total inert gases	Maximum 12.0 mol%	Maximum 7.0 mol%
Nitrogen	Maximum 11.0 mol%	-
CO <sub>2</sub>	Maximum 7.5 mol%	-
Mercury	Maximum 0.2 mg/Sm <sup>3</sup>	
Methanol	Maximum 1.0 mg/Sm <sup>3</sup>	
Glycols	Maximum 1.0 mg/Sm <sup>3</sup>	
Radioactivity	Maximum 8,000 Bq/Sm <sup>3</sup>	
Notes		m <sup>3</sup> refers to dry gas at standard conditions (15°C and 101.325 kPa)

The chromatograph used for gas composition analysis requires carrier and calibration gases. The carrier gas (helium) is not flammable, while the calibration gas (mainly methane) is classified as a Category G(i) fluid with similar compositions as process gas.

## 2.5.2 LIQUIDS HANDLED

### 2.5.2.1 *Filter Separator Drains*

The liquids handled at the facilities may consists of condensate, compressor lubrication oil or water, which is removed from the gas by the filter separators. The condensate is considered to be flammable liquid and based on hexane is considered to be a group IIA liquid in accordance to AS/NZS 60079.20. The compressor lube oil used in the stations is combustible, but not flammable, with a typical flash point (closed cup) over 60 °C. Therefore, it is treated as a non-hazardous material for the purpose of the hazardous area classification. Water is considered to be non-hazardous liquid.

### 2.5.2.2 *Odorant*

Odorant is injected into the pipeline at Tylers Pass. The odorant is SpotLeak 1005 and is a flammable liquid. It consists of Thiophene, Propanethiol and methyl as per the product specification. The odorant is classified as group IIA in accordance to AS/NZS 60079.20 and category C fluid in accordance with IP15 Section 1 (Table 1.2 – fluid categories).

## 2.6 EQUIPMENT SELECTION

The general requirements for selection, installation and maintenance of explosion proof (Ex) electrical equipment are described in AS/NZS 2381.1:2005.

To ensure the Ex electrical equipment performs satisfactorily, without the risk of ignition, the data shown in Table 3 must be used as area specification requirements.

**Table 4 Gas Group and Temperature Class**

Performance Criterion	Requirement	Reference
Ambient temperature	0 - 50 °C	Bureau of Meteorology
Auto-ignition temperature (Methane)	537 °C	AS/NZS 60079.20
Apparatus Group	IIA	AS/NZS 60079.20
Temperature Class	T1 / T3	AS/NZS 60079.20

The recommendations on equipment group and temperature class should be regarded as **minimum** requirements. Equipment selection must take into account local conditions, such as the presence of hot surfaces close by and electrical equipment design.

## 2.7 CLASSIFICATION

### 2.7.1 PIPING

#### 2.7.1.1 Process Piping

Welded piping at the stations is designed and constructed to ANSI/ASME B 31.3 and is not considered as a source of release. However, the possible release of flammable material occurs at flanges, valves and fittings due to the possible leakage from a gasket or seal. A majority of process gas service pipework installed in the stations is flanged. The screwed connections are limited to the small bore piping with a nominal size less than DN25. The screwed piping has tapered threads with similar leakage integrity to the flanged connections. The piping in the facilities is a permanent fixture and not subject to vibration.

All flanges and infrequently used valves are considered to be well maintained and located in an adequately ventilated area in the gas regulating and metering stations. Leakage of the flammable material at connection points is considered abnormal and the quantity of the hazardous material released is considered minor. Consequently, they are regarded as sources of *Secondary* grade release and a hazardous Zone 2 within a sphere area with 2 m radius from the potential leakage points is claimed around the piping with flanges or threaded joints, meters or regulators and valves other than relief valve in accordance with AS/NZS 60079.10.1 Clause ZA.6.6.2.4 for high pressure gas transmission system.

As a worst case the liquid piping is assumed to carry condensate which is a flammable liquid in accordance with AS/AZS 60079.10.1 clause ZA 5.2.8 that claims a hazardous area of Zone 2 of 1.5m in all directions of potential release points. However the liquid drain lines may contain sufficient quantities of dissolved and entrained. Since this hazardous area classification must account for a number of installations with a range of process conditions, liquid piping is classified as gas piping.

All process drains and vents used infrequently for maintenance or start-ups are normally plugged. Similarly, the sample points are taken on an infrequent or as required basis (maximum once every six months). To simplify hazardous area management, the classification for process gas piping will be assigned to the uncommonly operated process drains, vents and sample points, meaning a Zone 2 area of radius 2 m is declared around those potential leakage points.

The hazard zones adopted for the process piping, flanges, joints, valves and fittings are summarised below:

**Zone 2** 2 m radius from the edge of the process piping routes, including infrequently used process drains, vents and sample points

#### 2.7.1.2 Instrument Gas Piping

The instrument gas pipework is fabricated from screwed pipe and tube with compression fittings. Similar to process gas piping, the instrument gas piping has potential leakage points at connection points. The leakage is considered abnormal with minor quantities of flammable material. Hence, they are regarded as sources of *Secondary* grade release and the associated hazardous area zone will be classified as Zone 2.

According to AS/NZS 60079.10.1 Clause ZA.6.4.2.3c, for the lighter-than-air flammable gas operating with a pressure between 700 and 2,000 kPag, a hazardous Zone 2 within a sphere area with 1 m radius from the potential leakage points is assigned to the piping with flanged and screwed joints.

The hazard zone adopted for instrument gas piping is summarised below:

**Zone 2** 1 m radius from the edge of the instrument gas piping routes



### 2.7.1.3 Fuel Gas Piping

Fuel gas piping is fabricated with screwed connections, except those pipes with a nominal diameter less than DN25 and with flanges for larger diameters. The screwed piping has tapered threads with similar leakage integrity to flanged connections. The leakage is considered abnormal with the presence of minor quantities of flammable material. Hence, they are regarded as sources of *Secondary* grade release and the associated hazardous area zone will be classified as Zone 2.

According to AS/NZS 60079.10.1 Clause ZA.6.4.2.3c, for the lighter-than-air flammable gas operating with a pressure between 100 and 700 kPag, a hazardous Zone 2 within a sphere area with 0.5 m radius from the potential leakage points is declared around the piping with flanged and screwed connections.

The hazard zone adopted for fuel gas piping is summarised below:

**Zone 2**            0.5 m radius from the edge of the fuel gas piping routes

### 2.7.1.4 Control Valves

There are several shut down valves, pressure / temperature control valves and level control valves installed in the stations. Similar to process piping, the process connections of control and actuated valves are considered well maintained and leakage is considered abnormal. Therefore connection points are considered the same as process piping as described in Sections 2.7.1.1, 2.7.1.2 and 2.7.1.3.

In addition, the control valves are in regular use and leakage is more likely due to wear on the packing. An additional *Primary* grade of release (Zone 1) with a nominal hazard radius of 0.3 m around the glands is claimed in accordance with IP15 Section 5.4.5.1.

Control valves will release minor amounts of flammable gas with a small continuous bleed from the positioners or exhausts at a low discharge velocity in normal operation. It contributes a *Continuous* grade of release and in accordance with AS/NZS 60079.10.1 clause ZA 6.6.2.5, a Zone 1 area with a 0.5m radius will be claimed. A larger region that represents infrequent higher gas velocities that may exist surrounding the Zone 1 area due to abnormal operation or failure of the valves. A Zone 2 area within 1 m radius in all directions is assigned to the low velocity vents.

The additional hazard zones adopted for the control valves are summarised below:

**Zone 1**            0.5 m radius around the control valve positioners and exhausts

0.3 m radius around the control and actuated valve glands

**Zone 2**            1 m radius around the control valve positioners and exhausts

### 2.7.1.5 Pressure Relief and Safety Relief Valves

Pressure relief valves (PSVs) and safety relief valves (SRVs) are mounted on the multi-cyclone, filters, process gas piping, fuel gas and instrument pipework to provide the protection against operational overpressure for the piping and equipment.

Note that SRVs in Pine Creek Station piped to the vent stack do not contribute to the extent of the hazardous classification except as discussed under Section 2.7.1.1 for process piping.

PSVs and SRVs venting directly to atmosphere are normally treated as a *Secondary* grade of release due to no action on normal operating conditions, and as a result the associated hazard zone will be classified as Zone 2. In accordance with AS/NZS 60079.10.1 Clause ZA.6.6.2.9, a Zone 2 area is assigned within 6 m diameter cylinder with its axis on the line

of discharge from 1 m behind the points of discharge to a distance 8 m in front of the points of discharge.

The seats on the PSVs and SRVs will be metal to metal and tight shut-off, which will contribute to a small leakage at the vent tips during the normal operation. In line with the specification described in IP15 Section 5.4.4.5, a Zone 2 area of nominal 1 m radius should be placed around the end of the discharge point to account for any small leakages. It is recommended to upgrade the *Secondary* grade of release to a *Primary* grade of release accounting for the presence of the flammable material in the normal operating. Hence, an additional Zone 1 area with a nominal hazard radius of 1 m is claimed around the PSV and SRV discharge points to account for the minor leak through the valve seats.

The hazard zones of the PSVs and RSVs are considered to be the same due to lack of the discharge rates, which actually affect the extending zone of hazardous area.

The hazard zones adopted for the PSVs and RSVs are summarised below:

- Zone 1**            1 m radius from the vent tips
- Zone 2**            6 m laterally, 8 m above and 1 m below the discharge points

#### 2.7.1.6 Mainline Valves

Some of the actuated mainline valves (MLV) installed at the scraper stations as shown in the following photographs include an enclosure containing the solenoids and a hand pump for the valve. The solenoids vent to a location outside of the enclosure, however the tubing connections to the solenoid are a *Secondary* source of release. The enclosure has minimal ventilation and released gas can accumulate within the enclosure. Therefore a Zone 1 hazardous area is claimed within the enclosure.

Body bleeds valves maintenance ports and instrument gas connections from the buried valve are brought above grade. These provide potential leak sources and are treated the same as process piping connections as per section 2.7.1.1.

The hazard zone adopted for the actuated valve enclosures is summarised below:

- Zone 1**            Within the solenoid valve enclosure
- Zone 2**            2m radius from point of discharge



### 2.7.1.7 Local Vent Point

There are several local vent points installed in the facilities to allow the purging of gas from the stations following isolation. Each manual vent generally consists of a ball valve to control blow down rate. The ball valve provides high integrity isolation and wear is not considered on the valves. Hence, no leak is taken into account during the normal operation.

The hazardous area classification for those points is considered to be the same as PSVs and RSVs due to the similar operation which happens only during the period of system depressurisation. Therefore, they are treated as a *Secondary* grade of release and a Zone 2 area within 6 m diameter cylinder with its axis on the line of discharge from 1 m behind the points of discharge to a distance 8 m in front of the points of discharge are declared in accordance with AS/NZS 60079.10.1 Clause ZA.6.6.2.9.

Note: Majority of the vents are fitted with a cap and have a hole drilled in the vent pipe.

The hazard zone adopted for the local vent points is summarised below:

**Zone 2**            6 m laterally, 8 m above and 1 m below the discharge points

### 2.7.1.8 Pine Creek Vent Stack

There is a vent stack installed in the Pine Creek Station. Gas released from the PSVs, instrument manifold vents and vented instrument gas from the pneumatic controllers is sent to the vent stack. During normal operation, there is minimal flow from the vent stack from the pneumatic controllers. The vent stack is fitted with a flame arrester that offers protection against fire and explosion from outside sources of ignition. The flame arrester is fitted with a cover to prevent rain ingress but also acts to direct gas downwards. and will increase the diameter of the hazardous area.

The hazardous area is increased to a Zone 2 area within 12 m diameter cylinder and 6 m below the discharge point is claimed, compared with 8 m distance stated for vertical up discharge.

Furthermore, minor leakage of flammable mixture may occur through the PSV seats under normal operation as analysed in Section 2.7.1.5. As a result, it contributes to a *Primary* grade of release and an additional Zone 1 hazardous area with a nominal radius of 1 m is claimed around the vent stack discharge point to account for any small leakages from safety relief valve seats.

The continuous bleed from the pneumatic controllers also vents through the vent stack. As per Section 2.7.1.4, a 0.5 m Zone 1 hazardous area is claimed. This is within the hazardous area claimed for leakage through PSV seats.

The pipework to the vent stack is flanged and will generally be at close to atmospheric pressure. However for continuity the claimed hazardous area will be claimed to be as for process pipework, refer section 2.7.1.2.

The hazard zones adopted for the vent stack are summarised below:

**Zone 1**            1 m radius from the vent tip

**Zone 2**            12 m laterally, 6 m below and 8 m above the vent tip

### 2.7.1.9 Pipeline Blowdown

There are pipeline blowdown points at the scraper stations and meter stations. The vents are approximately 2.4 m tall, discharge vertically upwards and are fitted with quick opening closures. Pipeline blowdowns have the potential to release large volumes of gas to atmosphere and to obtain a representative hazardous area zone it would be required to

undertake plume analysis based on the blowdown conditions. An estimate of the extent of the plume from previous experience for pipeline blowdown vents is a cylinder with a radius of 15 m and a length of 30 m extending in the direction of the discharge and 1 m below the discharge point to account for the localised turbulence at the vent tip. Pipeline blowdowns are done infrequently and therefore a *Secondary* release that results in a Zone 2 hazardous area. The discharge is vertically upwards and therefore no ground effect would occur.

During normal operation a quick opening closure in the closed position is considered to provide similar containment as a pipe flange or fitting. Therefore the associated release would be *Secondary* providing a Zone 2 hazardous area of 2 m as per AS/NZS 60079.10.1 Clause ZA.6.4.2.4.

**Zone 2** A cylinder of radius 15 m extending 30 m vertically upwards and 1 m downwards from the point of discharge

**HOLD** The exact shape of the hazardous area zone should be determined using plume dispersion modelling based on the blowdown operation and conditions.

#### 2.7.1.10 Low Velocity Vents

There are numerous pressure relief valves installed on instrument gas systems, for example on the station limit valves. The relief from these pressure relief valves are similar to low velocity vents in accordance with AS/NZS 60079.10.1 ZA.6.6.2.8 that has an associated Zone 1 hazardous area of 0.5 m in all directions surrounded by a Zone 2 hazardous area of 1.0 m from the point of discharge. The pressure relief valves will not typically be relieving gas and the release will be *Secondary*, therefore the Zone 1 area is not appropriate. Therefore a Zone 2 hazardous area of 1 m radius from the point of discharge is claimed.

The hazard zone adopted for the instrument gas relief and vent points is summarised below:

**Zone 2** Radius of 1 m extending in all directions from the point of discharge

#### 2.7.2 SCRAPER VESSELS

The scraper vessels shall be operated such that it is normally isolated from the pipeline. There are no regular pigging operations. It is expected that the scraper vessels are opened at approximately yearly intervals and the small quantities of flammable gas may occur at the closures. Accordingly, they are treated as sources of *Secondary* grade release and a hazardous Zone 2 within a radius of 3 m centred at the closure is claimed as identified in AS/NZS 60079.10.1 ZA.6.6.2.2b for the equipment located at an adequately ventilated area.

The scraper vessels are enclosed vessels containing nozzle connections with piping, valves and fittings, which are also potential release sources. These are classified as piping as per section 2.7.1.1.

The hazard zone adopted for the pig receivers and launchers is summarised below:

**Zone 2** 3 m radius in all directions from quick opening closure  
As per section 2.7.1.1 for piping for remainder of the vessel



### 2.7.3 MULTICYCLONE AND FILTER SEPARATORS

Similar to receiving traps, the multicyclone and filter separators have quick opening closures that are operated at approximately yearly intervals under normal operation. The hazard zone assigned to the receiving traps in accordance with AS/NZS 60079.10.1 ZA.6.6.2.2b is also applicable to the filter coalescers, resulting in a hazardous Zone 2 area within 3 m radius around the discharge points is claimed.

Since the multicyclone and filter coalescers are enclosed vessels which handle process gas and liquids removed from the gas, the nozzle connections with piping, valves and fittings are also potential release points. To simplify hazardous area management, the classification for process gas piping will be applied to the vessels meaning a Zone 2 area of radius 2 m will be declared from the shell of the vessels.

The hazard zone adopted for the multicyclone and filter coalescers is summarised below:

**Zone 2**            3 m radius around the quick opening closures and 2 m radius from the edge of the vessels

### 2.7.4 SLOP TANKS

The slop tank installed at some stations are above ground storage tank used to collect condensate, compressor lube oil and water from the filter separators. The liquids in the tank are treated as a flammable fluid. The capacity of the tanks are approximately 1 kL. The tanks are provided with a vent that discharges to atmosphere. During the short period of the drainage from the filter coalescers to slop tank, the liquids may form a flammable mist and additionally the gas may break through into the drain tank. The freely vented tank allows vapour/air mixtures to be released during the normal operation.

Therefore, the slop tank will contain flammable vapours and a range of hazard zones is required. As such, it is likely that a small amount of flammable gas mixture would continuously exist in the tank and within close proximity of the tank vent, surrounded by a larger region that may sometimes exist due to occasional higher gas quantities and an even larger region that represents very infrequent high gas quantities.

The slop tank installed at the Pine Creek Station has a pressure vacuum vent set at 2 kPa pressure / vacuum. The vapour or released gas is directed to atmosphere through the vent that installed in conjunction with an inline flame arrester and a cap. The flame arrester is required to provide protection against internal fire and explosion from outside sources of ignition. The vented gas will be discharged vertical downwards to the surrounding equipment or pipework due to the installation of the cap. However, the additional extent zones are not claimed considering the relatively low operating pressure in the tank.

In accordance with API RP 505 Section 8.2.1, a Zone 0 area within 0.5 m radius, a Zone 1 area within 1.5 m radius and a Zone 2 area within 3 m radius of the vent point are declared. It is also stated in API RP 505 Section 8.2.1, a Zone 0 area should be claimed inside the tank above the liquid level due to the possibility of the continuous presence of the flammable mixture and a Zone 2 area with radius of 3 m should be placed around the shell of the equipment.

The hazard zones adopted for the slop tanks in the stations are summarised below:

**Zone 0**            Inside the tanks above the liquid level and 0.5 m radius from the tank discharge points

**Zone 1**            1.5 m radius from the tank discharge points

**Zone 2**            3 m radius around the shell of the tanks and from the tank discharge points



## 2.7.5 WATER BATH HEATERS

The indirect fired water bath heaters are fitted in some stations to heat the high pressure gas up to a temperature of 60 °C prior to pressure reduction, which prevents hydrate formation that may occur due to the Joule-Thomson effect when the temperature drops. The water bath heater consists of an insulated shell, removable process coils, removable fire tubes, stack burners, fuel gas conditioning train and control system.

During normal operation, a flame is projected into a submerged "fire-tube" located at the bottom of a horizontal cylindrical shell. Energy is transferred through the tube wall to the surrounding bath fluid water. By means of natural convection, the water then transfers the required amount of energy into a series of process coils located at the top of the heater shell.

The water bath burners are continuously flaming and provided with burner elements to ensure that the flame is maintained. On loss of flame the fuel gas supply is shut down. Therefore no hazardous area zones are claimed from the stacks.

The process tube within the water bath is fully welded with no potential points for release and would not normally provide a hazardous area. If there was a history of failure of the process coils leading to corrosion or erosion of the tubes, then a hazardous area should be claimed on the vent of the water bath heater. APA has not indicated that there have been failures of the process coils. Further, the maximum operating temperature of the water bath heaters is 95°C, the pH and the nitrate content of the water in the baths is checked frequently and APA has confirmed that the water bath heaters are treated with oxygen scavenger. Therefore no hazardous area is claimed from the water bath vent.

The potential release points on the vessels are process connections to the heaters. The classification for process piping will be applied to the process connections resulting in a *Secondary* grade of release and a related Zone 2 area with 2 m radius from the connection points in accordance with AS/NZS 60079.10.1 Clause ZA.6.4.2.4.

The hazard zone adopted for the water bath heaters is summarised below:

**Zone 2**            2 m radius from the high pressure gas connections of the vessel.

## 2.7.6 CATALYTIC HEATER

A catalytic heater is installed at the Elliott meter station. The heater consists of a section of pipe contained in a compartment. The inside of the compartment is surrounded by heating elements that heat the gas by radiant heat. The heat is generated by the combustion of gas in catalytic elements. The manufacturer's information indicates that the catalytic elements ensure that the gas is combusted at a lower temperature. The heating unit is approved for installation in hazardous areas and has Factory Mutual certification.

The pipework has no additional source of release and will be classified the same as the process pipework as described in section 2.7.1.1 and a 2 m Zone 2 hazardous area is claimed from the outside of the heater.

Additionally, there is a possibility of fuel gas not being combusted inside the heater. The manufacturer's literature indicates that there is a protection to prevent uncombusted gas being released. However the configuration of the heater is not well defined and to be conservative a primary grade of release is claimed. There is minimal ventilation in the compartment and the claimed zone is increased from Zone 1 to Zone 0 within the compartment.

The heater compartment is not considered to be gas tight and an additional hazardous area zone is claimed that will surround the heater compartment. The release will be a primary grade of release. The heater has good ventilation and a Zone 1 hazardous area is claimed. The released gas will be fuel gas and will be close to atmospheric pressure. In accordance with section 2.7.1.3 the extent of the hazardous area will be 0.5 m from the outside of the box.

The hazard zone adopted for the catalytic heater is summarised below:

- Zone 0**            Inside the heater compartment
- Zone 1**            0.5 m from the edges of the heater box
- Zone 2**            2 m radius from the high pressure gas connections of the vessel

### 2.7.7 KNOCKOUT POTS

The knockout pots are enclosed vessels which do not contribute to the hazardous area classification. However, the nozzle connections with piping, valves and fittings on the vessels are potential release points where small amounts of flammable mixture may present. To simplify hazardous area management, the classification for process gas piping will be applied to the vessels meaning a Zone 2 area of radius 2 m will be declared from the shell of the vessels.

The hazard zone adopted for the knockout pots is summarised below:

- Zone 2**            2 m radius from the edge of the vessels

### 2.7.8 GAS CHROMATOGRAPH SYSTEM

Gas chromatograph (GC) system is a specific analyser to determine natural gas stream composition and anticipated concentration of the selected components.

The chromatograph system comprises of several components: the analyser, sample tubing, process vents, pressure control valve, pressure safety valve, carrier gas cylinders and tubing, calibration gas cylinder and tubing. The chromatograph system is located under a shelter with open sides, therefore it is considered as being adequately ventilated.

The process tubing and analyser contain gas at approximately 140 kPag. The tubing will be well maintained and minor release of the flammable gas may occur at the connections due to leakage, and as a result the grade of release is considered to be *Secondary*. Therefore, a Zone 2 hazardous area with 0.5 m radius is assigned around the whole chromatography system to cover the process tubing potential leakage points according to AS/NZS 60079.10.1 Clause ZA.6.4.2.3c, for the lighter-than-air flammable gas operating at a pressure between 100 and 700 kPag.

The carrier gas is helium that is a non-hazardous material and therefore the carrier gas cylinders and tubing do not contribute to the hazardous zone.

The calibration gas comprises mainly methane and stores in a gas cylinder with an approximate volume of less than 10 L. AS/NZS 60079.10.1 Clause ZA.6.4.2.6d states that cylinder located in ventilated area, whether in storage or installed for use, is not associated with a hazardous zone when the gas capacity is less than 30 m<sup>3</sup>. Therefore, no hazardous zone is claimed around the calibration gas cylinder. The calibration gas tubing is at the same operating pressure as the process tubing and will have the same Zone 2 hazardous with 0.5 m radius around the calibration gas tubing connections.

The chromatograph system has several vent points that release the sample line contents at low velocity during the normal operation. The amount of the released gas will be small and the discharge rate will be slow and readily dispersed. Consequently, they are regarded as sources of *Primary* grade release and a hazard Zone 1 within a sphere area with 0.5 m

radius is declared from the vent tips in accordance with AS/NZS 60079.10.1 Clause ZA.6.6.2.8 for the low velocity vents in adequately ventilated area.

In addition, a larger region that represents infrequent higher gas quantities may exist surrounded the Zone 1 area due to the failure of pressure regulator or PSV. It results a *Secondary* grade of release and an additional Zone 2 area with 1 m radius is considered around the vents in accordance with AS/NZS 60079.10.1 Clause ZA.6.6.2.8.

The pressure relief valve will be activated in emergency. To simplify the hazardous area arrangement, it is treated the same as a vent as described above.

The hazard zones adopted for the chromatograph system are summarised below:

- Zone 1**            0.5 m radius from the vent tips
- Zone 2**            0.5 m radius around the gas chromatograph system, excluding the cylinders  
1.0 m radius around the vent tips

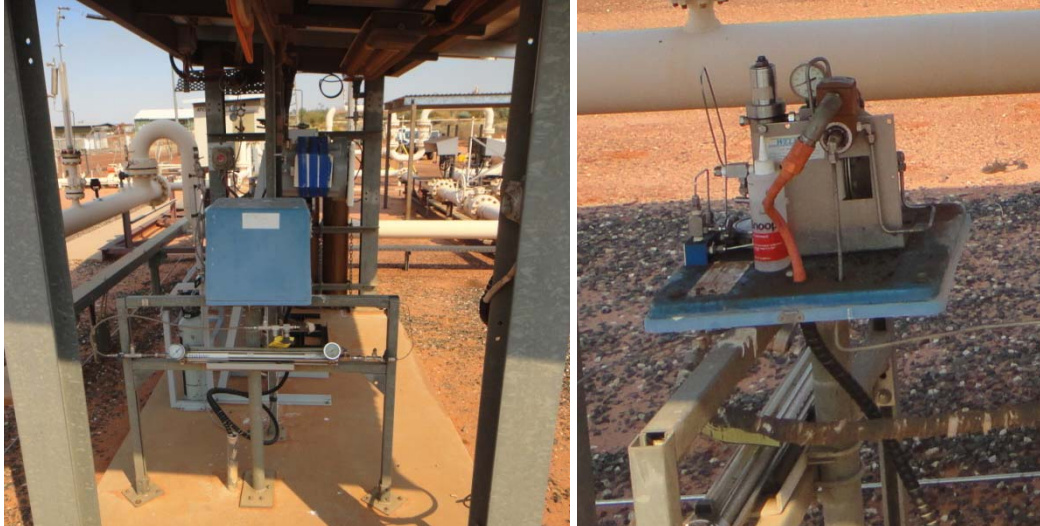
### 2.7.9 WATER DEW POINT ANALYSER / GAS SAMPLER

The water dew point analyser uses a chilled mirror to determine the dew point of the gas. The analysers receive gas from the sampler as shown in the photographs below. The gas sampler consists of an insertion regulator installed in the pipework, a heated capillary tube a sample cylinder, solenoid valve, further regulators and pressure relief valves. A solenoid valve is installed inside a box with a removable cover. The box prevents ventilation and therefore the declared hazardous area zone is increased to Zone 1 for the interior of the box.

The water dew point analyser comprises of several components: the analyser, sample tubing, process vents, pressure control valve, pressure safety valve, gas cylinders and tubing, calibration gas cylinder and tubing. The analyser system is located under a shelter with open sides, therefore it is considered as being adequately ventilated.

The process tubing and analyser contain gas at approximately 140 kPag. The tubing will be well maintained and minor release of the flammable gas may occur at the connections due to leakage, and as a result the grade of release is considered to be *Secondary*. Therefore, a Zone 2 hazardous area with 0.5 m radius is assigned around the whole analyser system to cover the process tubing potential leakage points according to AS/NZS 60079.10.1 Clause ZA.6.4.2.3c, for the lighter-than-air flammable gas operating at a pressure between 100 and 700 kPag.

The water dew point analyser and gas sampler have local vents that will frequently vent gas at low velocity to atmosphere during the normal operation. The amount of the released gas will be small and the discharge rate will be slow due to the characterisation of the systems. Consequently, they are regarded as sources of *Primary* grade release and a hazard Zone 1 within a sphere area with 0.5 m radius is declared from the vent tips in accordance with AS/NZS 60079.10.1 Clause ZA.6.6.2.8 for the low velocity vents in adequately ventilated area.



The hazard zone adopted for the water dew point analyser / gas sampler is summarised below:

- Zone 1**            0.5 m radius from the vent tips  
                          Inside the sampler box
- Zone 2**            0.5 m radius around the water dew point analyser system  
                          1.0 m radius around the vent tips

## 2.7.10 ODORANT INJECTION SYSTEM

### 2.7.10.1 Odorant Pipework

A majority of the odorant pipework is tubing fitted with compression fittings, these are considered to be well maintained and infrequently operated. This provides a *Secondary* source of release and a Zone 2 hazardous area. In accordance with AS/NZS 60079.10.1 Clause ZA.5.2.8 the associated hazardous area is 1.5 m in all directions down to ground level.

- Zone 2**            1.5 m in all directions extending down to ground level

### 2.7.10.2 Odorant Storage Tank

The odorant storage tank is a pressure vessel supplied with a natural gas blanket and a pressure relief valve.

AS/NZS 60079.10.1 Clause ZA.5.2.1.2c describes the hazardous area associated with the above ground vent on a storage tank as Zone 1 within 1.5 m radius in all directions from point of discharge and Zone 2 within the cylindrical volume below the Zone 1 area. This is applicable for a vent on a storage vessel. There will be a constant release from the vent however the volume of release is small and is considered to be a *Primary* and a Zone 1 area is claimed.

The connections on the pressure vessel will have the same Zone 2 hazardous area as the odorant pipework.

The tank pressure relief valve will provide a *Secondary* release. This will result in a Zone 2 hazardous area. The extent of the hazardous area will be as the Zone 1 area for the vent, but without the additional Zone 2 area.

- Zone 1** 1.5 m in all directions from vent tip
- Zone 2** Cylindrical volume below the Zone 1 area  
1.5 m in all directions extending down to ground level for tank connections

### 2.7.10.3 Odorant Injection Pumps

The odorant injection pumps are pneumatically powered from instrument gas that is derived from the transmission gas. During operation of pumps there will be a continuous vent of gas. There will be a *Continuous* release from the pump discharge through a bug screen located on the pump, refer photograph below. The minimum diameter of the instrument gas is small. It is reasonable to assume that the solenoid valve has a reduced bore, and a typical size is 1/8" (3.2 mm). Based on Table C9(a) from IP15 for a G(i) gas, a pressure of 5 bar(a) (400 kPag) and a 5 mm hole the hazard radius is <1 m. Therefore a hazardous radius of 0.5 m is claimed around the pump.

The pump is a high integrity positive displacement pump capable of developing high discharge pressures to the odorant, therefore it is assumed that any hazardous area associated with leakage from the pump seals would be small and within the hazardous zone associated with the gas vent.



- Zone 1** 0.5 m radius from the pump



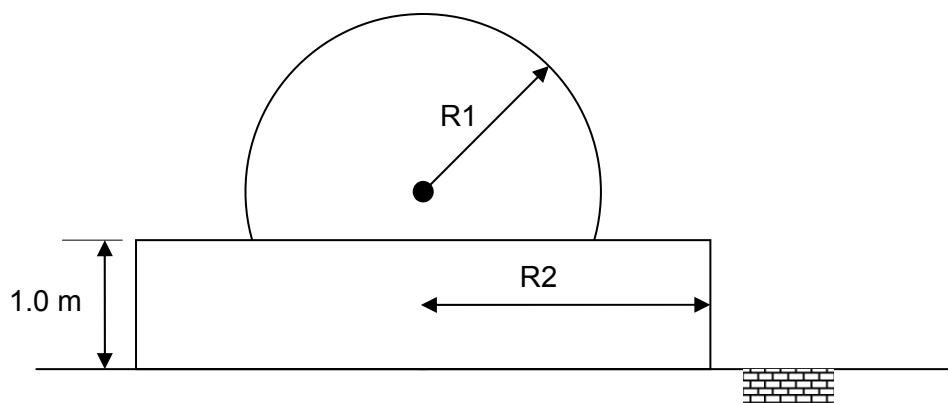
### 2.7.11 GROUND EFFECT

IP 15 Section 5.5 states that the determination of the full three dimensional envelope of the hazardous area zone shall consider the location of the release. The shape factor depends on height and orientation of the release. The key factors are:

1. For sources of release that are higher from grade than the hazardous radius, there is no impact due to ground effect.
2. For sources of release that are higher than 1 m from grade but less than the hazardous radius, there is a ground effect, up to 1 m above grade.
3. For sources of release that are 1 m or less from grade, there is a ground effect up to 1 m above grade.

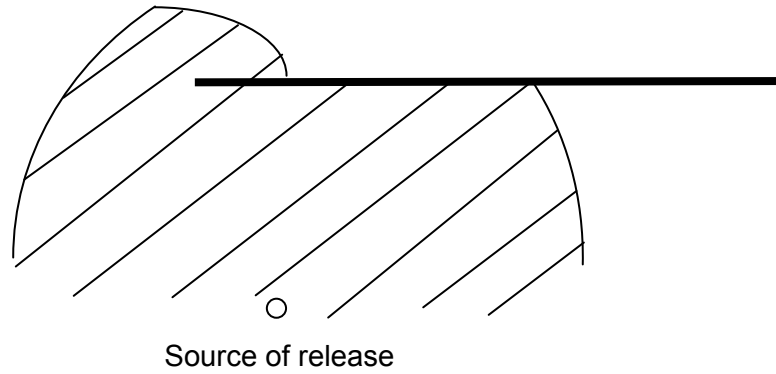
The main process pipework has a hazardous area of radius 2 m, and is located less than 2 m above grade. The direction of release from flanged joints and screwed fittings could be in any direction, therefore ground effects are to be considered. Other hazardous area zones will be sufficiently above grade so that there is no ground effect, or the direction of release will be upwards and therefore ground effect is negligible.

The ground effect increases the hazardous radius in accordance with IP 15 Table C9(b). A majority of the pipework in the facilities is to be located less than 1 m above grade. Interpolation of IP 15 Table C9(b) shows that the hazardous area for ground effect is 0.5 m larger than the hazardous area radius defined above, from the figure below,  $R2 = R1 + 0.5$ . Therefore the hazardous area at grade for gas pipework at transmission pressure will be 2.5 m to a height of 1 m.



### 2.7.12 VAPOUR BARRIERS

At Palm Valley Alice Springs and Mereenie the hazardous area zone impacts on a wall and the control hut, respectively. At these locations the hazardous area zone will extend around the barrier as shown in the diagram below. This is in accordance with AS/NZS 60079.10.1 Clause ZA.2 for measurements of distances.



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## **APPENDIX A HAZARDOUS AREA CLASSIFICATION DATA SHEET**

- Part I : Flammable material list and characteristics
- Part II : List of sources of release

## Part I – Sheet 1 of 1

## Flammable material list and characteristics

Amadeus Basin to Darwin Pipeline

Surface facilities



Revision:	0				
Author:	TCB				
Checked:	RDK				
QA:	EZG				
Date:	24/11/2011				

Material	Phase	ADG Class	IP 15 Fluid Category	Boiling Point °C	ASTM D86 5%(vol) Point of Stabilised Liquid at Atmospheric Pressure	Relative Density Of Fluid Vapour (Air SG=1) Liquid (Water SG=1)	Flash Point of Stabilised Liquid at Atmospheric Pressure °C	Vapour LEL (Vol %) In Air	Vapour UEL (Vol %) In Air	Ignition Temperature °C	Temperature Class	Equipment Group	Source Of Data
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Process gas and calibration gas (mixture)	Vapour	2.1	G(i)	-162	-	0.62	Gas	4.4 (Methane)	17 (Methane)	537 (Methane)	T1	IIA	AS/NZS 60079.20
Odorant (tetrahydrothiophene and tertiary butyl mercaptan)	Liquid	3	C	82	-	0.939 (liquid) 3.06 (vapour)	-8	1.1*	12.1*	224	T3*	IIA	AS/NZS 60079.20 MSDS
Condensate	Liquid	3	C	69 <sup>†</sup>	-	2.97 <sup>†</sup>	-21 <sup>†</sup>	1.0 <sup>†</sup>	8.4 <sup>†</sup>	233 <sup>†</sup>	T3 <sup>†</sup>	IIA	AS/NZS 60079.20

\* Values obtained for Tetrahydrothiophene

<sup>†</sup> Based on Hexane

Part II – Sheet 1 of 4

List of sources of release

Amadeus Basin to Darwin Pipeline

Surface facilities



Revision:	0				
Author:	TCB				
Checked:	RDK				
QA:	EZG				
Date:	24/11/2011				

Process Equipment Item			Flammable Material	Operating Conditions Pressure and Temperature	Description of Flammable Material Containment	Ventilation	Source Of Release		Distance From Source To			Equipment Group and Temperature Class	Section
No.	Description	Location					Description	Grade*	Boundary of Zone 0	Boundary of Zone 1	Boundary of Zone 2		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Process piping	Amadeus Basin to Darwin Pipeline surface facilities	Vap. Cat "G(i)"	≤ 9,650 kPag ≤ 60 °C	Closed system with flanges, piping joints and valves	Natural (open air)	Flanges, joints, valve seals, drains and vents	S	N/A	N/A	2 m radius from the edge of piping routes	IIA, T1	2.7.1.1
2	Instrument gas piping		Vap. Cat "G(i)"	≤ 770 kPag ≤ 60 °C	Closed system with flanges, piping joints and valves	Natural (open air)	Flanges, joints, valve seals, drains and vents	S	N/A	N/A	1 m radius from the edge of piping routes	IIA, T1	2.7.1.2
3	Fuel gas piping		Vap. Cat "G(i)"	≤ 700 kPag ≤ 60 °C	Closed system with flanges, piping joints and valves	Natural (open air)	Flanges, joints, valve seals, drains and vents	S	N/A	N/A	0.5 m radius from the edge of piping routes	IIA, T1	2.7.1.3
4	Control valves		Vap. Cat "G(i)"	≤ 9,650 kPag ≤ 60 °C	Valves with packed gland / positioner / exhaust	Natural (open air)	Valve glands, positioners and connections	C & P & S	N/A	0.5 m radius around control valve positioners and exhaust	1 m radius around control valve positioners and exhausts;	IIA, T1	2.7.1.4
5	Pressure relief and safety relief valves		Vap. Cat "G(i)"	≤ 9,650 kPag ≤ 60 °C	Valves and piping discharging vertically upwards	Natural (open air)	Pipe vent to atmosphere	C & P	N/A	1 m radius from vent tips	6 m laterally, 8 m above and 1 m below discharge points	IIA, T1	2.7.1.5
6	Mainline valves		Vap. Cat "G(i)"	≤ 9,650 kPag ≤ 60 °C	Closed system with flanges, piping joints and valves	Natural (open air)	Connections and valve seals	S	N/A	Within solenoid valve enclosure	As Piping	IIA, T1	2.7.1.6
7	Local Vent Points		Vap. Cat "G(i)"	≤ 9,650 kPag ≤ 60 °C	Valves and piping discharging vertically upwards	Natural (open air)	Pipe vent to atmosphere	S	N/A	N/A	6 m laterally, 8 m above and 1 m below discharge points	IIA, T1	2.7.1.7

\* C – Continuous; S – Secondary; P – Primary



Part II – Sheet 2 of 4

List of sources of release

Amadeus Basin to Darwin Pipeline

Surface facilities



Revision:	0				
Author:	TCB				
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Process Equipment Item			Flammable Material	Operating Conditions Pressure and Temperature	Description of Flammable Material Containment	Ventilation	Source Of Release		Distance From Source To			Equipment Group and Temperature Class	Section
No.	Description	Location					Description	Grade*	Boundary of Zone 0	Boundary of Zone 1	Boundary of Zone 2		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
8	Pine Creek vent stack	Pine Creek	Vap. Cat "G(i)"	Atmospheric pressure Ambient temperature	Valves and piping discharging vertically upwards	Natural (open air)	Pipe vent to atmosphere	P & S	N/A	1 m radius from the vent tip	12 m laterally, 6 m below and 8 m above vent tip	IIA, T1	2.7.1.8
9	Pipeline blowdown	Amadeus Basin to Darwin Pipeline surface facilities	Vap. Cat "G(i)"	≤ 9,650 kPag ≤ 60 °C	Valves and piping discharging vertically upwards	Natural (open air)	Pipe vent to atmosphere	S	N/A	N/A	A cylinder of radius 15 m extending 30 m vertically upwards and 1 m downwards from discharge point <b>HOLD – To be confirmed</b>	IIA, T1	2.7.1.9
10	Low velocity vents		Vap. Cat "G(i)"	≤ 9,650 kPag ≤ 60 °C	Valves and piping discharging vertically upwards	Natural (open air)	Pipe vent to atmosphere	S	N/A	N/A	Radius of 1 m extending in all directions from the point of discharge	IIA, T1	2.7.1.10
11	Scraper vessels		Vap. Cat "G(i)"	≤ 9,650 kPag ≤ 60 °C	Enclosed system with closures	Natural (open air)	Flanges, joints, valve seals, drains and vents	S	N/A	N/A	3 radius in all directions from quick opening closure As per section 2.7.1.1 for piping for remainder of the vessel	IIA, T1	2.7.2
12	Multicyclone and filter separators		Vap. Cat "G(i)"	≤ 9,650 kPag ≤ 60 °C	Enclosed vessels with quick opening closures	Natural (open air)	Flanges, joints, valve seals, drains and vents	S	N/A	N/A	3 m radius around the closures and 2 m radius from the edge of the vessels	IIA, T1	2.7.3
			Liq. Cat "C"	≤ 9,650 kPag ≤ 60 °C	Liquid drain pipework	Natural (open air)	Piping connections	S	N/A	N/A	2 m in all directions down to ground level	IIA, T3	2.7.1.1

\* C – Continuous; S – Secondary; P – Primary

Part II – Sheet 3 of 4

List of sources of release

Amadeus Basin to Darwin Pipeline

Surface facilities



Revision:	0				
Author:	TCB				
Checked:	RDK				
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Date:	24/11/2011				

Process Equipment Item			Flammable Material	Operating Conditions Pressure and Temperature	Description of Flammable Material Containment	Ventilation	Source Of Release		Distance From Source To			Equipment Group and Temperature Class	Section
No.	Description	Location					Description	Grade*	Boundary of Zone 0	Boundary of Zone 1	Boundary of Zone 2		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
13	Slop tanks	Amadeus Basin to Darwin Pipeline surface facilities	Vap. Cat "G(i)"	Atmospheric pressure Ambient temperature	Open vessels	Natural (open air)	Piping connections and vents	C & P & S	Inside the tank above liquid level and 0.5 m radius from tank discharge points	1.5 m radius from tank discharge points	3 m radius from around shell of tanks and from tank discharge points	IIA, T1	2.7.4
14	Water bath heaters		Vap. Cat "G(i)"	≤ 9,900 kPag ≤ 60 °C	Enclosed vessels	Natural (open air)	Piping connections	S	N/A	N/A	2 m radius from high pressure gas connections of vessel	IIA, T1	2.7.5
15	Catalytic heater		Vap. Cat "G(i)"	≤ 9,900 kPag ≤ 60 °C	Enclosed vessels	Natural (open air)	Piping connections	S	Inside the heater compartment	0.5 m from the edge of the heater compartment	2 m radius from high pressure gas connections of vessel	IIA, T1	2.7.6
16	Knockout pots		Vap. Cat "G(i)"	≤ 9,900 kPag ≤ 38 °C	Enclosed vessels	Natural (open air)	Piping connections	S	N/A	N/A	2 m radius from edge of vessels	IIA, T1	2.7.7
17	Gas chromatograph systems		Vap. Cat "G(i)"	≤ 140 kPag ≤ 60 °C	Closed tubing systems with joints and vents	Shelter with open sides (open air)	Tubing joints, drains and vents	P & S	N/A	0.5 m radius from vent tips	0.5 m radius around system, excluding cylinders 1.0 m radius around vent tips	IIA, T1	2.7.8
18	Water dew point analysers / gas samplers		Vap. Cat "G(i)"	≤ 140 kPag ≤ 60 °C	Closed tubing systems with joints and vents	Shelter with open sides (open air)	Tubing joints, drains and vents	P & S	N/A	0.5 m radius from vent tips Inside sampler box	0.5 m radius around the system, 1.0 m radius around vent tips	IIA, T1	2.7.9

\* C – Continuous; S – Secondary; P – Primary

Part II – Sheet 4 of 4

List of sources of release

Amadeus Basin to Darwin Pipeline

Surface facilities



Revision:	0					
Author:	TCB					
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Date:	24/11/2011					

Process Equipment Item			Flammable Material	Operating Conditions Pressure and Temperature	Description of Flammable Material Containment	Ventilation	Source Of Release		Distance From Source To			Equipment Group and Temperature Class	Section
No	Description	Location					Description	Grade*	Boundary of Zone 0	Boundary of Zone 1	Boundary of Zone 2		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
19	Odorant injection system pipework	Tylers Pass odorant injection station	Vap. Cat "C"	≤ 9,650 kPag ≤ 60 °C	Closed system with flanges, piping joints and valves	Natural (open air)	Flanges, joints, valve seals, drains and vents	S	N/A	N/A	1.5 m in all directions down to ground level	IIA, T3	2.7.10.1
20	Odorant injection system storage tanks		Vap. Cat "C"	15 kPag ≤ 60 °C	Enclosed vessel	Shelter with open sides (open air)	Connections	S	N/A	N/A	1.5 m in all directions down to ground level	IIA, T3	2.7.10.2
					Blanket gas vent		Pipe vent to atmosphere	P		Radius of 1.5 m in all directions from vent tip	Within cylindrical volume below Zone 1		
					Pressure relief valve and piping discharging vertically upwards		Pipe vent to atmosphere	S		N/A	Radius of 1.5 m in all directions from vent tip		
21	Odorant injection system pumps		Vap. Cat "G(i)"	≤ 400 kPag ≤ 60 °C	Pneumatic pump instrument gas exhaust	Shelter with open sides (open air)	Piping connections and vents	C	N/A	N/A	Radius of 0.5 m	IIA, T1	2.7.10.3
22	Ground effect	Amadeus Basin to Darwin Pipeline surface facilities	Vap. Cat "G(i)"	≤ 9,650 kPag ≤ 60 °C	Closed system with flanges, piping joints and valves	Natural (open air)	Flanges, joints, valve seals, drains and vents	S	N/A	N/A	2.5 m laterally and extending to 1 m above grade for all process piping less than 2 m above grade	N/A	2.7.12

\* C – Continuous; S – Secondary; P – Primary

## **APPENDIX B HAZARDOUS AREA MAPPING DRAWINGS**

For hazardous area mapping drawings, refer to Section 4 of the Hazardous Area Dossiers for each site.

### 3 Observation for Improvement (OFI)

OFI No.	Description	Proposed Remedy
<b>MT 0000-OFI-1</b> Temperature element MT 0000-TE-09	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
<b>MT 0000-OFI-2</b> High high temperature switch MT 0000-TSHH-12	Nil hazard area actions required for simple device with IS circuit however recommend replacing switch due to illegible nameplate.	Repair as per description.
<b>MT 0000-OFI-3</b> Pressure transmitter MT 0000-PT-14	Cable fixing/support at instrument is required to avoid damage.	Repair as description.
	Insufficient information of IS certification on nameplate.	Verify that instrument is an IS device and show certification on nameplate.
<b>MT 0000-OFI-4</b> Valve limit switch (closed) MT 0000-ZSC-17	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	General condition of installation is poor.	Review and repair installation as required.
<b>MT 0000-OFI-5</b> Valve limit switch (open) MT 0000-ZSO-17	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	General condition of installation is poor.	Review and repair installation as required.
<b>MT 0000-OFI-6</b> Solenoid valve MT 0000-SV-17	Insufficient information to determine method of protection however it is envisaged to be flameproof.	Replace solenoid valve
	Cable is sun-damaged.	Replace damaged cable.
	Solenoid valve directly connected to junction box may require conduit seal.	Replace solenoid valve.
	Cable junction box appears to have only DIP certification.	Replace cable junction box.

<b>OFI No.</b>	<b>Description</b>	<b>Proposed Remedy</b>
<b>MT 0000-OFI-7</b> High pressure differential switch/transmitter MT 0000-PDISH/PDT -21	Cable ID is not available.	Fit instrument cable ID.
	Instrument ID is incorrect.	Replace instrument ID.
	Insufficient information of IS certification shown on device.	Verify that instrument is an IS device and show certification on nameplate.
	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
<b>MT 0000-OFI-8</b> High level switches MT 0000-LSH-21 MT 0000-LSH-21A	Cable ID is not available.	Fit instrument cable with ID.
	Cable entry is loose.	Tighten cable entry.
	Installation may require attention as per manufacturer's instructions with respect to an Ex d rated conduit seal relating to pressure piling with connected junction box.	Review as per description.
	Ex certification for junction box is applicable to DIP installation and nil reference to flammable gas installation.	Review instrument Ex rating.
	Loop drawing indicates IS circuit however nil evidence of IS barriers found.	Verify that instrument is an IS device.
<b>MT 0000-OFI-9</b> Pressure transmitter MT 0000-PT-22	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
<b>MT 0000-OFI-10</b> Low range flow transmitter MT 0000-FT-22A	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	Cable ID to be changed from J101 to J014.	Change cable ID.
<b>MT 0000-OFI-11</b> High range flow transmitter MT 0000-FT-22	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	Cable ID to be changed from J019 to J015.	Change cable ID.



<b>OFI No.</b>	<b>Description</b>	<b>Proposed Remedy</b>
<b>MT 0000-OFI-12</b> Temperature transmitter MT 0000-TT-22	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	Equipment and cable labels are required.	Fit labels to equipment and cable.
<b>MT 0000-OFI-13</b> High pressure differential switch/transmitter MT 0000-PDISH/PDT-24	Cable ID is not available.	Fit instrument cable with ID.
	Instrument ID is incorrect.	Replace instrument ID.
	Insufficient information of IS certification shown on device.	Verify that instrument is an IS device and show certification on nameplate.
	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
<b>MT 0000-OFI-14</b> High level switches MT 0000-LSH-24 MT 0000-LSH-24A	Cable ID is not available.	Fit instrument cable with ID.
	Cable entry is loose.	Tighten cable entry.
	Installation may require attention as per manufacturer's instructions with respect to an Ex d rated conduit seal relating to pressure piling with connected junction box.	Review as per description.
	Loop drawing indicates IS circuit however nil evidence of IS barriers is found.	Verify that instrument is an IS device.
<b>MT 0000-OFI-15</b> Pressure transmitter MT 0000-PT-25	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	Cable ID to be changed from J016 to J020	Change cable ID as description.
<b>MT 0000-OFI-16</b> Low range flow transmitter MT 0000-FT-25A	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	Cable ID to be changed from J014 to J018.	Change cable ID as description.
<b>MT 0000-OFI-17</b> High range flow transmitter MT 0000-FT-25	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	Cable ID to be changed from J015 to J019	Change cable ID as description.

<b>OFI No.</b>	<b>Description</b>	<b>Proposed Remedy</b>
<b>MT 0000-OFI-18</b> Temperature transmitter MT 0000-TT-25	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	Equipment and cable labels are required.	Fit labels to equipment and cable.
<b>MT 0000-OFI-19</b> Solenoid valve MT 0000-SV-29 Junction box MT 0000-JB-29	Ex m would not normally be applied to wiring installations hence consider Ex e.	Review instrument Ex rating.
	Insufficient information on Clipsal elbow connector to suggest Ex rating.	Remove Clipsal elbow connector and connect Ex d cable gland directly or through an adaptor if required.
	Equipotential bonding connection is required.	Provide equipotential bonding connection.
<b>MT 0000-OFI-20</b> Heating strip thermostat (up high) MT 0000-HST	Label required for capillary flexible conduit.	Fit capillary flexible conduit with label.
<b>MT 0000-OFI-21</b> Heating strip junction box (up high) MT 0000-JB	Labels required for cabling and enclosure.	Fit cabling and enclosure with labels.
	Two uncertified blank plugs.	Replace blank plugs with certified ones.
<b>MT 0000-OFI-22</b> Thermon junction box MT 0000-JB	Labels required for cabling and enclosure.	Fit cabling and enclosure with labels.
	Tags on adaptors are illegible.	Review adaptors certification.
<b>MT 0000-OFI-23</b> Gas chromatograph junction box: Upstream (front) Upstream (back) Downstream (front) Downstream (back)	Not certified to Australian standards.	Replace junction boxes or obtain conformity assessment.
<b>MT 0000-OFI-24</b> Heating strip thermostat MT 0000-HST	Label required for capillary flexible conduit.	Fit capillary flexible conduit with label.

<b>OFI No.</b>	<b>Description</b>	<b>Proposed Remedy</b>
<b>MT 0000-OFI-25</b> Heating strip junction box MT 0000-JB	Labels required for cabling and enclosure.	Fit cabling and enclosure with labels.
	Uncertified blank plugs. Not certified to Australian standards.	Replace blank plugs with certified ones.
<b>MT 0000-OFI-26</b> Junction box (sq) MT 0000-JB-32	Not certified to Australian standards.	Replace junction boxes or obtain conformity assessment.
<b>MT 0000-OFI-27</b> Solenoid valve MT 0000-SV-32	Not certified to Australian standards.	Replace junction boxes or obtain conformity assessment.
<b>MT 0000-OFI-28</b> Moisture analyser MT 0000-MA-M00	Nil hazardous area certification evident for equipment use in Australia.	Replace analyser or obtain conformity assessment.
<b>MT 0000-OFI-29</b> Moisture analyser switch MT 0000-MAS-23A	Label required for moisture analyser switch.	Fit moisture analyser switch with label.
<b>MT 0000-OFI-30</b> Moisture analyser junction box MT 0000-JB-30	Label required for junction box.	Fit junction box with label.
	Not certified to Australian standards.	Replace junction boxes or obtain conformity assessment.
<b>MT 0000-OFI-31</b> Solenoid valve MT 0000-SV-30	Device labelled 'Out of Service'.	Review valve condition.
	Not certified to Australian standards.	Replace junction boxes or obtain conformity assessment.
	Label required for valve.	Fit valve with label.
<b>MT 0000-OFI-32</b> Pressure transmitter MT 0000-PT-32	Cable ID is not available.	Fit instrument cable with ID.
	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
<b>MT 0000-OFI-33</b> Light MT 0000-LT	Label required for junction box and cables.	Fit junction box and cables with label.
	Uncertified blank plugs	Replace blank plugs with certified ones.

<b>OFI No.</b>	<b>Description</b>	<b>Proposed Remedy</b>
<b>MT 0000-OFI-35</b> Pressure switch MT 0000-PS	Label required for pressure switch.	Fit pressure switch with label.
	Nil hazardous area certification evident for equipment use in Australia.	Replace switch or obtain conformity assessment.
	Switch is directly connected to a junction box of unknown certification.	Replace junction box or review certification of junction box and obtain conformity assessment or fitness for purpose assessment.
<b>MT 0000-OFI-36</b> Wilco ight switch MT 0000- ZL	Label required for light switch.	Fit light switch with label.
	Certification detail is unavailable.	Replace with approved light switch.
<b>MT 0000-OFI-37</b> Pipeline blowdown vent	The exact dimensions and shape of the hazardous area of the plume from the pipeline vent requires review.	Undertake plume dispersion modelling.
<b>MT 000-OFI-38</b> P&IDs	The P&IDs require modification to include mark-ups identified during the hazardous area inspection.	Update drawings.
<b>MT 0000-OFI-39</b> Control hut	The control hut is located within the hazardous area resulting from the pipework. A door provides an entrance route into the hut.	Refer additional information.
<b>MT 0000-OFI-40</b> Data Manual	Data manuals are not current with the equipment installed at site. The manuals appear to be generic and include information for all sites.	Review manuals and update to reflect current equipment at that site.
<b>MT 0000-OFI-41</b> Pyrophoric iron	Pipeline corrosion products collected in the filter elements can spontaneously combust on exposure to the atmosphere. This can be rectified by immersing the elements in water as they are removed from the filter vessel.	Install a water trough close to the filter vessels with drain point and update filter change out procedures.

OFI No.	Description	Proposed Remedy
<p><b>MT 0000-OFI-42</b>                      Area lighting</p>	<p>The area lighting pole is located within the hazardous area from the PSV discharges and the pipework</p> <hr/> <p>Hazardous area rating of light not reviewed.</p>	<p>Refer additional information.                      Review hazardous area rating of light.</p>
<p><b>MT 0000-OFI-43</b>                      Equipment identification</p>	<p>There is a lack of equipment identification. Particularly around the gas chromatograph and moisture analyser. This may cause problems in the management of the operation and maintenance of the site.</p>	<p>Assign equipment IDs, update drawings and label.</p>

## Additional Information

### MT 0000-OFI-39

Following modifications at the facility the pipework is located close to the control hut. The hazardous area resulting from the flange is 2,500 mm at ground level. The pipework is approximately 1,800 mm away from the hut. There is a door at the corner of the hut and potentially the hazardous area zone would extend inside the hut. The distance between the flange and the control hut is 2,000 mm.

Potentially, the hazardous area can enter the hut and the whole hut would become classified as a Zone 2 area and all electrical equipment in the hut would need to be suitable rated and installed.

To remedy the situation it is proposed to make the control hut gas-tight (including cable entries through the floor) to prevent ingress and ensure that the door closest to the pipework is locked. This may impact on access and egress from the hut and a safety risk assessment should be conducted by APA to approve the change.

Alternatively, replacing the flange with a fully welded spool will remove the hazardous area zone from around the hut as there is no hazardous area zone associated with welded pipe.





### **MT 0000-OFI-41**

An area light is located in the hazardous area zone produced by the PSV discharge. This can be rectified by directing the outlet of the PSV to a location 3,000 mm away from the light. The second PSV is located greater than 3,000 mm away.

Note that PSV sizing checks may be required to confirm the operation of the PSV is not impacted by modifications to the discharge piping.

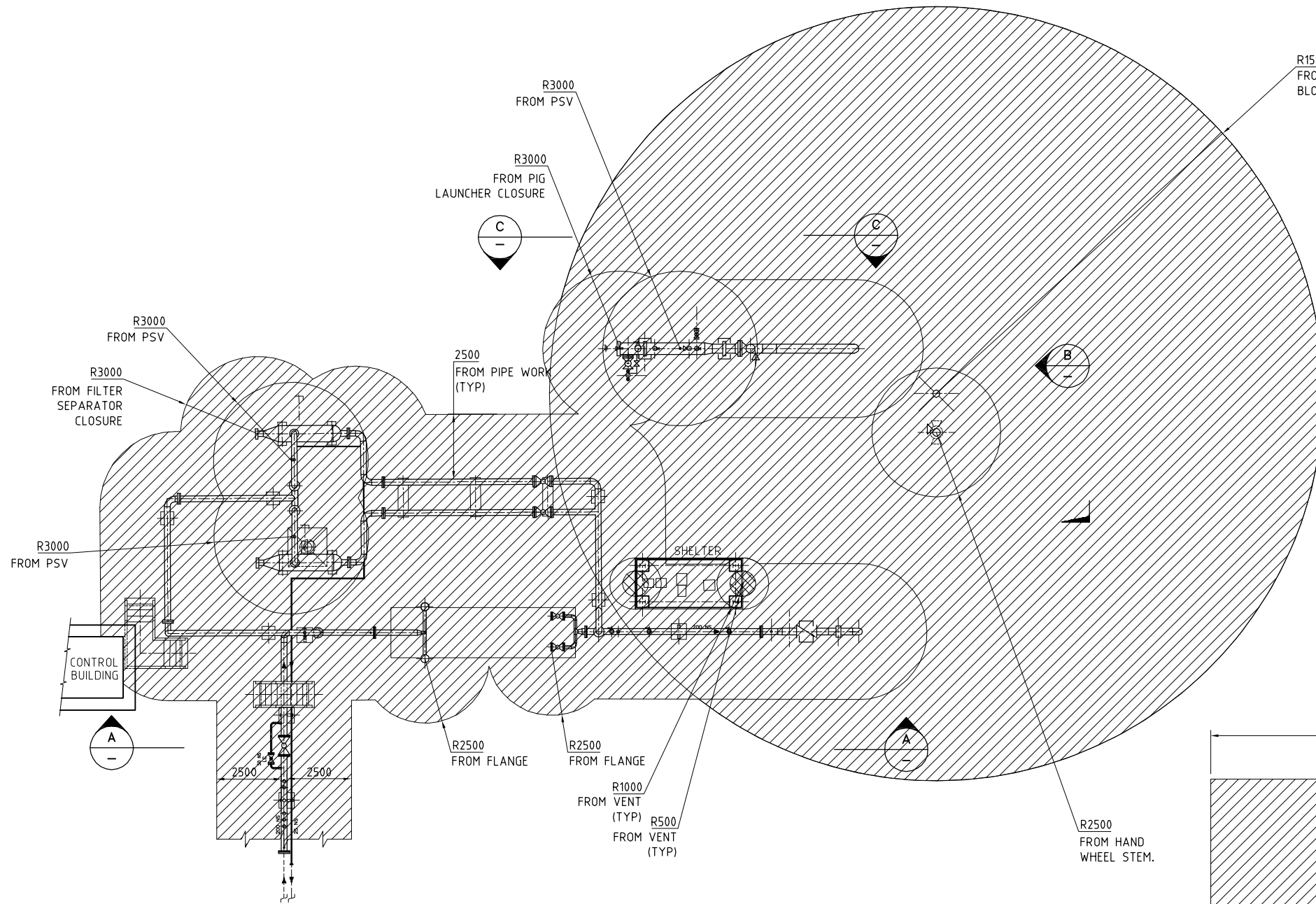
Additionally, it is common to install a junction box inside the light pole at ground level, this has not been inspected. The base of the light pole is located in the hazardous area arising from the pipework flanges. This may require the wiring and junction box to be replaced with appropriately rated equipment.



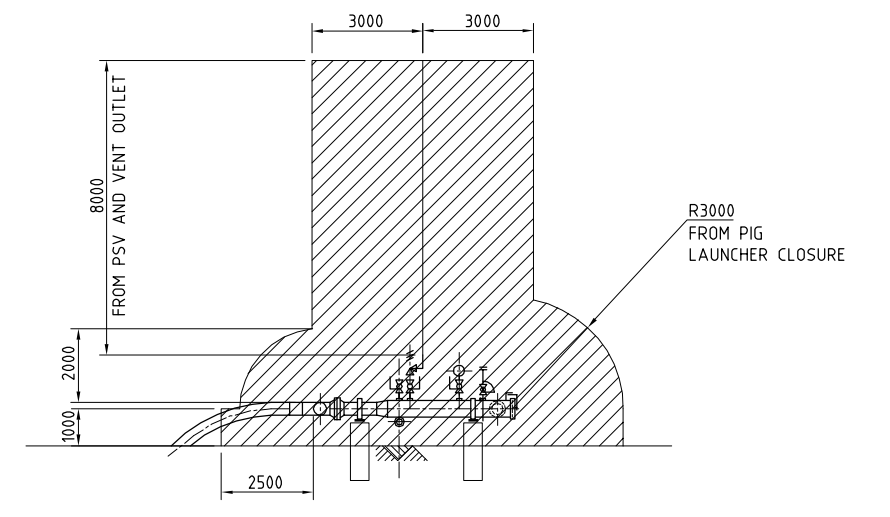
## 4 Hazardous Area Mapping Drawings

This section contains the hazardous area mapping drawings.

<b>Drawing Number</b>	<b>Description</b>	<b>Revision</b>
MT 0000-5001	Mereenie Meter Station Hazardous Area	0






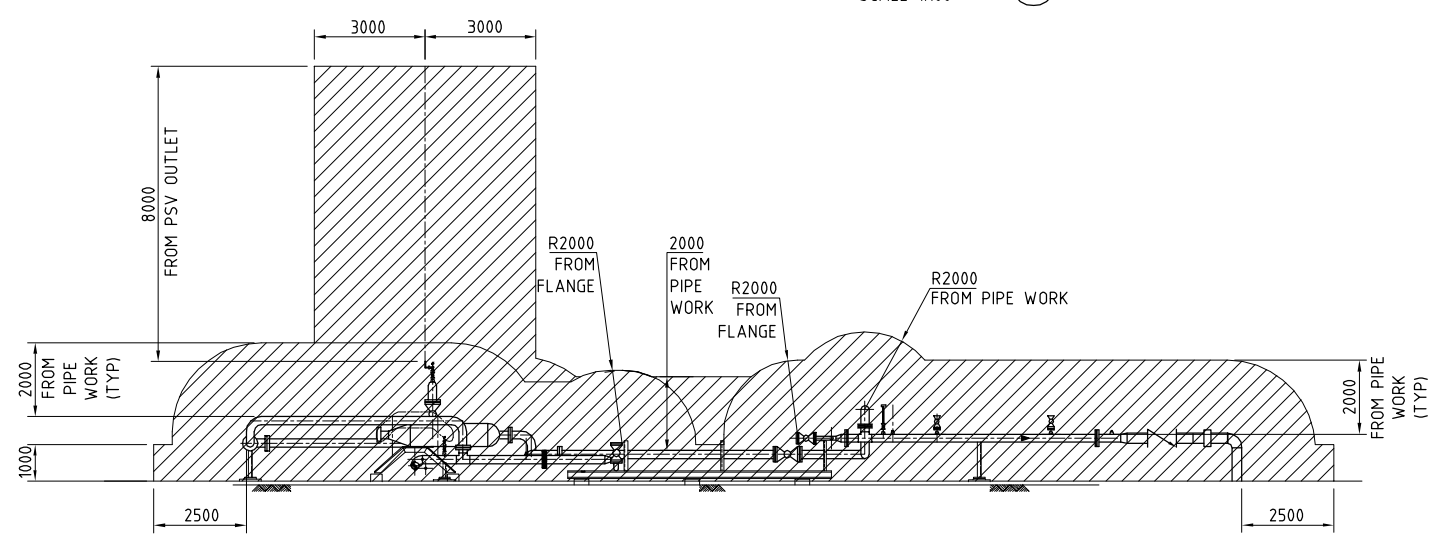
**PLAN VIEW** 01  
SCALE 1:100



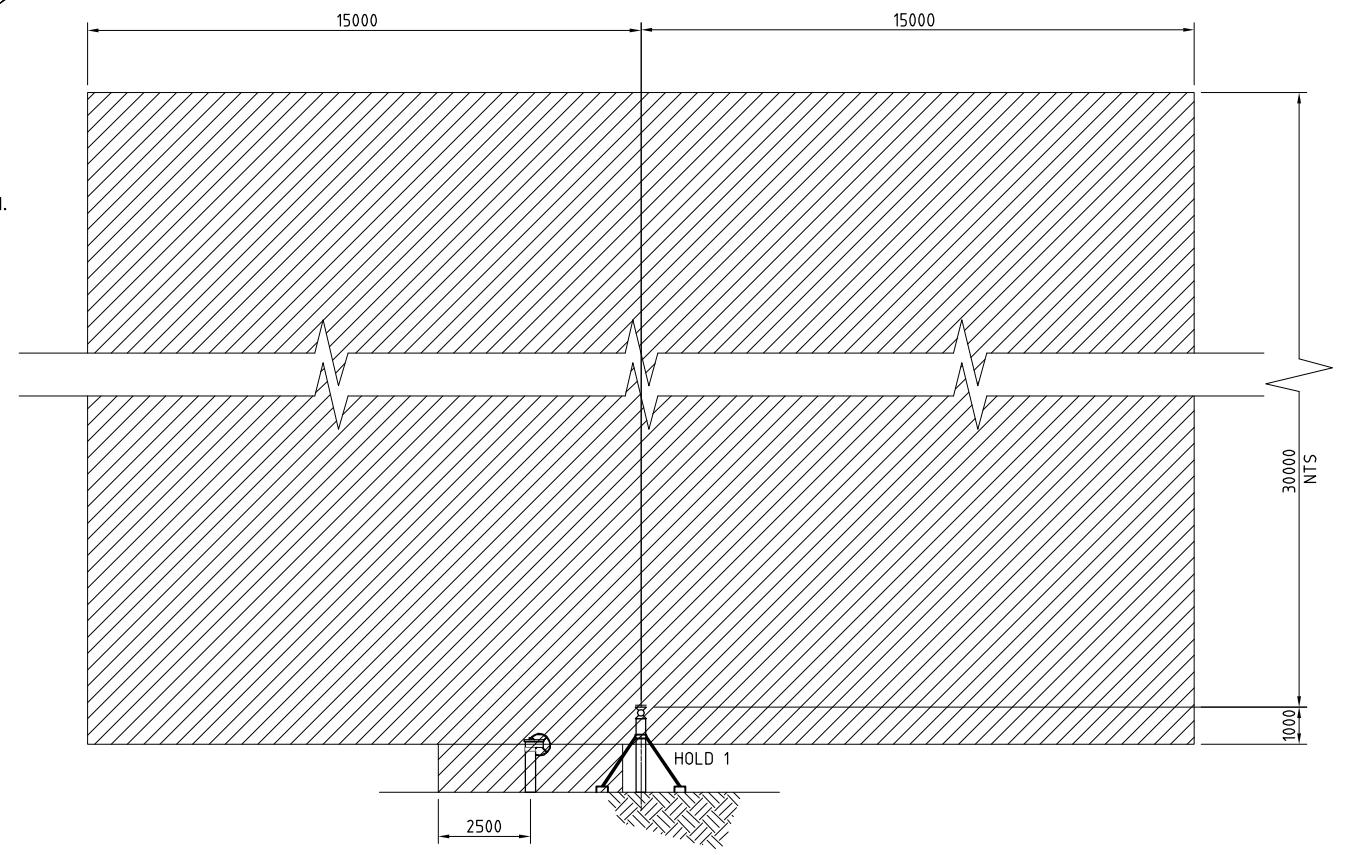
**SECTION C**  
SCALE 1:100

**CLASSIFICATION LEGEND**

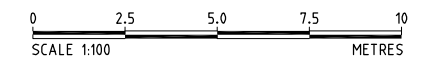
-  ZONE 0
-  ZONE 1
-  ZONE 2
- GAS IIA T1
- LIQUID IIA T3



**SECTION A**  
SCALE 1:100





**SECTION B**  
SCALE 1:100



- NOTES:
1. ALL BELOW GRADE PIPING AND EQUIPMENT NOT SHOWN FOR CLARITY OF DRAWINGS
  1. ACTUAL SHAPE AND EXTENT OF HAZARDOUS AREA TO BE DETERMINED BY PLUME ANALYSIS

REV	DESCRIPTION	DATE	BY	CHKD	APPV	REFERENCE DRAWING	SHEET NO.
0	CHEMICALS AND PIPING	2007	FYFE	NTS			1
1	REVISION DESCRIPTION						2

		<table border="1"> <tr> <td>SHEET NO.</td> <td>SCALE</td> <td>PROJECT</td> </tr> <tr> <td>LEVEL DRAWING</td> <td>1:100</td> <td>AMADEUS BASIN TO DARWIN PIPELINE</td> </tr> <tr> <td>PIPE WORK</td> <td></td> <td>MERRENIIE METER STATION</td> </tr> <tr> <td></td> <td></td> <td>HAZARDOUS AREA - MERRENIIE</td> </tr> <tr> <td></td> <td></td> <td>HAZARDOUS</td> </tr> </table>	SHEET NO.	SCALE	PROJECT	LEVEL DRAWING	1:100	AMADEUS BASIN TO DARWIN PIPELINE	PIPE WORK		MERRENIIE METER STATION			HAZARDOUS AREA - MERRENIIE			HAZARDOUS
SHEET NO.	SCALE	PROJECT															
LEVEL DRAWING	1:100	AMADEUS BASIN TO DARWIN PIPELINE															
PIPE WORK		MERRENIIE METER STATION															
		HAZARDOUS AREA - MERRENIIE															
		HAZARDOUS															
<table border="1"> <tr> <td>PROJECT NO.</td> <td>DRAWING NO.</td> <td>REV</td> </tr> <tr> <td>NTD00045001</td> <td>NTD00045001</td> <td>0</td> </tr> </table>	PROJECT NO.	DRAWING NO.	REV	NTD00045001	NTD00045001	0	<p>100% COMPLETE          100% CHECKED          100% APPROVED</p>										
PROJECT NO.	DRAWING NO.	REV															
NTD00045001	NTD00045001	0															

## **5 Hazardous Area Equipment Register and Certificates of Conformity**

This section contains the hazardous area equipment register and associated certificates of conformity.



# Mereenie Meter Station Hazardous Area Equipment Register

APA Group

Doc No.	18756-4-70-003
Rev.	0
Date	7-Dec-11

Tag	P&ID No.	Location	Instrument Type	Manufacturer	Model	Serial No.	Hazard Area Drawing No.	Haz Area Classification			Ex Protection	Certification
								Zone	Gas Group	Temp.		
<b>MANLINE VALVE AND LAUNCHER P&amp;ID (MT0000-7001)</b>												
Nil												
<b>INLET AND STATION LIMIT VALVE P&amp;ID (MT0000-7002)</b>												
MT0000-TE-09	MT0000-7002	Station limit valve MT0000-SLV-17	Temperature element				MT0000-5001	2	IIA	T3	Ex i, s	
MT0000-TE/TT-10	MT0000-7002	Station limit valve MT0000-SLV-17	Ambient temperature element / transmitter				MT0000-5001	NH				
MT0000-TSHH-12	MT0000-7002	Station limit valve MT0000-SLV-17	High high temperature switch	Ashcroft			MT0000-5001	2	IIA	T3		
MT0000-PSHH-15	MT0000-7002	Station limit valve MT0000-SLV-17	High high pressure switch	CSA	9012 GCW-2 C		MT0000-5001	2	IIA	T3	Ex i, s	
MT0000-PSHH-15A	MT0000-7002	Station limit valve MT0000-SLV-17	High high pressure switch	CSA	9012 GCW-2 C		MT0000-5001	2	IIA	T3	Ex i, s	
MT0000-PT-14	MT0000-7002	Station limit valve MT0000-SLV-17	Pressure transmitter	Rosemount	3501 / 3001	R5093784	MT0000-5001	2	IIA	T3	Ex ia, IIC, T4	AUS Ex 1347x
MT0000-ZSC-17	MT0000-7002	Station limit valve MT0000-SLV-17	Valve limit switch (closed)	-	-	-	MT0000-5001	2	IIA	T3	Div 1 - 2	
MT0000-ZSO-17	MT0000-7002	Station limit valve MT0000-SLV-17	Valve limit switch (open)	-	-	-	MT0000-5001	2	IIA	T3	Div 1 - 2	
MT0000-SV-17	MT0000-7002	Station limit valve MT0000-SLV-17	Solenoid valve	SAE			MT0000-5001	2	IIA	T3	IIB T6	FLP 693 DIP45
ESD	MT0000-7002		Emergency shutdown				MT0000-5001	NH				
MT0000-HS-1	MT0000-7002		Hand switch				MT0000-5001	NH				
MT0000-HS-2	MT0000-7002		Hand switch				MT0000-5001	NH				
MT0000-XAX-3	MT0000-7002						MT0000-5001	NH				
MT0000-XAX-4	MT0000-7002						MT0000-5001	NH				
RTU/PLC-M000	MT0000-7002		Remote telemetry unit				MT0000-5001	NH				
Cathodic Protection Unit	MT0000-7002						MT0000-5001	NH				
Solar Power Regulating Unit	MT0000-7002						MT0000-5001	NH				
MT0000-ZS-41/41A	MT0000-7002		Valve limit switch				MT0000-5001	NH				
MT0000-XX/XS-42	MT0000-7002		Site entrance main gates				MT0000-5001	NH				
MT0000-XX/XS42A	MT0000-7002		Site entrance main gates				MT0000-5001	NH				
<b>METERING AND GAS ANALYSIS P&amp;ID (MT0000-7003)</b>												
MT0000-PDISH/PDT-21	MT0000-7003	Filter separator MT0000-FS-1	High pressure differential switch/transmitter	Rosemount	3051 / 30001	R50872668	MT0000-5001	2	IIA	T3	Ex d, IIC T5	AUS Ex 1347x
MT0000-LSH-21	MT0000-7003	Filter separator MT0000-FS-1	High level switch	Frank W Murphy	L1200 dpot		MT0000-5001	2	IIA	T3	Ex ia, IIB T6	AUS Ex 609
MT0000-LSH-21A	MT0000-7003	Filter separator MT0000-FS-1	Low level switch	Frank W Murphy	L1200 dpot		MT0000-5001	2	IIA	T3	Ex ia IIB T6	AUS Ex 609
MT0000-PT-22	MT0000-7003	Meter run No. 1-M000	Pressure transmitter	Rosemount	3051 PG5A22AIBM517	858996	MT0000-5001	2	IIA	T1	Ex ia IIC T5	AUS Ex 1249x
MT0000-FT-22A	MT0000-7003	Meter run No. 1-M000	Low range flow transmitter	Rosemount	3051 PD2A22AL5M517	858994	MT0000-5001	2	IIA	T1	Ex ia IIC T5	AUS Ex 1249x
MT0000-FT-22	MT0000-7003	Meter run No. 1-M000	High range flow transmitter	Rosemount	3051 PD2A22AIBM517	858995	MT0000-5001	2	IIA	T1	Ex ia IIC T5	AUS Ex 1249x
MT0000-TT-22	MT0000-7003	Meter run No. 1-M000	Temperature transmitter	Rosemount	3144P D2A117M5F5	1170768	MT0000-5001	2	IIA	T1	Ex ia IIC T6	AUS Ex 02.3794X
MT0000-PDISH/PDT-24	MT0000-7003	Filter separator MT0000-FS-2	High pressure differential switch/transmitter	Rosemount	3051 / 30001		MT0000-5001	2	IIA	T3	Ex d, IIC T5	AUS Ex 1347x
MT0000-LSH-24	MT0000-7003	Filter separator MT0000-FS-2	High level switch	Frank W Murphy	L1200 dpot		MT0000-5001	2	IIA	T3	Ex d, IIB T6	AUS Ex 609
MT0000-LSH-24A	MT0000-7003	Filter separator MT0000-FS-2	High level switch	Frank W Murphy	L1200 dpot		MT0000-5001	2	IIA	T3	Ex d IIB T6	AUS Ex 609
MT0000-PT-25	MT0000-7003	Meter run No. 2-M000	Pressure transmitter	Rosemount	3051 PG5A22AIBM517	858996	MT0000-5001	2	IIA	T1	Ex ia IIC T5	AUS Ex 1249x
MT0000-FT-25A	MT0000-7003	Meter run No. 2-M000	Low range flow transmitter	Rosemount	3051 PD2A22AIAM5L7	587026	MT0000-5001	2	IIA	T1	Ex ia, n, d, IIC T5	AUS Ex 1249x
MT0000-FT-25	MT0000-7003	Meter run No. 2-M000	High range flow transmitter	Rosemount	3051 PD2A22AIAM5J7	587027	MT0000-5001	2	IIA	T1	Ex ia, n, d, IIC T5	AUS Ex 1249x
MT0000-TT-25	MT0000-7003	Meter run No. 2-M000	Temperature transmitter	Rosemount	3144P D2A117M5F5	1170778	MT0000-5001	2	IIA	T1	Ex ia IIC T5	AUS Ex 02.3794X
MT0000-SV-29	MT0000-7003	Gas sampler MT0000-GS-M000 or 1495	Solenoid valve	Lucifer		821003	MT0000-5001	2	IIA	T1	Ex m,e, IIC T5	AUS Ex 321-1
MT0000-JB-29	MT0000-7003	Gas sampler MT0000-GS-M000 or 1495	Junction box	SAE			MT0000-5001	2	IIA	T1	IIB T5	
MT0000-HST	MT0000-7003	Gas sampler MT0000-GS-M000 or 1495	Heating strip thermostat (Up high)	Thermon	E7h10120CU	0603 093	MT0000-5001	2	IIA	T1	Ex d IIC T6	AUS Ex 3039X
MT0000-JB	MT0000-7003	Gas sampler MT0000-GS-M000 or 1495	Heating strip junction box (Up high)	Crouse Hinds	GUBA1MPSP019	0503-086	MT0000-5001	2	IIA	T1	Ex d T6	AUS Ex 262x
MT0000-JB	MT0000-7003	Gas sampler MT0000-GS-M000 or 1495	Thermon junction box	Weildmuller		570	MT0000-5001	2	IIA	T1	Ex e IIC T6	AUS Ex 614x
MT0000-MA-M000	MT0000-7003	Moisture analyser MT0000-MA-P000	Moisture analyser	Ametek	3050 OLV		MT0000-5001	2	IIA	T1	Group-1 CL-A T6	ATEX 6007 X
MT0000-JB	MT0000-7003-1	Gas chromatograph MT0000-GC-M000	Junction Box Upstream (Front)	Curlee	MWS GB 50565	110083	MT0000-5001	2	IIA	T1	BCD & Class 2	32L7 LR42129
MT0000-JB	MT0000-7003-1	Gas chromatograph MT0000-GC-M000	Junction Box Upstream (Back)	Curlee	MWS GB 50565	110083	MT0000-5001	2	IIA	T1	BCD & Class 2	32L7 LR42129
MT0000-JB	MT0000-7003-1	Gas chromatograph MT0000-GC-M000	Junction Box Downstream (Front)	Curlee	MWS GB 50565	109773	MT0000-5001	2	IIA	T1	BCD & Class 2	32L7 LR42129
MT0000-JB	MT0000-7003-1	Gas chromatograph MT0000-GC-M000	Junction Box Downstream (Back)	Curlee	MWS GB 50565	109773	MT0000-5001	2	IIA	T1	BCD & Class 2	32L7 LR42129
MT0000-PS			Pressure switch	Ashcroft	APSN7DCS04	C3014246	MT0000-5001	2	IIA	T1	CL-I GR-ABCD CL-II GR-	UL 297G
MT0000-GC-M000	MT0000-7003-1	Gas chromatograph MT0000-GC-M000	Gas chromatograph				MT0000-5001	2	IIA	T1		
MT0000-HST	MT0000-7003-1	Gas chromatograph MT0000-GC-M000	Heating strip thermostat	Thermon	E7H10120CU	0503-086	MT0000-5001	2	IIA	T1	Ex d IIC T6	AUS Ex 3039
MT0000-JB	MT0000-7003-1	Gas chromatograph MT0000-GC-M000	Heating strip junction box	Crouse Hinds	GUBA01K66185		MT0000-5001	2	IIA	T1	IIC T6	AUS Ex 262x
MT0000-JB		Gas chromatograph MT0000-GC-M000	Junction box (sq)	Adalet	30903		MT0000-5001	2	IIA	T1	Class II Group EFG	
MT0000-SV		Gas chromatograph MT0000-GC-M000	Solenoid valve	Asco	EF8016 G2	A879895	MT0000-5001	2	IIA	T1	ABCD Class II	
MT0000-MAS-23A		Moisture analyser MT0000-MA-P000	Moisture analyser Switch	Wilco	FS 110 CI		MT0000-5001	2	IIA	T1	Ex d I / II B T6	AUS Ex 1039x



## Mereenie Meter Station Hazardous Area Equipment Register

APA Group 

<b>Doc No.</b>	18756-4-70-003
<b>Rev.</b>	0
<b>Date</b>	7-Dec-11

Tag	P&ID No.	Location	Instrument Type	Manufacturer	Model	Serial No.	Hazard Area Drawing No.	Haz Area Classification			Ex Protection	Certification
								Zone	Gas Group	Temp.		
MT0000-JB		Moisture analyser MT0000-MA-P000	junction box	Crouse Hinds	10 5235	CL 1 GR A B C D	MT0000-5001	2	IIA	T1		
MT0000-SV		Moisture analyser MT0000-MA-P000	Solenoid valve	Go	HPR2 ELECTRIC		MT0000-5001	2	IIA	T1	Ex d IIC T3	KEMA Ex 96 D 1862
MT0000-PT-32		Gas chromatograph MT0000-GC-M000	Pressure transmitter	Rosemount	3051 / 300	91 562771	MT0000-5001	2	IIA	T1	Ex ia, n, d, IIC T5	AUS Ex 03.1347x / 1249x
MT0000-JB			240V Junction Box	SAE			MT0000-5001	2	IIA	T1	IIB T5	SAA - FLP 693
MT0000-JB			High 240V Junction Box	Govan	FC4 PC5		MT0000-5001	2	IIA	T1	Ex d IIB T6	Ex 238 FLP 771
MT0000-LT			Light	Burn Brite	2x40 240/250 HPF		MT0000-5001	2	IIA	T1	Ex d IIB T6	AUS Ex 229
MT0000-ZL			Light switch	Govan	FC4		MT0000-5001	2	IIA	T1	Ex d IIB T6	
MT0000-ZL			Light Switch	WILCO	WFS110		MT0000-5001	2	IIA	T1	Ex d, CLASS 1 DIV 1,2	AUS Ex FLP 559?





**FYFE**  
 Earth Partners  
 ENVIRONMENT  
 DEVELOPMENT  
 RESOURCES

## Mereenie Meter Station Hazardous Area Equipment Register

APA Group

Doc No.	18756-4-70-003
Rev.	0
Date	7-Dec-11

Tag	P&ID No.	Location	Instrument Type	Manufacturer	Model	Serial No.	Hazard Area Drawing No.	Haz Area Classification			Ex Protection	Certification
								Zone	Gas Group	Temp.		



Notes (in order of highlighted rows):	
Tag no.	Remarks
MT0000-TE-09	Certification details are not available
MT0000-TSHH-12	Certification and Ex protection details are not available
MT0000-PSHH-15	Certification details are not available
MT0000-PSHH-15A	Certification details are not available
MT0000-ZSC-17	Certification details are not available
MT0000-ZSO-17	Certification details are not available
MT0000-JB-29	Certification details are not available
MT0000-MA-M000	Certification is not Australian. Refer Section 3 - MT 0000-OFI-28
MT0000-JB	Certification is not Australian. Refer Section 3 - MT 0000-OFI-25
MT0000-PS	Certification is not Australian. Refer Section 3 - MT 0000-OFI-35
MT0000-JB-32	Certification details are not available
MT0000-SV-32	Certification details are not available
MT0000-JB-30	Certification details are not available
MT0000-ZL	Certification details are not available

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

# Certificate of Conformity

**Certificate No:** AUS Ex 03.1347X      **Issue 0:** Original Issue 13/7/1992  
**Issue 4:** 22/7/2003 (Revalidation)

**Date of Expiry:** 22/7/2013

**Certificate Holder:** Fisher-Rosemount Pty Ltd  
471 Mountain Highway  
BAYSWATER Victoria 3153

**Electrical Equipment:** Model 3051-series Pressure Transmitter and Model 3001-series Hydrostatic Pressure Transmitter, including optional Fieldbus/Profibus outputs, LCD Indicator and/or T1 Transient-protection Terminal Block

**Type of Protection:** Ex d                      Zone 1  
DIP                                      Zone A21

**Marking Code:** Ex d IIC T5(T<sub>amb</sub>=80°C)/T6(T<sub>amb</sub>=40°C) IP66  
DIP A21 T5(T<sub>amb</sub>=80°C)/ T6(T<sub>amb</sub>=40°C) IP66  
AUS Ex 03.1347X

**Manufactured By:** Rosemount Inc  
8200 Market Boulevard  
Chanhassen, MN 55317 USA

Issued by:



919 Londonderry Road Londonderry NSW 2753  
Phone: (02) 4724 4900 Fax: (02) 4724 4999

JAS-ANZ



Accreditation by the Joint Accreditation  
System of Australia and New Zealand,  
Acc No. Z2221100AS

STANDARDS AUSTRALIA



Standards Australia Quality Assurance Services Pty Limited A.B.N. 67 050 611 642

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

*This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.*

*The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:*

- AS/NZS 60079.0:2000 Electrical apparatus for explosive gas atmospheres Part 0: General requirements
- AS/NZS 60079.1:2002 Electrical apparatus for explosive gas atmospheres Part 1: Flameproof enclosures 'd'
- AS/NZS 61241.1.1:1999 Electrical apparatus for use in the presence of combustible dust  
Part 1.1: Electrical apparatus protected by enclosures and surface temperature limitation - Specification for apparatus
- AS 1939-1990 Degrees of protection provided by enclosures of electrical equipment (IP Code)

*This certificate does not ensure compliance with electrical safety requirements and performance other than those included in the Standards listed above.*

*The equipment listed has successfully met the examination and test requirements as recorded in*

*Test Report No:* TestSafe 23605

*File Reference:* TestSafe 2002/032123



Signed for and on behalf of issuing authority  
Laboratory Systems Manager  
TestSafe Australia

Position

22/7/2003

Date of issue

Ex 03.1347X-4

*This certificate and schedule may not be reproduced except in full.*

*This certificate is not transferable and remains the property of Standards Australia Quality Assurance Services and must be returned in the event of its being revoked or not renewed.*

Issued by:



919 Londonderry Road Londonderry NSW 2753  
Phone: (02) 4724 4900 Fax: (02) 4724 4999



Accreditation by the Joint Accreditation  
System of Australia and New Zealand,  
Acc No. Z2221100AS

STANDARDS AUSTRALIA



Standards, Australia Quality Assurance Services Pty Limited A.B.N. 67 050 611 642

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

### Schedule

Certificate No: AUS Ex 03.1347X Issue: 4 Date of Issue: 22/7/2003

**Certified Equipment:** The 3051-series Pressure Transmitter and Model 3001-series Hydrostatic Pressure Transmitter consists of a polyurethane-coated aluminium alloy or stainless steel enclosure (having two compartments, one containing a terminal block and the other electronic circuitry) and a pressure sensor module. The pressure sensor module is available with either dual coplanar pressure diaphragms for measurement of differential pressure, or a single pressure diaphragm for measurement of absolute or gauge pressure.

The electronic circuitry provides a 4-20 mA/HART output, or alternatively a Foundation Fieldbus, Profibus, or a low voltage (0.8/1.0-3.2/5.0 Vdc) output. Access to both compartments in the housing is via threaded covers. Electrical connection is via two threaded entries.

The transmitter may optionally include an LCD digital indicator with an associated cover with a cemented glass window, and/or a T1 transient-protected terminal block in place of the standard terminal block.

All the models are summarised in Table 1:

Table 1

Model	Description
3051C and 3051CA	Pressure transmitter
3051P	High pressure version
3051L	Liquid level transmitter
3051H	High temperature configuration
3051CL and 3051SL	Flush mounted hydrostatic pressure transmitter
3051T	Gauge and absolute pressure transmitter
3001C and 3001S	Hydrostatic pressure transmitter
3001CH and 3001SH	High process temperature hydrostatic pressure transmitter

As the model 3051 housings passed pressure tests at 4 times the reference pressures, and are not of welded construction, they may be exempted from the routine pressure test of Clause 16 of AS/NZS 60079.1:2002.

Issued by:



919 Londonderry Road Londonderry NSW 2753  
Phone: (02) 4724 4900 Fax: (02) 4724 4999



Accreditation by the Joint Accreditation System of Australia and New Zealand, Acc No. Z2221100AS

STANDARDS AUSTRALIA



# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex 03.1347X-4

### Conditions of Certification:

1. It is a condition of manufacture that all pressure sensors of a welded construction be subjected to a pressure test in accordance with Clause 16 of AS/NZS 60079.1:2002 at a pressure of 1020 kPa or 1.5 times the maximum working pressure, whichever is greater.
2. It is a condition of safe use for transmitter enclosures having a cable entry thread other than metric conduit thread that the equipment be utilised with an appropriately certified thread adaptor or cable gland.
3. It is a condition of safe use, where only one entry is used for connection to external circuits, the unused entry shall be closed by means of the blanking plug supplied by the equipment manufacturer or by suitable certified blanking plugs.
4. It is a condition of safe use that the irrelevant explosion protection marking code shall be permanently scribed off the certification marking label upon completion of commissioning, where the equipment is supplied with a certification marking label showing more than one explosion protection marking code.

### Drawings Schedule

Drawing No	Drawing Title	Issue	Date
03031-1004 Sheets 1 to 10	Approval Drawing for Model 03051C/LP/H/T, 3001C/S Flameproof Configuration, SAA	AE	8/7/03
03031-1007 Sheets 1 to 6	Approval Drawing for Module Housing Ass'y, Explosion Proof	AD	2/2/00
03031-0097 Sheets 1 to 2	Clamp, Cover	B	26/6/91

Issued by:



919 Londonderry Road Londonderry NSW 2753  
Phone: (02) 4724 4900 Fax: (02) 4724 4999

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System of Australia and New Zealand,  
Acc No. Z2221100AS

STANDARDS AUSTRALIA



Standards Australia Quality Assurance Services Pty Limited A.B.N. 67 050 611 642

Page 4 of 4

# STANDARDS ASSOCIATION OF AUSTRALIA

Sheet of Sheet 2

INCORPORATED BY ROYAL CHARTER

STANDARDS HOUSE, 90 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## CERTIFICATE FOR FLAMEPROOF ENCLOSURE

No. **FW** 693

This certifies that the flameproof enclosure described hereunder has been EXAMINED and TESTED and has been found to comply with the requirements for a flameproof enclosure in accordance with AS C98- Flameproof Enclosure of Electrical Equipment, Including Amendment No.(s).....

This Certificate applies only to the flameproof features of the equipment described herein and does not purport, nor is it intended to certify compliance with the relevant electrical safety requirements of the SAA Wiring Rules, AS CCI Parts I and II.

### DETAILS OF EQUIPMENT:

"S.A.E." Flameproof Enclosures, Cert. Nos.  
FWJ1, FWJ2, FHS51, FNL11 and FRP1L.

See Sheet 2 of 2 for a description of enclosures.

### DRAWING NUMBER:

1483 GA5-1, 1483 GA4-1, 148328-2, 148330-3, 148330-1,  
148319-2, 053917-1, 148322-1, 148321-1, 0107127-2,  
148327-1, "Retainer Clip" information sheet, ED/211/2.

### GROUPING AND CLASSIFICATION:

GROUP III Enclosures; Temperature Classification T6

### APPLICANT:

Safe Appliance and Equipment Co. Pty. Ltd.,  
26-28 Kent Road,  
MASCOT N.S.W. 2060

### MANUFACTURER:

Metalcraft Engineering Co. Pty. Ltd.,  
26-28 Kent Road,  
MASCOT, N.S.W. 2060

### TESTING STATION AND REPORT No.:

SCC TR. 10,46601

### REMARKS:

#### DETAILS OF ENCLOSED ELECTRICAL COMPONENTS

Cat. No. FWJ1 - Four-way terminal block "Siemens BK4"  
Cat. No. FWJ2 - Four-way terminal block "Siemens BK4"  
Cat. No. FHS51 - One "Federal" 3 pole 15 A switch  
Cat. No. FNL11 - Two "Klockner-Hoeller" Lampholders 2.5W,  
Two D.S.9.S. size lamps  
Cat. No. FRP1L - Two "Klockner-Hoeller" push button switches

  
Chairman of Committee EL/29

  
Director, Standards Association of  
Australia

EL/29

Date 13. 6. 74

STANDARDS ASSOCIATION OF AUSTRALIA

Sheet 2 of Sheet 2

INCORPORATED BY ROYAL CHARTER

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

CERTIFICATE FOR FLAMEPROOF ENCLOSURE

No. PLP 693

REMARKS:

CAST ALUMINIUM ENCLOSURES

Cat. No. FNU1, Junction Box - One bore and spigot joint,  
Four  $\frac{1}{2}$  in. conduit entries  
16 T.P.I.

Cat. No. FNU2, Junction Box - One bore and spigot joint  
Four 1" conduit entries  
16 T.P.I.

Cat. No. FNS51, Isolating Switch - One bore and spigot joint,  
Four  $\frac{1}{2}$  in. or 1 in. conduit  
entries 16 T.P.I. One operating  
spindle.

Cat. No. FNL11, Pilot Lamp Station - One bore and spigot joint,  
Four  $\frac{1}{2}$  in. or 1 in. conduit entries  
16 T.P.I. Two indicator lamp  
inspection windows.

Cat. No. FNP11, Push Button Station - One bore and spigot joint,  
Four  $\frac{1}{2}$  in. or 1 in. conduit entries  
16 T.P.I. Two operating rods.

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Chairman of Committee EL/29



Director, Standards Association of  
Australia

EL/29

Date 3.6.74

## STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

12 AUG 1980

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

SUPPLEMENTARY CERTIFICATE FOR EXPLOSION PROTECTED  
ELECTRICAL EQUIPMENT

No. FLP 693 - 1

This certifies that the equipment described hereunder has been examined and tested in accordance with the requirements of the Australian standard(s) specified herein, and such equipment has been found to comply with these requirements.

This certificate may be withdrawn at any time if in the opinion of SAA Committee EL/29, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been altered or revised to a degree that the equipment is no longer considered suitable for installation in the hazardous location stated, or if the certificate holder has breached any of the terms or conditions under which this certificate was issued.

Description of Modification	Hazardous Location
<p>To recognize changes in the components and catalogue numbers of the following instruments</p> <p>(a) Switch Enclosure Cat. No. FNS51 (b) Pilot Light System Cat. No. FNL11 (c) Push-button Station Cat. No. FNP1L</p> <p>as detailed in Schedule</p>	N/A
<p>Drawing Nos.</p> <p>From 79 - 007 - AD - 002 Issue A to 79 - 023 - AD - 002 Issue A inclusive</p>	Type of Protection
	N/A
	<p>Certificate Holder</p> <p>Safe Appliance and Equipment Co. Pty. Ltd., 26-28 Kent Road MASCOT, NSW, 2020.</p>
	<p>Manufacturer</p> <p>Metalcraft Engineering Co. 26-28 Kent Road MASCOT, NSW, 2020.</p>
	<p>Test Report No(s)</p> <p>N/A</p>
	<p>Australian Standard(s)</p> <p>N/A</p>
	<p>SAA File Reference</p> <p>EL/29: 79068/M90</p>
	<p>Effective Date</p> <p>1980-02-20</p>
	<p>Date of Issue</p> <p>1980-07-03</p>

*J. H. Gray*  
Director  
Standards Association of Australia

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STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W

## CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

## SCHEDULE 1

Continuation of Certificate No. FLP 693 -1

New Cat. No.	Short Description	Originated from	Changes
FNL 1.1 (1M) FNL 1.2 (2M)	Indicating Lamp Single Position	FNL 1"	One position deleted
FNP 1.1 (1M) FNP 1.2 (2M)	Push Button Station 2 Positions	FNP 1I	One position was to stay put. Now both positions no stay put and external modification.
1S.1 (1M) FNP 1S.2 (2M)	Push Button Station 2 Positions	FNP 1L	As for FNP 1.1/FNP 1.2 but with both buttons shrouded
FNP 11.1 (1M) FNP 11.2 (2M)	Push Button Station 1 position	FNP 1L	One position deleted and no position stay put and external modification.
FNP 11K.1 (1M) FNP 11K.2 (2M)	Push Button Station Key operated 1 position	FNP 1L	One position deleted and external modification.
FNP 11M.1 (1M) FNP 11M.2 (2M)	Push Button Station Palm operated 1 position	FNP 1L	One position deleted and no position stay put and external modification.
FNP 11S.1 (1M) FNP 11S.2 (2M)	Push Button Station 1 position (shrouded)	FNP 1L	One position deleted and no position stay put with button shrouded and external modification
FNP 1K.1 (1M) FNP 1K.2 (2M)	Push Button Station 2 positions with 1 key operated	FNP 1L	External modification
FNP 11L.1 (1M) FNP 11L.2 (2M)	Push Button Station 1 position stay put	FNP 1L	One position deleted and single position stay put only and external modification.
FNP L1 (1M) FNP L2 (2M)	Push Button Station and Pilot Light combined.	FNP 1L	Combinations of FNP 1L and FNL 11 with one button position deleted and pilot light deleted.
FNS 15.1 (1M) FNS 15.2 (2M)	Switch 240 V a.c. 15A DPDT or 240 V a.c. 15A 2 ways	FNS 51	Changing interiors of switch to Ring-Grip FS 169/15 DP.

.....  
*J. H. Wray*  
 Director  
 Standards Association of Australia

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## CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

SCHEDULE 1 (Continued)

Continuation of Certificate No. FLP 693 -

New Cat. No.	Short Description	Originated from	Changes
FNS 52.1 (1M) FNS 52.2 (2M)	Switch 500 V a.c. 15A DP 3 positions	FNS 51	Changing interiors of switch to Federal type 15S10302 PM1 and external excutcheon plate
FNS 51K.2 (1M) FNS 52K.2 (2M)	Switch with key lockable device 500 V a.c. 15A	FNS 51	Changing interiors of switch to Kraus & Naimer type B11 B2K911 and external locking device.
FNS 65/*1 (1M) FNS 65/*2 (2M)	Switch 500 V a.c. 20 A 3 positions	FNS 51	Changing interiors of switch to Kraus & Naimer type B11 and U17 series
FNS 66/*1 (1M) FNS 66/*2 (2M)	Switch 500 V a.c. 20 A Multi-positions	FNS 51	Changing interiors of switch to Kraus & Naimer type B11 and U17 series and external modification.
FNP 18G.1 (1M) FNP 18G.2 (2M)	Push button Station 2 position with pad- locking facility	FNP 1L	One position was to stay put Now both positions no stay put with both buttons shrouded and external modification.
FNP 118G.1(1M) FNP 118G.2(2M)	Push Button Station 1 position with padlocking facility	FNP 1L	One position deleted and no position to stay put and external modification.

.....  
*J. H. Gray*  
 Director  
 Standards Association of Australia



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**CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Continuation of Certificate No. TLP 693 -

SCHEDULE 1 (Continued)

NOTES:

Code of Cat. No.

Suffix .1 denotes 0.75 in entries

Suffix .1M denotes 20 mm entries

Suffix .2 denotes 1 in entries

Suffix .2M denotes 25 mm entries

2. The \* for switches FNS 65 and FNS 66 will be a number which is allocated to denote a switch function from one of the Fraus & Naimer B11 or C17 switch series.

  
.....  
Director  
Standards Association of Australia

# STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 609

This certifies that the equipment described hereunder has been examined and tested in accordance with the requirements of the Australian standard(s) specified herein, and such equipment has been found to comply with these requirements.

This certificate may be withdrawn at any time if in the opinion of SAA Committee P/3, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been altered or revised to a degree that the equipment is no longer considered suitable for installation in the hazardous location stated, or if the certificate holder has breached any of the terms or conditions under which this certificate was issued.

<b>Description of Equipment</b> <u>'Murphy' Liquid Level Switches,</u> <u>Series L-1100 and L-1200</u>	<b>Hazardous Location</b> Class I Zone 1
	<b>Type of Protection</b> Ex d IIB T6
	<b>Certificate Holder</b> Murphek Pty Ltd 215 Parramatta Road <u>AUBURN NSW 2144</u>
<b>Drawing No(s)</b> 15-00-0197; 15-00-0195; 15-00-0155; 15-00-0154; 15-01-0082 Rev C; 15-05-344 Rev P; 15-05-345 Rev J; 15-05-346 Rev G; 15-05-348 Rev G; 15-05-349 Rev A; 15-05-376 Rev R; 15-05-474; 15-05-497 Rev E; 15-05-650 Rev A; 15-05-0466 Rev D; 65.05.403 Rev D; Bulletin LL7434; 15-01-0090 Rev 1; 15-05-0462 Sheets 1 & 2 Rev R; Sketch No L1100/L1200	<b>Manufacturer</b> Frank W Murphy Manufacturer Inc 3131 South Sheridan Tulsa <u>OKLAHOMA 74145 USA</u>
<b>Certification Conditions</b>	<b>Test Report No(s)</b> SCC TR NO: 60015
	<b>Australian Standard(s)</b> AS 2480-1981
	<b>SAA File Reference</b> P/3: 84122/M121
<b>Remarks</b>	<b>Effective Date</b> 1985-09-05
	<b>Date of Issue</b> 1985-09-06

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Director—Administration & Approvals  
Standards Association of Australia



[HOME](#) > [EPEE](#) > [EX 609](#)

## EPEE Certificate: Ex 609



<b>Certificate No.</b>	Ex 609	<b>Latest Issue</b>	Original Issue
		<b>Issue Date</b>	06-09-1985
<b>Expiry Date</b>	06-09-1995	<b>Expired</b>	
<b>Certificate Holder</b>	Murphek Pty Ltd		
	215 Parramatta Road		
	Auburn Sydney		
	New South Wales 2144		
	Australia		
<b>Equipment Category</b>	Level Detectors		
<b>Product Description</b>	L-1100 & L-1200   LIquid Level Switches		
<b>Protection Type</b>	Type d		
<b>Marking Code</b>	T6 85 Deg C   Class I   Zone 1		
<b>Gas Group</b>	IIB		
<b>IP Rating</b>			
<b>Manufacturer</b>	Frank W Murphy Manufacturer Inc		
<b>Test Report Number</b>	60015		
<b>Issued By</b>	Quality Assurance Services		
<b>Standard</b>	AS 2480-1981		

### NOTES

[HOME](#) > [EPEE](#) > [EX 609](#)

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Certification of

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No: AUS Ex 1249X Issue 0: Original Issue 17/7/1991  
Issue 5: 30/05/2003 (Revalidation)

Date of Expiry: 30/05/2013

Certificate Holder: Fisher-Rosemount Pty Ltd  
471 Mountain Highway  
BAYSWATER Victoria 3153

Electrical Equipment: Model 3051-series Pressure Transmitter and Model 3001-series Hydrostatic Pressure Transmitter, including optional Fieldbus/Profibus outputs, LCD indicator and T1 Transient-protection Terminal Board.

Type of Protection: Ex ia  
Ex n

Marking Code: Ex ia IIC T4 (T<sub>amb</sub> = 70 °C) / T5 IP66 (for non-Fieldbus)  
Ex ia IIC T4 (T<sub>amb</sub> = 60 °C) / T5 IP66 (for Foundation Fieldbus/Profibus)  
Ex n IIC T4(T<sub>amb</sub> = 70 °C) / T5 IP66  
AUS Ex 1249X

Manufactured By: Rosemount Inc  
8200 Market Boulevard  
Chanhassen MN 55317 USA

Emerson Process Management		
Document Control		
PDC No.: 4-70538561-001	Rev: 0	Date: 31/7/03
ORDER NUMBERS		
Customer: 626973		
Emerson: 70538561		

Issued by:



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STANDARDS AUSTRALIA

## Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

*This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.*

*The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:*

- AS 2380.1-1989 Electrical equipment for explosive atmospheres - Explosion-protection techniques - General requirements (incorporating Amendment 1)
- AS 2380.7-1987 Electrical Equipment for explosive atmospheres - Explosion-protection techniques - Intrinsic safety 'i'
- AS 2380.9-1991 Electrical Equipment for Explosive atmospheres - Explosion-protection Techniques - Non-sparking Apparatus - Type of protection 'n'
- AS 1939-1990 Degrees of protection provided by enclosures of electrical equipment (IP Code)

*This certificate does not ensure compliance with electrical safety requirements and performance other than those included in the Standards listed above.*

*The equipment listed has successfully met the examination and test requirements as recorded in*

*Test Report No: LOSC 11812; 16864; 16910 and TestSafe 20320, 21599 and 22468*

*File Reference: TestSafe 94/5985-TSA 0007*



Signed for and on behalf of issuing authority  
Laboratory Systems Manager  
TestSafe Australia

Position  
30/05/2003

Date of issue

Ex 1249X-5

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Standards Australia Quality Assurance Services Pty Limited A.B.N. 67 050 611 642

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

### Schedule

Certificate No: AUS Ex 1249X

Issue: 5

Date of Issue: 30/05/2003

**Certified Equipment:**

The range of transmitters is designed to convert signals from a pressure transducer into an electrical signal. The electronics provide an analogue 4-20 mA output with HART, or optionally a d.c. output for low power applications or Foundation Fieldbus, or Profibus output for Fieldbus applications. The transmitter is intended for connection to separately certified apparatus having a source of potential not exceeding 30 Volts d.c. and a short circuit current not exceeding 200 mA for the low power and analog/HART output or 300 mA for the Fieldbus output.

The equipment may be manufactured in a number of combinations from the ranges of optional boards according to the configurations, and they are tabulated in the following tables.

(a) Foundation Fieldbus/Profibus Transmitter Configuration		
Ref.	Description	Drawing No.
Any one of the following terminal boards:		
Ter.e	Standard 3051 Fieldbus	03031-0467
Ter.f	Transient Protection 3051 Fieldbus (T1 Option)	03031-0486
Micro-board assembly:		
Micro.a1	3051 Fieldbus Analog	03031-0477
Micro.a2	3051 Fieldbus Digital	03031-0481
Optional LCD Indicator assembly:		
Dis.c	CCA, Vortex Shrouded, LCD Board, 2 Line	08800-7611
Any one of the sensor boards can be used: (Refer to Sensor Board List below)		

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# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Ex 1249X-5

Certified Equipment: (Continued)

Addendum to Certificate No. ....

(b) Low Power Transmitter Configuration		
Ref.	Description	Drawing No.
Any one of the following terminal boards can be used:		
Ter.a	Potted Low Power Terminal Block Assembly	03031-0607
Ter.b	Transient Protection Terminal Brd, 3-Wire (T1 Option)	03031-0506
Microboard assembly:		
Micro.b	Low Power Microboard Conformal Coated	03031-0275
Optional LCD Indicator assembly:		
Dis.a	Coated CCA Meter/LCD Board	03031-0162
Any one of the sensor boards can be used: (Refer to Sensor Board List below)		

(c) Analog/HART Transmitter Configuration		
Ref.	Description	Drawing No.
Any one of the following terminal boards can be used:		
Ter.c	4-20mA Standard Terminal Block Assembly	03031-0657
Ter.d	Standard Transient Protection Terminal Block Assembly (T1 Option)	03031-0665
Microboard Assembly:		
Micro.c	Micro Brd 5, Coated & Spot Potted, 3051/3001 & Probar	03031-0584
Optional LCD Indicator assembly:		
Dis.b	Shrouded/Spot-Potted/Labelled LCD Board, 2 Line	03031-0591
Any one of the sensor boards can be used: (Refer to Sensor Board List below)		

Sensor Boards List		
Ref.	Description	Drawing No.
Sen.a	Low Cost Sensor Card Conformal Coated	03031-0283
Sen.b	Sensor Board 3, Uncoated, 3051C	03031-0587
Sen.c	Sensor Board IV Coated, 3051C	03031-0817
Sen.d	AP Sensor Card Conformal Coated	03031-2011
Sen.e	Sensor Board, Coated, 3051T	03031-0923
Sen.f	Sensor Taconite, Coated, 3051/2088	03031-0929

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# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No... Ex 1249X-5

### Variations Permitted By Issue 5:

- The complete range of the equipment has been classified as documented in the Certified Equipment.

### Conditions of Certification relating to Variations Permitted by Issue 5:

- It is a condition of manufacture that the 3051 or 3001 pressure transmitters that do not include the transient protection on the terminal board assembly must be capable of withstanding a test voltage of not less than 500 Volts, 48 Hz to 62 Hz applied between input terminals and case for a period not less than 1 minute.
- It is a condition of safe use that the following parameters are to be taken into account for Intrinsic Safety applications:

(a) Foundation Fieldbus/Profibus Transmitter Configuration	
Entity Parameters	With or without transient protected T1 option
U <sub>i</sub>	30 V
I <sub>i</sub>	300 mA
P <sub>i</sub>	1.3 W
C <sub>i</sub>	0 µF
L <sub>i</sub>	0 µH

(b) Low Power Transmitter Configuration		
Entity Parameters	Without transient protected T1 option	With transient protected T1 option
U <sub>i</sub>	30 V	30 V
I <sub>i</sub>	200 mA	200 mA
P <sub>i</sub>	0.9 W	0.9 W
C <sub>i</sub>	0.042 µF	0.042 µF
L <sub>i</sub>	10 µH	0.75 mH

(c) Analog/HART Transmitter Configuration		
Entity Parameters	Without transient protected T1 option	With transient protected T1 option
U <sub>i</sub>	30 V	30 V
I <sub>i</sub>	200 mA	160 mA
P <sub>i</sub>	0.9 W	0.9 W
C <sub>i</sub>	0.01 µF	0.01 µF
L <sub>i</sub>	10 µH	1.05 mH

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## Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex 1249X-5

### Conditions of Certification relating to Variations Permitted by Issue 5: (continued)

3. It is a condition of safe use that the apparatus may only be used with a passive current limited power source for Intrinsic Safety applications. The power source parameters must be such that  $P_o \leq (U_o \times I_o) / 4$ .
4. It is a condition of safe use that for models using transient protection in the terminal assembly (T1 transient protection models) the apparatus enclosure is to be electrically bonded to the protective earth. The conductor used for the connection shall be equivalent to a copper conductor of 4 mm<sup>2</sup> minimum cross-sectional area.
5. It is a condition of safe use that the Fieldbus option is to be supplied from a voltage source not exceeding 35.0 V dc for Non-Sparking applications. The Low Power and Analog/HART options are to be supplied from a voltage source not exceeding 55 V dc for Non-sparking applications
6. It is a condition of safe use that where the equipment is installed such that there is an unused conduit entry, the entry must be sealed with a suitable blanking plug to maintain the minimum degree of protection of IP66 for Non-Sparking applications.
7. It is a condition of safe use that upon completion of commissioning the apparatus with a label plate with more than one marking on it, the irrelevant marking code(s) shall be permanently scribed off.

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Page ..... of .....

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex 1249X-5

### Drawings Relating to Variations Permitted by Issue 5

Document No.	Document Title	Sheets	Issue	Date
00268-0031	Index of I.S. Barrier System for MOD.268 Smart Family Interface	1 to 7	M	08/04/1993
03031-0059	Label, Nameplate / Customer Tag	1 to 16	AY	17/12/2001
03031-0060	Label, Approvals, 3051C	1 to 8	BG	04/04/2002
03031-0087	Schematic Diagram, 3051/3001 CENELEC I.S. Approval	1 of 1	AC	10/10/1997
03031-0160	Schematic Diagram, Meter/LCD Board	1 of 1	H	07/05/1990
03031-0161	Printed Wiring Board LCD/Meter Board	1 to 4	U	05/08/1996
03031-0162	Coated CCA Meter/LCD Board	1 of 1	AC	22/11/1999
03031-0272	Schematic Diagram 3051C Low Power	1 of 2	AA	17/02/1999
03031-0273	Printed Wiring Board Low Power Microboard	1 to 4	J	06/08/1996
03031-0275	Circuit Card Assy Low Power Microboard Conformal Coated	1 to 3	AB	10/11/1999
03031-0280	Schematic Diagram Low Cost Sensor BRD	1 of 1	F	12/01/1995
03031-0281	Printed Wiring Board Low Cost Sensor Card	1 to 4	G	06/08/1996
03031-0283	Circuit Card Assy Low Cost Sensor Card Conformal Coated	1 of 1	F	21/03/1991
03031-0464	Schematic Drawing Standard Terminal Block, 3051 Fieldbus	1 of 1	AA	20/03/1998
03031-0467	Terminal Block Assy, Standard 3051 Fieldbus	1 to 2	AC	12/1998
03031-0475	3051 Fieldbus Analog Electronics	1 to 2	AC	12/1998
03031-0476	Printed Wiring Board - Fieldbus Analog	1 to 3	AC	10/06/1998
03031-0477	Circuit Card Assy 3051 Fieldbus Analog	1 to 2	AH	29/05/2001
03031-0479	3051 Fieldbus Digital Electronics	1 of 1	AB	12/1998
03031-0480	Printed Wiring Board - 3051 Fieldbus Digital	1 to 3	AC	12/1998
03031-0481	Circuit Card Assy - 3051 Fieldbus Digital	1 to 3	AD	01/2000
03031-0483	Schematic Drawing Transient Terminal Block, 3051 Fieldbus	1 of 1	AB	22/02/2001
03031-0484	Printed Wiring Board Transient Protection 3051 Fieldbus	1 to 3	AC	22/02/2001
03031-0486	Terminal Block Assy, Transient Protection, 3051 Fieldbus	1 to 2	AC	12/1998
03031-0488	Ass'y Output Electronics, Fieldbus	1 of 1	AG	29/05/2001
03031-0504	Schematic Diagram Terminal Block 3-wire Configuration	1 of 1	C	21/05/1991
03031-0505	Printed Wiring Board Terminal Board, 3-Wire Configuration	1 to 2	E	23/06/1995
03031-0506	Circuit Card Assy, Transient Protection Terminal BRD, 3-Wire	1 to 3	AA	24/08/1998

Issued by:



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## STANDARDS AUSTRALIA

Standards Australia Quality Assurance Services Pty Limited A.B.N. 67 050 611 642

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex.1249X-5

### Drawings Relating to Variations Permitted by Issue 5 (Continued)

Document No.	Document Title	Sheets	Issue	Date
03031-0519	3051P Label, Nameplate / Customer Tag	1 to 8	AG	10/08/2001
03031-0520	Label, Approvals, 3051P	1 to 8	AJ	06/01/2000
03031-0521	Label, Nameplate / Customer Tag 3051C-Low Power	1 to 7	AH	15/02/2001
03031-0535	Label, Nameplate / Customer Tag 3051P-Low Power	1 to 3	F	19/05/1995
03031-0581	Schematic Drawing Micro Board #5 3051C	1 to 3	AD	01/03/2002
03031-0582	Printed Wiring Board, Micro BRD 5, 3051C	1 to 3	AD	17/07/2000
03031-0584	Shrouded Assembly Micro BRD 5, Coated & Spot Potted, 3051/3001 & Probar	1 to 4	AK	04/03/2002
03031-0585	Schematic Sensor Board 3	1 to 2	B	13/11/1995
03031-0586	Printed Wiring Board Sensor Board 3 3051C	1 to 4	AA	08/10/1997
03031-0587	Circuit Card Assy Sensor Board 3, Uncoated, 3051C	1 to 2	AC	25/06/1998
03031-0589	Schematic Diagram 160 Segment LCD Board	1 to 1	A	31/01/1995
03031-0590	Printed Wiring Board LCD Board, 2 Line	1 to 4	AA	30/11/1998
03031-0591	Circuit Card Assembly Shrouded/Spot-Potted/labeled LCD Board, 2 Line	1 to 3	AF	19/06/2000
03031-0604	Schematic Diagram 3051C Low Power Terminal Block	1 of 1	A	12/02/1996
03031-0605	Printed Wiring Board, Low Power, Terminal, Block, 3051C	1 to 3	A	12/02/1996
03031-0607	Potted Low Power Terminal Block Assembly	1 of 1	AC	15/11/2001
03031-0655	Schematic Diagram 4-20mA Standard Terminal Block	1 of 1	AB	15/10/2001
03031-0656	Printed Wiring Board, Standard 4-20mA, Terminal Block, 3051C	1 to 3	AD	20/06/2000
03031-0657	4-20mA Standard Terminal Block Assembly	1 to 2	AF	15/11/2001
03031-0663	Schematic Diagram Standard Trans. Protection Terminal Block	1 of 1	AB	10/2001
03031-0664	Printed Wiring Board, Transient Protection Standard, Term. Block, 3051C	1 to 3	AC	07/08/1997
03031-0665	Standard Transient Protection Terminal Block Assembly	1 to 2	AD	15/11/2001
03031-0687	Schematic Diagram, 3051 Fieldbus CENELEC I.S. Approval	1 of 1	AB	16/08/2001
03031-0815	Schematic Sensor Board IV	1 to 2	AE	13/01/1999
03031-0816	Printed Wiring Board Sensor Board IV, 3051C	1 to 3	AE	11/06/1998

Issued by:



**919 Londonderry Road Londonderry NSW 2753**  
 Phone: (02) 4724 4900 Fax: (02) 4724 4999



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 System of Australia and New Zealand,  
 Acc No. Z2221100AS

## STANDARDS AUSTRALIA

Standards Australia Quality Assurance Services Pty Limited A.B.N. 67 050 611 642

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex 1249X-5

### Drawings Relating to Variations Permitted by Issue 5 (Continued)

Document No.	Document Title	Sheets	Issue	Date
03031-0817	Circuit Card Assy Sensor Board IV Coated, 3051C	1 to 2	AH	13/01/1999
03031-0920	Schematic Sensor, 3051T	1 to 2	G	13/12/1995
03031-0921	Printed Wiring Board, Sensor Board 3051T	1 to 3	C	25/02/1997
03031-0923	Circuit Card Assy Sensor Board Coated, 3051T	1 of 1	AA	07/10/1997
03031-0926	Schematic Sensor, 3051TAC	1 to 3	AE	01/04/2001
03031-0927	Printed Wiring Board Sensor Taconite, 3051/2088	1 to 3	AF	25/05/2001
03031-0929	Circuit Card Assembly Sensor Taconite, Coated, 3051/2088	1 of 1	AJ	01/04/2001
03031-1017	Approval Drawing For Module Housing Ass'y, Intrinsically Safe	1 to 6	AH	30/11/2000
03031-1022	Model 3051C/L/P/H, 3001C/S Intrinsically Safe and Type N Configuration, SAA	1 to 10	AG	28/05/2003
03031-1026	SAA I.S. Index For 3051 and 3001	1 to 4	AB	26/04/1999
03031-2008	Schematic Diagram AP Sensor Brd	1 of 1	L	23/09/1996
03031-2009	Printed Wiring Board AP Sensor Card	1 to 4	K	23/09/1996
03031-2011	Circuit Card Assy AP Sensor Card Conformal Coated	1 of 1	AA	07/10/1997
03031-2041	3051T Sensor Board Standoff	1 of 1	AC	05/09/2000
08800-7609	Schematic Diagram, Vortex LCD Board	1 of 1	AA	15/10/1997
08800-7610	Printed Wiring Board, LCD 2 Line	1 to 3	AA	15/10/1997
08800-7611	CCA, Vortex, Shrouded, LCD Board, 2 Line	1 to 2	AE	06/07/2000

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HEREIN AND MUST BE  
HANDLED ACCORDINGLY

REVISIONS


REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AA	UPDATE ENTITY PARAMETERS	RTC1002910	J.D.J.	12/2/97
AB	ADD FIELDBUS AND PROFIBUS	RTC1006448	J.D.J.	4/26/99

SAA ENTITY CONCEPT APPROVALS

3051C	3001C
3051L	3001CL
3051P	3001CH
3051H	3001S
3051CA	
3051T	

OUTPUT CODE A (4-20 mA HART) SEE SHEETS 2  
OUTPUT CODE M (LOW POWER) SEE SHEETS 3  
OUTPUT CODE F / W (FIELDBUS, PROFIBUS) SEE SHEETS 4

TestSafe Australia  
This drawing forms part of certification documents under Certificate Number AUS Ex 1249X-5  
Amendment requires Supplementary Certification



THE ROSEMOUNT PRESSURE TRANSMITTERS LISTED ABOVE ARE INTRINSICALLY SAFE WHEN USED IN THE CURCUIT WITH SAA APPROVED BARRIERS WHICH MEET THE LIST ENTITY PERAMETERS.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM, THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURER'S FIELD WIRING INSTRUCTIONS AND THE APPLICABLE CIRCUIT DIAGRAM.

CAD Maintained, (MICROSTATION)

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES (mm). REMOVE ALL BURRS AND SHARP EDGES, MACHINE SURFACE FINISH 125  -TOLERANCE- .X ± .1 [2,5] .XX ± .02 [0,5] .XXX ± .010 [0,25]  FRACTIONS      ANGLES ± 1/32            ± 2'	CONTRACT NO.	<b>ROSEMOUNT® MEASUREMENT</b>		Rosemount Inc. 12001 Technology Drive Eden Prairie, MN 55344 USA
	DR. <b>Mike Dobe</b> 12/30/91	FISHER-ROSEMOUNT		
	CHK'D	TITLE		SAA I.S. INDEX FOR 3051 & 3001
	APP'D. <b>GLEN MONZO</b> 5/8/92	SIZE	FSCM NO	DWG NO.
APP'D. GOVT.	SCALE	N/A	WT.	SHEET 1 OF 4

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REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AB		RTC1006448		

### OUTPUT CODE "A" (4-20MA / HART) SAA ENTITY CONCEPT APPROVALS

THE ROSEMOUNT PRESSURE TRANSMITTERS LISTED BELOW ARE INTRINSICALLY SAFE WHEN USED IN THE CIRCUIT WITH SAA APPROVED BARRIERS WHICH MEET THE LISTED ENTITY PARAMETERS.

#### APPROVED TRANSMITTERS

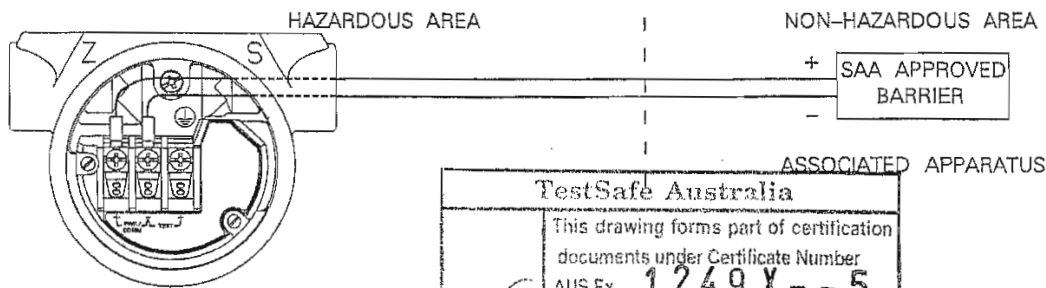
3051C	3051H	3001C	3001S
3051L	3051T	3001CL	
3051P	3051CA	3001CH	

ENTITY PARAMETER FOR Ex ia IIC T5 CLASS I, ZONE 0 PROTECTION:

APPARATUS PARAMETER	BARRIER PARAMETER
$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 0.9W$  $C_i = 0.01\mu F$ $L_i = 10\mu H$  FOR T1 OPTION ONLY $I_{max} = 160mA$ $L_i = 1.05mH$	$V_{oc}$ IS LESS THAN OR EQUAL TO 30V $I_{sc}$ IS LESS THAN OR EQUAL TO 200mA $\frac{V_{oc} * I_{sc}}{4}$ IS LESS THAN OR EQUAL TO 0.9W  $C_a$ IS GREATER THAN 0.01 MICROFARADS $L_a$ IS GREATER THAN 10 MICROHENRIES   $I_{sc}$ IS LESS THAN OR EQUAL TO 160mA $L_a$ IS GREATER THAN 1.05 MILLIHENRIES

THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURERS FIELD WIRING INSTRUCTIONS AND THE CIRCUIT DIAGRAM SHOWN BELOW.



Rosemount Inc.  
12001 Technology Drive  
Eden Prairie, MN 55344 USA

**TestSafe Australia**  
This drawing forms part of certification documents under Certificate Number AUS Ex **1249X--5**  
Amendments require Supplementary Certification

CAD Maintained, (MICROSTATION)

DR.	Mike Dobe	SIZE	FSCM NO	DWG NO.	03031-1026
ISSUED		A			
		SCALE	N/A	WT.	
				SHEET	2 OF 4

REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AB		RTC1006448		

**OUTPUT CODE "M" (LOW POWER)  
SAA ENTITY CONCEPT APPROVALS**

THE ROSEMOUNT LOW POWER CONFIGURED PRESSURE TRANSMITTERS LISTED BELOW ARE SAA APPROVED AS INTRINSICALLY SAFE WHEN USED IN THE CIRCUIT WITH SAA APPROVED BARRIERS WHICH MEET THE LISTED ENTITY PARAMETERS.

APPROVED TRANSMITTERS WITH LOW POWER CONFIGURATION

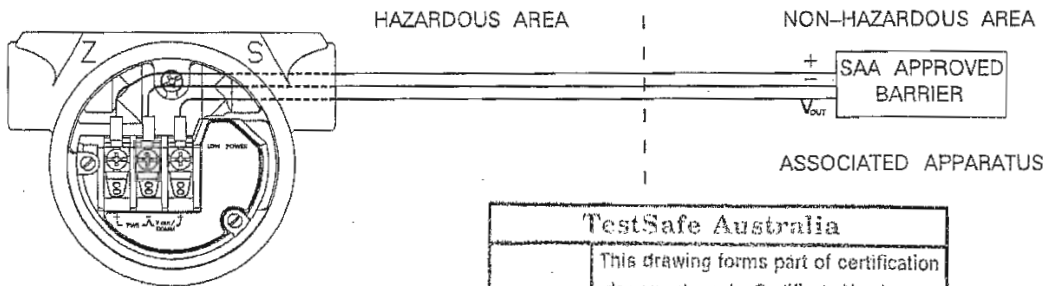
3051C            3051T  
 3051L           3051CA  
 3051P  
 3051H

ENTITY PARAMETER FOR Ex ia IIC T5 CLASS I, ZONE 0 PROTECTION:

APPARATUS PARAMETER	BARRIER PARAMETER
$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 0.9W$  $C_i = 0.042\mu F$ $L_i = 10\mu H$  FOR T1 OPTION ONLY $L_i = 0.75mH$	$V_{oc}$ IS LESS THAN OR EQUAL TO 30V $I_{sc}$ IS LESS THAN OR EQUAL TO 200mA $\frac{V_{oc} * I_{sc}}{4}$ IS LESS THAN OR EQUAL TO 0.9W  $C_a$ IS GREATER THAN 0.042 MICROFARADS $L_a$ IS GREATER THAN 10 MICROHENRIES  $L_a$ IS GREATER THAN 0.75 MILLIHENRIES

THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURERS FIELD WIRING INSTRUCTIONS AND THE CIRCUIT DIAGRAM SHOWN BELOW.



Rosemount Inc.  
 12001 Technology Drive  
 Eden Prairie, MN 55344 USA  
  
 DR. **Mike Dobe**  
 ISSUED

**TestSafe Australia**  
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 AUS Ex **1249X--5**  
 Amendments require Supplementary Certification  
 CAD Maintained (MICROSTATION)

SIZE	FSCM NO	DWG NO.
A		03031-1026
SCALE	N/A	WT.
		SHEET 3 OF 4

REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AB		RTC1006448		

**OUTPUT CODE F/W (FIELD BUS, PROFIBUS)  
SAA ENTITY CONCEPT APPROVALS**

THE ROSEMOUNT PRESSURE TRANSMITTERS LISTED BELOW ARE INTRINSICALLY SAFE WHEN USED IN THE CIRCUIT WITH SAA APPROVED BARRIERS WHICH MEET THE LISTED ENTITY PARAMETERS.

APPROVED TRANSMITTERS

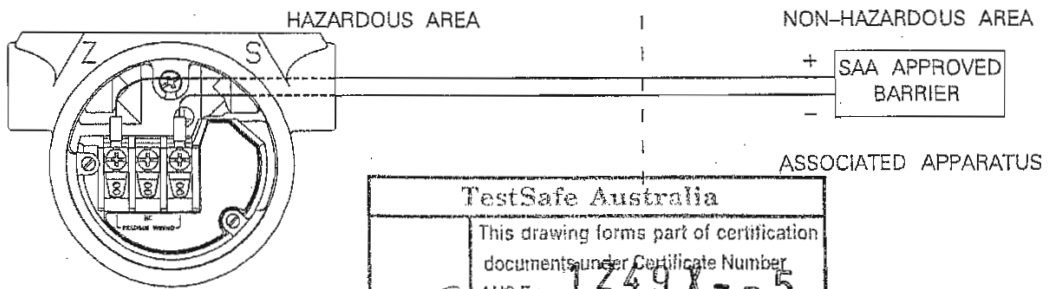
3051C	3051H	3001C	3001S
3051L	3051T	3001CL	
3051P	3051CA	3001CH	

ENTITY PARAMETER FOR Ex ia IIC T5 CLASS I, ZONE 0 PROTECTION:

APPARATUS PARAMETER	BARRIER PARAMETER
$V_{max} = 30V$ $I_{max} = 300mA$ $P_{max} = 1.3W$  $C_i = 0 \mu F$ $L_i = 0 \mu H$	$V_{oc}$ IS LESS THAN OR EQUAL TO 30V $I_{sc}$ IS LESS THAN OR EQUAL TO 300mA $\frac{V_{oc} * I_{sc}}{4}$ IS LESS THAN OR EQUAL TO 1.3W  $C_a$ IS GREATER THAN 0 MICROFARADS $L_a$ IS GREATER THAN 0 MICROHENRIES

THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURERS FIELD WIRING INSTRUCTIONS AND THE CIRCUIT DIAGRAM SHOWN BELOW.



Rosemount Inc.  
12001 Technology Drive  
Eden Prairie, MN 55344 USA

**TestSafe Australia**  
This drawing forms part of certification documents under Certificate Number AUS Ex **1249X--5**  
Amendments require Supplementary Certification

CAD Maintained, (MICROSTATION)

DR. **Mike Dobe**

SIZE **A**

DWG NO. **03031-1026**

ISSUED

SCALE **N/A** WT. \_\_\_\_\_

SHEET **4** OF **4**

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# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

### Certificate of Conformity

**Certificate No:** AUS Ex 02.3794X      **Issue 0:** Original Issue: 29/05/2002

**Date of Expiry:** 29/05/2012

**Certificate Holder:** Fisher Rosemount Pty Ltd  
471 Mountain Highway  
Bayswater Victoria 3153

**Electrical Equipment:** Model 3144P Smart Temperature Transmitter, with optional integral temperature assembly and/or indicator

**Type of Protection:** Ex ia  
Ex n

**Marking Code:** Ex n IIC IP66 T5 (Tamb= -60 °C to 75 °C), T6 (Tamb= -60 °C to 50 °C)  
Ex ia IIC IP66 T5 (Tamb= -60 °C to 75 °C), T6 (Tamb= -60 °C to 50 °C)  
AUS Ex 02.3794X

**Manufactured By:** Rosemount, Inc.  
Minneapolis, Mn  
U.S.A

Issued by:



919 Londonderry Road Londonderry NSW 2753

Phone: (02) 4724 4900

Fax: (02) 4724 4999

**STANDARDS AUSTRALIA**



Standards Australia Quality Assurance Services Pty Limited A.B.N. 67 050 611 612

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

*This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.*

*The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:*

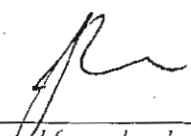
AS 2380.1:1989	Electrical equipment for explosive atmospheres – Part 1 – General requirements
AS 2380.9:1991	Electrical equipment for explosive atmospheres – Part 9 – Type of protection n – Non-sparking.
AS 1939:1990	Degrees of protection provided by enclosures for electrical equipment (IP Code)
AS/NZS 60079.0:2000	Electrical apparatus for explosive gas atmospheres – Part 0: General requirements (including Amendment 1)
AS/NZS 60079.11:2000	Electrical apparatus for explosive gas atmospheres – Part 11: Intrinsic safety 'i' (including Amendment 1)

*This certificate does not ensure compliance with electrical safety requirements and performance other than those included in the Standards listed above.*

*The equipment listed has successfully met the examination and test requirements as recorded in*

*Test Report No: TestSafe 22328*

*File Reference: TestSafe 2002/001006*

  
Signed for and on behalf of issuing authority

Director  
TestSafe Australia

Position

29/05/2002

Date of issue

Ex 02.3794X

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*This certificate is not transferable and remains the property of Standards Australia Quality Assurance Services and must be returned in the event of its being revoked or not renewed.*

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STANDARDS AUSTRALIA



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# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

### Schedule

Certificate No: AUS Ex 02.3794X

Issue: 0

Date of Issue: 29/05/2002

**Certified Equipment:** The Model 3144P Smart Temperature Transmitter is designed to convert the input from a temperature sensor into a 4-20 mA signal for measurement purposes. It contains printed circuit boards housed in a cylindrical metallic enclosure with a central partition that forms two compartments, each fitted with screw-on covers. The electronics compartment contains a transition printed circuit board, a main printed circuit board which is completely encapsulated, and an optional meter/LCD board. External connections are made via a terminal assembly in the terminal compartment. The terminal assembly consists of terminals mounted on a printed circuit board. The board itself is potted in a plastic enclosure. An encapsulated transient protection block may be fitted as an option in the terminal compartment. The metallic enclosure is polyurethane coated aluminum alloy, or optionally stainless steel.

#### Conditions of Certification:

##### 1 Conditions of Safe Use

The following conditions shall be adhered to during installation:

- 1.1 For the option using the lightning protection board, the apparatus should be bonded to earth with a copper conductor of 4 mm<sup>2</sup> or greater.
- 1.2 For the label plate with more than one type of marking on it, on completion of commissioning the apparatus, the irrelevant marking code(s) shall be permanently scribed off.
- 1.3 Input/Output parameters for non-sparking protection model: Ex n

Input Parameters	Power / Loop Terminals J2B (Pins "+", "-" & "T")
Maximum Input Voltage $U_n$	55 V
Maximum Input Power $P_n$	1.3 W

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STANDARDS AUSTRALIA



Standards Australia Quality Assurance Services Pty Limited A.B.N. 67 050 611 100



# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Ex 02.3794X

Conditions of Certification continued:

Addendum to Certificate No.....

1.4 Input/Output parameters for intrinsically safe model: Ex ia

I.S. Inputs/Outputs Parameters	Power / Loop Terminals J2B Pins "+", "-" and "T"	Sensor Terminals J1B Pins "1" to "5"
Maximum Input Voltage $U_i$	30 V	
Maximum Input Current $I_i$	300 mA	
Maximum Input Power $P_i$	1.0 W	
Maximum Internal Capacitance $C_i$	0.005 $\mu$ F	
Maximum Internal Inductance $L_i$	20 $\mu$ H	
Maximum Output Voltage $U_o$		13.6 V
Maximum Output Current $I_o$		100 mA
Maximum Output Power $P_o$		80 mW
Maximum External Capacitance $C_o$		0.66 $\mu$ F
Maximum External Inductance $L_o$		1.9 mH

### Drawing Schedule

Drawing No	Drawing Title	Sheets	Issue	Date
00644-4250	Transformer	1 of 1	AB	11/02/2000
00644-4253	Opto Coupler	1 to 5	AA	04/10/1999
03144-0140	Label, Nameplate	1 to 2	AD	21/01/2002
03144-0164	Label, Approvals for 3144P	1 to 2	AC	22/05/2002
03144-0308	Approval DWG. 3144P Hart/Analog SAA I.S. & Type n	1 to 3	AA	17/08/2001
3144-2004	Schematic Diagram Transition Board	1 of 1	B	10/04/1995
03144-1015	Filter Plate Assembly	1 to 3	AC	14/01/2002
03144-2005	PWB Drill Drawing Transition Board	1 to 2	D	03/05/1996
3144-2006	Circuit Card Assembly 3144 Transition Board Uncoated	1 of 1	B	05/1996
03144-2007	Schematic Diagram 3144 Terminal Block	1 of 1	B	10/04/1995
03144-2008	PWB Drill Drawing Terminal Block	1 to 2	E	04/11/1996
03144-2009	Circuit Card Assembly 3144 Terminal Block	1 of 1	AA	10/04/1997
03144-2017	Schematic, 3144/3244 Transient Protection Block, Hart	1 of 1	B	19/11/1996

Issued by:



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**STANDARDS AUSTRALIA**



Standards Australia Quality Assurance Services Pty Limited A.B.N. 67 050 611 647

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Ex 02.3794X

Addendum to Certificate No. ....

### Drawing Schedule continued:

Drawing No	Drawing Title	Sheets	Issue	Date
03144-2018	PWB, 3144/3244 Transient Protection Block, Hart	1 to 3	A	19/11/1996
03144-2019	CCA, Transient	1 to 2	AA	16/01/1998
03144-2108	Schematic, 3144P Electronics Board Fieldmount	1 to 3	AE	23/04/2002
03144-2109	Printed Wiring Board, Electronics Field Mount	1 to 3	AC	24/04/2002
03144-2110	CCA, Electronics Board Coated	1 to 2	AF	24/04/2002
3144-2111	Schematic, 3144 LCD Adapter Board	1 of 1	AA	21/06/01
3144-2112	PWB, Fabrication Drawing Interconnect Board	1 to 2	01	12/2000
3144-2113	CCA Interconnect Board	1 of 1	01	07/2001
03144-2354	Coated LCD/Meter Assembly 3144/3244	1 to 3	AE	19/07/2001
03144-2357	Schematic Diagram FB/ADV Meter/LCD Board	1 of 1	AA	29/04/1999
03144-2358	PWB FB/ADV Meter/LCD Board	1 to 3	AA	29/04/1999
03144-3040	Final Assy, Transient Protector	1 of 1	AB	16/06/1998

Issued by:



919 Londonderry Road Londonderry NSW 2753

Phone: (02) 4724 4900

Fax: (02) 4724 4999

STANDARDS AUSTRALIA



Standards Australia Quality Assurance Services Pty Limited A.B.N. 67 050 611 612

*Certification of*

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

## Certificate of Conformity

Certificate No:	AUS Ex 321	Issue 0:	Original Issue 20/4/1982
		Issue 5:	17/9/1998
Date of Expiry:	16/5/2004		
Certificate Holder:	Parker Hannifin (Australia) Pty Ltd 9 Carrington Road CASTLE HILL NSW 2154		
Electrical Equipment:	"LUCIFER" Explosion Proof Coil/Housing Assemblies		
Type of Protection:	Ex m IIC T* IP65/IP67 Class I Zone 1 Ex me IIC T* IP65/IP67 Class I Zone DIP T* IP65/IP67 Class II		
Marking Code:	Ex m IIC T* IP65/IP67 Ex me IIC T* IP65/IP67 DIP T* IP65/IP67 AUS Ex 321 (* see schedule)		
Manufactured By	Parker Lucifer		

Issued by:



*Londonderry Occupational Safety Centre*

**919 Londonderry Road LONDONDERRY NSW 2753**

Phone: (02) 4724 4900

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### STANDARDS AUSTRALIA

## Certification of

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

Ex 321-5

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.

The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:

- AS 2380.1-1989 Electrical equipment for explosive atmospheres - Explosion-protection techniques - General requirements
- AS 2380.6-1988 Electrical equipment for explosive atmospheres - Explosion-protection techniques - Increased safety 'e'
- AS 2431-1981 Electrical equipment for explosive atmospheres - Encapsulated apparatus - Type of protection 'm'
- AS 2236-1994 Electrical equipment for explosive atmospheres - Dust-excluding Ignition-proof (DIP) enclosures
- AS 1939-1990 Degrees of protection provided by enclosures of electrical equipment (IP Code)

The equipment listed has successfully met the examination and test requirements as recorded in

Test Report No: LOSC 10601

File Reference: LOSC 92/4654

*K. J. Zink*

Signed for and on behalf of issuing authority

*Continental Approvals + Certification*

Position

17/9/1998

Date of issue

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*Londonderry Occupational Safety Centre*

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## Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

## Schedule

Certificate No: AUS Ex 321                      Issue: 5                      Date of Issue: 17/9/1998

Certified Equipment: A range of "Lucifer" Explosion Proof Coil/Housing Assemblies.

### Schedule of Variations

#### Variations Permitted by Issue 3:

Inclusion of additional solenoid coils, designated Series 49 Models 492070.03, 492190.03 and 492310.03, to the range of certified equipment. The additional solenoid coils are classified as shown in Table 1 and are rated for operation at up to and including 440 Volts 50/60Hz ac or 120 Volts dc.

**Table 1: Classification of Series 49 Solenoids**

Model	IP Classification	Temperature Classification	
		@ 40°C ambient	@ 75°C ambient
492070.03	IP65/IP67	T5	T4
492190.03	IP65	T4	T3
492310.03	IP65	T5	T4

**Drawings Relating to Variations Permitted by Issue 3**

Drawing No	Drawing Title	Issue	Date
DY 492310.03	Electrical Part Ex me	2	4/2/94
DY 492190.03	Electrical Part Ex me	1	4/2/94
CY 492070.03	Electrical Part Ex me	original	24/3/93
CZ 6982	Characteristics	2	12/12/91
CZ 1203	Characteristics	0	12/12/91

Issued by:



*Londonderry Occupational Safety Centre*

919 Londonderry Road LONDONDERRY NSW 2753

Phone: (02) 4724 4900

Fax: (02) 4724 4999



## STANDARDS AUSTRALIA

*Certification of***EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex 321-5

## Drawings Relating to Variations Permitted by Issue 3 (continued)

Drawing No:	Drawing Title	Issue	Date
BZ 1222	Comparative Table	original	1/4/93
BZ 1202	Characteristics for Fuses and Diodes	1	17/3/92
BY 492165	Bobin EEx me	1	24/11/92
BY 492065	Bobin EEx m	1	27/11/91
BY 492063	Circuit Electronics	1	27/11/91
BY 492061	Circuit Electronics	1	27/11/91
BY 481000E	Coil 8W	original	20/2/91
482696	Label Detail	5	3/3/94
482697	Label Detail	6	3/3/94

**Variations Permitted by Issue 4:**

Certificate of Conformity re-issued to correct typographical errors.

**Variations Permitted by Issue 5:**

A change to the name and address of the Certificate Holder.

Issued by:

*Londonderry Occupational Safety Centre*

919 Londonderry Road LONDONDERRY NSW 2753

Phone: (02) 4724 4900

Fax: (02) 4724 4999

**STANDARDS AUSTRALIA**

# Standards Association of Australia

INCORPORATED BY ROYAL CHARTER



HEAD OFFICE: STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

Mail: P.O. BOX 458,  
NORTH SYDNEY, N.S.W. 2060  
Telephone: 929 6022  
Telegrams: Austandard North Sydney  
Telex: 26514 GDV/sc

Your reference:

Our reference: P/3:83193

11th April 1984

Sperry Vickers  
Automation & Pneumatics  
19 Pakington Street  
ST KILDA VIC. 3182



Attention: Mr A G Ainslie

Dear Sir,

Re: SUPPLEMENTARY CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

We have pleasure in forwarding the enclosed supplementary certificate of compliance:

Certificate No ~~Ex 321~~

Date of Issue 1984 04 11

We would remind you of the undertaking that you have entered into in signing the application; that is not to make any modifications whatsoever to the equipment before applying to and obtaining from the Association a supplementary certificate covering such modification. Further, the Association reserves the right to cancel any certificate issued to you if in the opinion of SAA Committee P/3, the relevant standard(s) has been altered to a degree that the equipment is no longer considered suitable for installation in the hazardous location, or if the certificate holder has breached any of the terms or conditions under which the certificate was issued.

Yours faithfully,

*Gayle Valentine*

Gayle Valentine  
Executive Officer  
COMMITTEE P/3 - CERTIFICATION OF ELECTRICAL EQUIPMENT FOR HAZARDOUS LOCATIONS



# STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## SUPPLEMENTARY CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 321-1 (Page 1 of 3)

This certifies that the equipment described hereunder has been examined and tested in accordance with the requirements of the Australian standard(s) specified herein, and such equipment has been found to comply with these requirements.

This certificate may be withdrawn at any time if in the opinion of SAA Committee P/3, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been altered or revised to a degree that the equipment is no longer considered suitable for installation in the hazardous location stated, or if the certificate holder has breached any of the terms or conditions under which this certificate was issued.

<p>Description of Modification <u>'Lucifer' Explosion Proof Coil/Housing Assemblies</u> This supplementary certificate relates to the range of assemblies as detailed in Schedule 1, and which add to the range of equipment already certified under SAA Certificate No. Ex 321.</p> <p>Drawing No(s) CA 48.8210.03E Modification 3, CA 488890.03E Modification 3, CY 482697 Modification 2, CY 48 2060.03E Modification 2, CY 483430 Modification 1, BZ 1028 page 1 and BZ 1029 page 2.</p>	<p>Hazardous Location Class I Zone 1</p> <p>Type of Protection Refer Schedule 2</p> <p>Certificate Holder Sperry Vickers Automation and Pneumatics 19 Pakington Street ST KILDA VIC. 3182</p> <p>Manufacturer Sperry Vickers Automation and Pneumatics Lucifer Division P.O. Box 465 Geneva Switzerland</p> <p>Test Report No(s) SCC TR No: 58892</p> <p>Australian Standard(s) AS 2431-1981 AS 1593-1982</p> <p>SAA File Reference P/3:83193/M115</p> <p>Effective Date 1984 04 10</p> <p>Date of Issue 1984 04 11</p>
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.....  
Director—Administration & Approvals  
Standards Association of Australia

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Continuation of Certificate No: Ex 321-1 (Page 2 of 3)

SCHEDULE 1      Description of Modification (Continued)  
'Lucifer' Explosion-Proof Coil/Housing Assemblies

<u>Assembly Type</u>	<u>Voltage</u> V	<u>Frequency</u> Hz	<u>Power</u> W
48.2060.03	24 a.c.	50 and 60	6
	110 a.c.	50 and 60	6
	220 a.c.	50 and 60	6
	24 d.c.	-	6
	48 d.c.	-	6
48.8210.03	24 a.c.	50 and 60	11
	48 a.c.	50 and 60	11
	110 a.c.	50 and 60	11
	220 a.c.	50 and 60	11
	24 d.c.	-	9
	48 d.c.	-	9
	60 d.c.	-	9
	110 d.c.	-	9
220 d.c.	-	9	
48.5900.03	24 a.c.	50 and 60	8
	48 a.c.	50 and 60	8
	110 a.c.	50 and 60	8
	220 a.c.	50 and 60	8
	12 d.c.	-	8
	24 d.c.	-	8
	48 d.c.	-	8
	60 d.c.	-	8
	110 d.c.	-	8
48.8880.03	24 a.c.	50 and 60	5
	110 a.c.	50 and 60	5
	220 a.c.	50 and 60	5
	24 d.c.	-	5
	48 d.c.	-	5
48.8890.03	24 a.c.	50 and 60	6
	110 a.c.	50 and 60	6
	220 a.c.	50 and 60	6
	24 d.c.	-	6
	48 d.c.	-	6

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*J. Murray*  
 Director—Administration & Approvals  
 Standards Association of Australia

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Continuation of Certificate No: Ex 321-1 (Page 3 of 3)

SCHEDULE 1 Description of Modification (Continued)

NOTES:

1. All assemblies are totally encapsulated with "Scotchcase 241" epoxy resin enclosed in a plastic case.
2. Assemblies Type 48.5900.03 and 48.8880.03 are provided with a three-core flexible cord.
3. Assemblies Type 48.2060.03, 48.8210.03 and 48.8890.03 are provided with a terminal enclosure.

SCHEDULE 2 Type of Protection (Continued)

Types 48.2060.03, 48.8890.03	: Ex m e IIC T6
Type 48.8210.03	: Ex m e IIC T5
Type 48.8880.03	: Ex m IIC T6
Type 48.5900.03	: Ex m IIC T5

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Director—Administration & Approvals  
Standards Association of Australia

*Certification of*

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

# Certificate of Conformity

Certificate No: AUJS Ex 3039      Issue 0: Original Issue 8/4/1994  
Issue 1: 18/10/1996

Date of Expiry: 8/4/2004

Certificate Holder: Thermon Australia Pty Ltd  
30 London Drive  
BAYSWATER Victoria 3153

Electrical Equipment: Flameproof Thermostat

Type of Protection and Marking Code: Ex d IIC T6 IP66  
AUS Ex 3039

Manufactured By: Thermon Australia Pty Ltd  
30 London Drive  
BAYSWATER Victoria 3153

Issued by:



*Londonderry Occupational Safety Centre*

132 Londonderry Road LONDONDERRY NSW 2753

Phone: (047) 244 900 Fax: (047) 244 999

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

### Schedule

Certificate No: AUS Ex 3039 Issue: 1 Date of Issue: 18/10/1996

Certified Equipment: A Flameproof Thermostat consisting of a control thermostat housed in a separately certified flameproof enclosure with the capillary tube passing through an encapsulated gland assembly. The gland assembly also supports and restrains a length of flexible metal conduit which gives mechanical protection to the capillary tube.

#### Drawings Relating to Original Issue

Drawing No	Drawing Title	Issue	Date (dd/mm/yy)
R1177	Flameproof Thermostat	original	8/12/91
R1178	Flameproof Thermostat - Internal Layout	original	31/3/92
Form 1004	Marking Plate	4	24/2/94

#### Schedule of Variations

##### Variation 1:

1. The inclusion of Group IIC to the Type of Protection and a change in the IP rating to IP66.
2. A revision to the label drawing to correct the marking required to be shown.

#### Drawing Relating to Variation 1

Drawing No	Drawing Title	Issue	Date (dd/mm/yy)
R1177-1	Flameproof Thermostat	1	24/1/96
R1178-1	Flameproof Thermostat - Internal Layout	1	24/1/96
1045	Class I Zone 1 Thermostat Label Details - Hydrogen and Acetylene Rating for IIC Areas	3	24/1/96
Form 1004	Marking Plate	4	17/10/96

Issued by:



*Londonderry Occupational Safety Centre*

132 Londonderry Road LONDONDERRY NSW 2753

Phone: (047) 244 900 Fax: (047) 244 999

STANDARDS AUSTRALIA

# Certification of

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Ex 3039-1

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.

The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:

- AS 2380.1-1989 Electrical Equipment for Explosive Atmospheres - Explosion-protection Techniques - General Requirements
- AS 2380.2-1991 Electrical Equipment for Explosive Atmospheres - Explosion-protection Techniques - Flameproof Enclosure 'd' (Incorporating Amendment 1)
- AS 1939-1990 Degrees of Protection Provided by Enclosures of Electrical Equipment (IP Code)

The equipment listed has successfully met the examination and test requirements as recorded in

Test Report No: LOSC 7378 and 14189

File Reference: LOSC 92/4342

*K. J. Fiske*

Signed for and on behalf of issuing authority

*Coordinator Approvals - Certificate*

Position

18/10/1996

Date of issue

This certificate and schedule may not be reproduced except in full.

This certificate is not transferable and remains the property of Standards Australia Quality Assurance Services and must be returned in the event of its being revoked or not renewed.

Issued by:



*Londonderry Occupational Safety Centre*

132 Londonderry Road LONDONDERRY NSW 2753

Phone: (047) 244 900 Fax: (047) 244 999

STANDARDS AUSTRALIA

## GUBA Junction Boxes

Class 1 Zone 1  
Group IIC Gases  
Exd Flameproof IP66

### Application:

GUBA series junction boxes are used in threaded rigid conduit and cable systems in hazardous areas

- To function as a splice box, pull box or equipment device enclosure
- Indoors and outdoors

### Features:

- Threaded construction throughout permits use in hazardous areas
- Wide variety of conduit entry arrangements
- Covers are sealed with "O" ring gasket

### Standard Materials:

- Bodies and covers - Cast copper-free aluminium

### Standard Finishes:

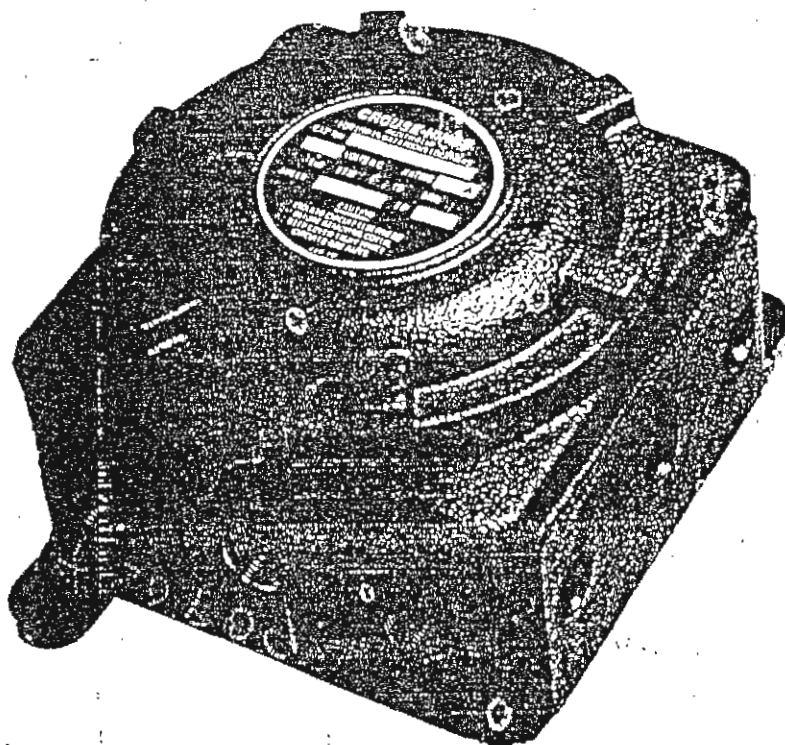
- Natural

### Options:

- Cast iron. Bodies and covers....Add suffix WOD
- Corrosion Resistant Grey Polyurethane finish - consult factory
- Drilling and tapping to suit application eg. metric and imperial conduit, NPT and BSP pipe threads. (Metric threads standard)- Information on request.
- Various cover types.
- Terminals can be supplied with junction boxes to specification
- Glass windows can be added
- Dome covers can be added

### Compliances:

- Certificate of Compliance No. Ex 262 for GUBA01, GUBA1440, GUBA1100, GUBA1103 to AS2480
- No. Ex 324 for GUBA02, GUBA726 to AS2480
- IP66 to AS1939



### Ordering Information:

1. Refer to Table 1 (next page) to determine whether a GUBA01 or a GUBA02 is required.
2. Specify exact number, type, size and location of all entries, taking care not to exceed the maximum number of entries given in Table 1.
3. Order the type of cover required separately - see section on Threaded Covers for GUBA Junction Boxes (page 3-3).

#### Examples:

1. GUBA01 with:
  - 2x25mm entries in top
  - 2x25mm entries in bottom
  - 2x32mm entries in left side
  - 1x32mm entry in right side
  - 1x50mm entry in back
2. GUBA02 with:
  - 2x1 1/4" BSP entries in top
  - 2x1 1/4" BSP entries in bottom
  - 1x2" Imp entry in left side
  - 1x50mm entry in right side
  - 4x20mm entries in back



# STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 262

This certifies that the equipment described hereunder has been examined and tested in accordance with the requirements of the Australian standard(s) specified herein, and such equipment has been found to comply with these requirements.

This certificate may be withdrawn at any time if in the opinion of SAA Committee EL/29, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been altered or revised to a degree that the equipment is no longer considered suitable for installation in the hazardous location stated, or if the certificate holder has breached any of the terms or conditions under which this certificate was issued.

<b>Description of Equipment</b>  <u>Junction Boxes</u>  Cat. Nos: GUBA01; GUBA1440; GUBA1100 and GUBA1103	<b>Hazardous Location</b>  Class I Zone 1
<b>Drawing No(s)</b>  22-148-GA1 Sheet 1; 22-148-GA1 Sheet 2 - Issue 1	<b>Type of Protection</b>  Ex d IIB T6 IP65
<b>Certification Conditions</b>	<b>Certificate Holder</b> Crouse-Hinds Australia Pty Ltd., 31, Moxon Road, PUNCHBOWL, NSW 2196
<b>Remarks</b>	<b>Manufacturer</b> Crouse-Hinds Australia Pty Ltd 31, Moxon Road, PUNCHBOWL, N.S.W 2196
	<b>Test Report No(s)</b> Londonderry Centre TR No. LFP 580
	<b>Australian Standard(s)</b> AS C98-1970 and AS 1939-1976
	<b>SAA File Reference</b> EL/29:80196/M97
	<b>Effective Date</b> 1981- 07-14
	<b>Date of Issue</b> 1981-08-13

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Director—Administration & Approvals  
Standards Association of Australia

# STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## SUPPLEMENTARY CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 262-1

This certifies that the equipment described hereunder has been examined and tested in accordance with the requirements of the Australian standard(s) specified herein, and such equipment has been found to comply with these requirements.

This certificate may be withdrawn at any time if in the opinion of SAA Committee P/3, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been altered or revised to a degree that the equipment is no longer considered suitable for installation in the hazardous location stated, or if the certificate holder has breached any of the terms or conditions under which this certificate was issued.

<p>Description of Modification</p> <p><u>Junction Box</u></p> <p>This supplementary certificate relates to deletion of wire guards over the glass windows of the junction boxes certified under SAA Certificate No Ex 262</p> <p><u>Drawing No(s)</u></p> <p>22-148-GA1 Sheet 1 issue 2 and 22-148-GA1 Sheet 2 issue 2</p>	<p>Hazardous Location</p> <p>Class I Zone 1</p> <p>Type of Protection</p> <p>Ex d IIB T6 IP65</p> <p>Certificate Holder</p> <p>Crouse-Hinds Aust Pty Ltd 31 Moxon Road PUNCHBOWL NSW 2196</p> <p>Manufacturer</p> <p>Crouse-Hinds Aust Pty Ltd 31 Moxon Road PUNCHBOWL NSW 2196</p> <p>Test Report No(s)</p> <p>Londonderry Centre Letter of 9 July 1982</p> <p>Australian Standard(s)</p> <p>AS 2480-1981</p> <p>SAA File Reference</p> <p>P/3: 82123/M105</p> <p>Effective Date</p> <p>1982.08.19</p> <p>Date of Issue</p> <p>1982.10.06</p>
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## SUPPLEMENTARY CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 262-2

This certifies that the equipment described hereunder has been examined and tested in accordance with the requirements of the Australian standard(s) specified herein, and such equipment has been found to comply with these requirements.

This certificate may be withdrawn at any time if in the opinion of SAA Committee P/3, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been altered or revised to a degree that the equipment is no longer considered suitable for installation in the hazardous location stated, or if the certificate holder has breached any of the terms or conditions under which this certificate was issued.

<p><b>Description of Modification</b></p> <p><u>'Crouse-Hinds' Junction Boxes</u></p> <p>This supplementary certificate relates to the extension of the equipment already certified under SAA Certificate Nos. Ex 262 and Ex 262-1 to include the following catalogue numbers:</p> <p>GUBA01WOD; GUBA1140WOD; GUBA1100WOD and GUBA1103WOD.</p> <p>NOTE: The suffix 'WOD' designates the use of cast iron for the base, low cover or window assembly</p> <p><u>Drawing No(s)</u></p> <p>22-148-GA1 Sheets 1 &amp; 2, Issue 3</p>	<p><b>Hazardous Location</b></p> <p>Class I Zone 1</p> <p><b>Type of Protection</b></p> <p>Ex d IIB T6</p> <p><b>Certificate Holder</b></p> <p>Crouse-Hinds (Aust) Pty Ltd 31 Moxon Road Punchbowl NSW 2196</p> <p><b>Manufacturer</b></p> <p>Crouse-Hinds (Aust) Pty Ltd 31 Moxon Road Punchbowl NSW 2196</p> <p><b>Test Report No(s)</b></p> <p>Londonderry Centre TR No: 1816</p> <p><b>Australian Standard(s)</b></p> <p>AS 2480-1981</p> <p><b>SAA File Reference</b></p> <p>P/3: 83214/M117</p> <p><b>Effective Date</b></p> <p>1984-05-23</p> <p><b>Date of Issue</b></p> <p>1984-06-01</p>
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Incorporated by Royal Charter

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## SUPPLEMENTARY CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 262-3

This certifies that the equipment described hereunder has been examined and tested in accordance with the requirements of the Australian standard(s) specified herein, and such equipment has been found to comply with these requirements.

This certificate may be withdrawn at any time if in the opinion of SAA Committee P/3, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been altered or revised to a degree that the equipment is no longer considered suitable for installation in the hazardous location stated, or if the certificate holder has breached any of the terms or conditions under which this certificate was issued.

<p>Description of Modification</p> <p><u>'Crouse-Hinds' GUBA Series Junction Boxes</u></p> <p>This Supplementary Certificate relates to the addition of grade 316 stainless steel as a material option to equipment previously certified under SAA Certificates Ex 262, Ex 262-1 and Ex 262-2</p> <p><u>Drawing No(s)</u></p> <p>22-148-GA1, Sheet 1 &amp; 2, Issue 5</p>	<p>Hazardous Location</p> <p>Class I Zone 1</p> <p>Type of Protection</p> <p>Ex d IIB T6</p> <p>Certificate Holder</p> <p>Crouse Hinds (Australia) Pty Ltd 31 Moxon Road <u>PUNCHBOWL NSW 2196</u></p> <p>Manufacturer</p> <p>Crouse Hinds (Australia) Pty Ltd 31 Moxon Road <u>PUNCHBOWL NSW 2196</u></p> <p>Test Report No(s)</p> <p>N/A</p> <p>Australian Standard(s)</p> <p>AS 2480-1981</p> <p>SAA File Reference</p> <p>P/3: 86027/M128</p> <p>Effective Date</p> <p>1986-02-18</p> <p>Date of Issue</p> <p>1986-03-24</p>
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Standards Association of Australia

*Certification of*

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

**Certificate of Conformity**

Certificate No.: **Ex 262X** Issue 0: **31 August 1981** Original Issue  
1: **6 October 1982**  
2: **1 June 1984**  
3: **24 March 1986**  
4: **02 June 1994** Revalidation and extension  
of range

Date of expiry: **02 June 2004**

Certificate Holder: **Crouse-Hinds Australia Pty Ltd**  
391 Park Road,  
Regents Park NSW 2143

Electrical Equipment: **Crouse-Hinds GUBA01 and GUBA02 Series Junction Boxes  
and Enclosures**  
Cat Numbers GUBA1103, GUBA1440, GUBA1100, GUBA02, GUBA266

Type of Protection and Marking Code: **Ex d IIC T6 IP66 Class 1 Zone 1  
AUS Ex 262X**

Manufactured by: **Crouse-Hinds Australia Pty Ltd**

Issued by:



**Redbank Testing and Certification Centre**

2 Smith Street, REDBANK, QLD 4301, Australia  
Postal Address: PO Box 467, GOODNA, QLD 4300, Australia  
Phone: (07) 810 6370 Fax: (617) 810 6363



Quality System Certified to  
AS3902/ISO9002  
Registration No 603j

**STANDARDS AUSTRALIA**

## Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

*This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.*

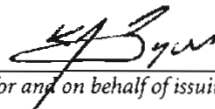
*The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:*

- AS 2380.1 - 1989**      **Electrical equipment for explosive atmospheres - Explosion-protection techniques Part 1: General requirements**
- AS 2380.2 - 1991**      **Electrical equipment for explosive atmospheres - Explosion-protection techniques Part 2: Flameproof enclosure d**  
(Including Amdt No 1 - July 1992)
- AS 1939 - 1990**      **Degrees of protection provided by enclosures for electrical equipment (IP Code)**

*The equipment listed has successfully met the examination and test requirements as recorded in*

Test Report No: **NE93/0245**

File Reference: **30/001/0138**



Signed for and on behalf of issuing authority

**Manager - Redbank Testing and Certification Centre**  
Position

**02 June 1994**

Date of issue

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Certificate No.: **Ex 262X**

Issue: **4**

Issued by:



### Redbank Testing and Certification Centre

2 Smith Street, REDBANK, QLD 4301, Australia  
Postal Address: PO Box 467, GOODNA, QLD 4300, Australia  
Phone: (07) 810 6370      Fax: (617) 810 6363



Quality System Certified to  
AS3902/ISO9002  
Registration No 6039

## STANDARDS AUSTRALIA



Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642

Page 2 of ..... 4

# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

## Schedule

Equipment:

This Certificate of Conformity covers the revalidation of Crouse-Hinds GUBA01 and GUBA02 Series Junction Boxes and enclosures; Cat Numbers GUBA1103, GUBA1440, GUBA1100, GUBA01, GUBA266 which were previously certified by Certificates Ex 262, Ex 262-1, Ex 262-2, Ex 262-3 and Ex 324 and Ex 324-1.

The GUBA junction box has a common base for each series with various covers as listed below:

CATALOGUE No.	PART NOS.	
	BASE	COVER
GUBA1103 Meter Housing Enclosure	GUBA01	GUBA0110
GUBA1440 Medium Cover Enclosure	GUBA01	GUBA714
GUBA1100 Deep Cover Enclosure	GUBA01	GUBA7110
GUBA02 Shallow Lid Enclosure	GUBA02	GUBA0102
GUBA266 Deep Lid Enclosure	GUBA02	GUBA726

The following drawings are included in the documentation for this Certificate of Conformity:

DRAWING NUMBER	DRAWING TITLE	REVISION NUMBER	DRAWN/ REVISION DATE
22-148-GA027	FLAMEPROOF AND WEATHERPROOF INSTRUMENT ENCLOSURE CATALOGUE NO. GUBA1103	1	21-01-94
22-148-GA1 SHT 1 OF 2	FLAMEPROOF AND WEATHERPROOF ITEM 1 JUNCTION BOX	7	20-01-94
22-148-GA1 SHT 2 OF 2	FLAMEPROOF AND WEATHERPROOF ITEM 2 METER HOUSING CAT.No.GUBA1103 ITEM 3 JUNCTION BOX DOMED COVER CAT.No. GUBA1440/1100	7	20-01-94
22-148-GA2	FLAMEPROOF AND WEATHERPROOF JUNCTION BOX	6	20-01-94

Certificate No.: Ex 262X

Issue: 4

Date of Issue: 02 June 1994

Issued by:



### Redbank Testing and Certification Centre

2 Smith Street, REDBANK, QLD 4301, Australia  
Postal Address: PO Box 467, GOODNA, QLD 4300, Australia  
Phone: (07) 810 6370 Fax: (617) 810 6363



Quality System Certified to  
AS3902/ISO9002  
Registration No 6039

## STANDARDS AUSTRALIA



Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642



# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No.....: Ex 262X

Issue: 4

Date of Issue: 02 June 1994

## Conditions of Certification:

The maximum permissible power dissipation for each type of enclosure for T6 temperature ratings is:

Enclosure Type	Maximum Permissible Power Dissipation (W)
GUBA01 BASE WITH COVER PART NO. GUBA 714	50W
GUBA01 BASE WITH COVER PART NO. GUBA 7110	60W
GUBA01 BASE WITH COVER PART NO. GUBA 0110	50W
GUBA02 BASE WITH COVER PART NO. GUBA 726	115W
GUBA02 BASE WITH COVER PART NO. GUBA 0102	80W

Issued by:



## Redbank Testing and Certification Centre

2 Smith Street, REDBANK, QLD 4301, Australia  
Postal Address: PO Box 467, GOODNA, QLD 4300, Australia  
Phone: (07) 810 6370 Fax: (617) 810 6363



Quality System Certified to  
AS3902/ISO9002  
Registration No 6039

# STANDARDS AUSTRALIA



Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642

4 4  
Page ..... of .....

Certification of

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

**Certificate of Conformity**

**Certificate No.:** Ex 614X     *Issue:* 0     *Date of Issue:* 12 February 1985 (Original Issue)  
   *Issue:* 4     *Date of Issue:* 12 October 1998

**Date of Expiry:** 17 June 2004

**Certificate Holder:** **Weidmuller Pty Ltd**  
43 Huntingwood Drive  
HUNTINGWOOD NSW 2148

**Electrical Equipment:** **Die-Cast Aluminium Alloy Terminal Enclosures**  
**K1, K2, K3, K4, K5, K6 and K7**

**Type of Protection and Marking Code:** Ex e IIC T6 IP65     Class 1 Zone 1 (Enclosures K1, K2 and K3)  
Ex e IIC T6 IP66/67     Class 1 Zone 1 (Enclosures K4, K5, K6 and K7)  
AUS Ex 614X

**Manufactured by:** **Weidmuller Pty Ltd**

Issued by:

**Quality Assurance Services** 

A subsidiary of Standards Australia

1 The Crescent Homebush NSW 2140 Australia     Mail: Looked Bag 2032 Strathfield NSW 2135 Australia  
Telephone (02) 9746 4900 Fax (02) 9746 8460

**STANDARDS AUSTRALIA**

 Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642

# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

*This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.*

*The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:*

- |                |   |
|----------------|---|
| AS 2380.1—1989 | Electrical equipment for explosive atmospheres—Explosion-protection techniques Part 1: General requirements |
| AS 2380.6—1988 | Electrical equipment for explosive atmospheres—Explosion-protection techniques Part 6: Increased Safety     |
| AS 1939—1990   | Degrees of protection provided by enclosures of electrical equipment (IP Code)                              |

*The equipment listed has successfully met the examination and test requirements as recorded in*

Test Report No: **NE94/0018**  
File Reference: **30/001/0169**

  
Signed for and on behalf of issuing authority

**General Manager Certification**

Position

**12 October 1998**

Date of issue

**Certificate No: Ex 614X Issue: 4**

*This certificate and schedule may not be reproduced except in full.*

*This certificate is not transferable and remains the property of Standards Australia Quality Assurance Services and must be returned in the event of its being revoked or not renewed.*

Issued by:

**Quality Assurance Services** 

A subsidiary of Standards Australia  
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**STANDARDS AUSTRALIA**



Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642

# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

## Schedule

*Equipment:*

*Certificate No:* Ex 614X *Issue:* 4

K-range of die-cast aluminium alloy terminal enclosures, fitted with SAA Ex e certified terminals. The degree of protection for each of the models in the range is in accordance with the following:

Enclosure Model	IP Rating
K1	IP65
K2	IP65
K3	IP65
K4	IP66/67
K5	IP66/67
K6	IP66/67
K7	IP66/67

*Issued by:*

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Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642

Page 3 of .....

# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No..... Ex 614X

Issue: 4

The following drawings are included in the documentation for this Certificate of Conformity:

DRAWING NUMBER	DRAWING TITLE	REVISION NUMBER	DRAWN/REVISED DATE
11026	K4-K7 Enclosure General Arrangement SAA Ex e Certification	C	27/5/94
11090	K1-K3 SAA Ex e Enclosure General Arrangement	B	27/5/94
11031	K Range Enclosures. SAA Marking Detail	D	8/6/94
11032	K Boxes SAA Certification Terminal Content	B	13/04/94

## Conditions of Certification:

1. When cable glands or conduit enter the enclosure a locknut shall be fitted internally.
2. The total sum of the maximum permitted currents for each of the individual terminals, including each terminal, fitted in a particular arrangement within any of the K1 to K7 enclosures must not exceed the values listed on Drawing Number 11032 Issue B.

## Variation to Issue 3

Change of Certificate address

Issued by:

## Quality Assurance Services

A subsidiary of Standards Australia

1 The Crescent Homebush NSW 2140 Australia Mail: Locked Bag 2032 Strathfield NSW 2135 Australia  
Telephone (02) 9746 4900 Fax (02) 9746 8460

## STANDARDS AUSTRALIA



Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642



**LCIE**

**1 ATTESTATION D'EXAMEN CE DE TYPE**

**2 Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles  
Directive 94/9/CE**

**3 Numéro de l'attestation CE de type  
LCIE 01 ATEX 6007 X**

**4 Appareil ou système de protection**  
Analyseur d'humidités  
Type : 3050 OLV

**5 Demandeur :** AMETEK  
Process & Analytics  
Instruments Division

**6 Adresse :** 455 Corporate Blvd  
Newark, DE 19702 USA

**7 Cet appareil ou système de protection et ses variantes éventuelles acceptées est décrit dans l'annexe de la présente attestation et dans les documents descriptifs cités en annexe.**

**8 Le LCIE, organisme notifié sous la référence 0081 conformément à l'article 9 de la directive 94/9/CE du Parlement européen et du Conseil du 23 mars 1994, certifie que cet appareil ou système de protection est conforme aux exigences essentielles en ce qui concerne la sécurité et la santé pour la conception et la construction d'appareils et de systèmes de protection destinés à être utilisés en atmosphères explosibles, données dans l'annexe II de la directive. Les vérifications et épreuves figurent dans notre rapport confidentiel N° 28 543 010.**

**9 Le respect des exigences essentielles en ce qui concerne la sécurité et la santé est assuré par la conformité aux documents suivants :**  
- EN 50014 (1997)  
- EN 50018 (1994)  
- EN 50019 (2000)

**10 Le signe X lorsqu'il est placé à la suite du numéro de l'attestation, indique que ce matériel ou système de protection est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe de la présente attestation.**

**11 La présente attestation d'examen CE de type porte uniquement sur la conception, l'examen et l'essai de l'équipement ou du système de protection spécifié conformément à la directive 94/9/CE.  
Toutes autres exigences de la Directive sont applicables au procédé de fabrication et de livraison de cet équipement ou système de protection. Ces derniers ne sont pas couverts par la présente attestation.**

**12 Le marquage de l'appareil ou du système de protection devra comporter, entre autres indications utiles, les mentions suivantes :**



EEx d IIC T6 ou EEx de IIC T6

**1 EC TYPE EXAMINATION CERTIFICATE**

**2 Equipment or Protective System Intended for use in Potentially explosive atmospheres  
Directive 94/9/CE**

**3 EC type Examination Certificate number  
LCIE 01 ATEX 6007 X**

**4 Equipment or Protective system**  
Moisture Analyzer  
Type : 3050 OLV

**5 Applicant :** AMETEK  
Process & Analytics  
Instruments Division

**6 Address :** 455 Corporate Blvd  
Newark, DE 19702 USA

**7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.**

**8 LCIE, notified body number 0081 in accordance with article 9 of the directive 94/9/CE of the European Parliament and Council of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective system intended for use in potentially explosive atmospheres, given in Annex II to the directive.  
The examination and test results are recorded in confidential report No 28 543 010.**

**9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with :**  
- EN 50014 (1997)  
- EN 50018 (1994)  
- EN 50019 (2000)

**10 If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.**

**11 This EC Type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC.  
Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.**

**12 The marking of the equipment or protective system shall include the following :**



EEx d IIC T6 or EEx de IIC T6

Fontenay-aux-Roses, le 22 juin 2001

Le Directeur de l'organisme certificateur  
Manager of the certification body

Timbre sec/dry seal

page 1/2 A

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LCIE	33, av du Général Leclerc	Tél : +33 1 40 95 60 60	Société anonyme à directoire
Laboratoire Central	BP 8	Fax : +33 1 40 95 86 56	et conseil de surveillance
des Industries Electriques	92266 Fontenay-aux-Roses cedex	contact@lcie.fr	au capital de 15 745 984 €
Une société de Bureau Veritas	France	www.lcie.fr	RCS Nanterre B 408 363 174



(A1) **ANNEXE**

(A1) **SCHEDULE**

(A2) **ATTESTATION D'EXAMEN CE DE TYPE**

(A2) **EC TYPE EXAMINATION CERTIFICATE**

**LCIE 01 ATEX 6007 X**

**LCIE 01 ATEX 6007 X**

(A3) Description de l'équipement ou du système de protection

L'analyseur 3050 OLV mesure la concentration en humidité de gaz.

Plusieurs types de gaz peuvent être analysés. Aucun gaz analysés ne sera inflammable. Le gaz entre et sort à travers l'enveloppe antidéflagrante grâce à des connecteurs vissés dans l'enveloppe. En option, une enveloppe auxiliaire BARTEC certifiée PTB Ex 91.C3108 (EEx e II T6) peut être montée sur l'analyseur type OLV3050. Dans ce cas, deux traversées BARTEC certifiées PTB Ex 97 ATEX 1078 X ( EEx d IIC T6) sont utilisées.

Le marquage est le suivant :

AMETEK  
Adresse  
Type : 3050 OLV  
N° de fabrication : ...  
Année de fabrication : ...



II 2 G

EEx d IIC T6 ou EEx de IIC T6

LCIE 01 ATEX 6007 X

NE PAS OUVRIR SOUS TENSION

Le marquage CE est accompagné du numéro d'identification de l'organisme notifié responsable de la surveillance du système de qualité (0081 pour le LCIE).

Le matériel devra également comporter le marquage normalement prévu par les normes de construction du matériel électrique concerné.

(A4) Documents descriptifs

Dossier technique référencé Techfile-3050 ATEX-a du 10/04/2001.

Ce document comprend 10 rubriques (13 pages).

(A5) Conditions spéciales pour une utilisation sûre

- Température ambiante maximale : 50°C.

- Tous les gaz analysés doivent être purs ou des composés de gaz purs (sans air ni oxygène) et ces gaz ne doivent pas être inflammables.

- Des presses étoupes d'un type certifié (en conformité avec l'EN 50018) devront être montés pour une utilisation en zone dangereuse (ces moyens de raccordement ne sont pas inclus dans la présente certification).

(A6) Exigences essentielles en ce qui concerne la sécurité et la santé

Conformité à la 3<sup>e</sup> édition de la norme européenne EN 50014 (1997), à la deuxième édition de la norme européenne EN 50018 (1994) et à l'EN 50019 (1994).

(A3) Description of Equipment or protective system

The model 3050 OLV moisture analyzer measures the concentration of moisture on a gaz stream.

Various gases are capable of being analyzed by the 3050 OLV. All gases to be analyzed will be pure process or mixtures of pure process gases (without any air or oxygen) and will not be in the flammable range. The gaz enters and exits the flameproof enclosure through process line connectors.

In option, an auxiliary BARTEC box, certified PTB Ex 91.C3108 (EEx e II T6) can be mounted on the analyzer type OLV3050. In this case, 2 certified BARTEC bushings certified PTB Ex 97 ATEX 1078 X (EEx d IIC T6) are used.

The following marking shall appeared :

AMETEK  
Address  
Type : 3050 OLV  
Serial number : ...  
Year of construction : ...



II 2 G

EEx d IIC T6 or EEx de IIC T6

LCIE 01 ATEX 6007 X

DO NOT OPEN WHILE ENERGIZED

The CE marking shall be accompanied by the identification number of the notified body responsible for surveillance of the quality system (0081 for the LCIE).

The equipment must also carry the usual marking required by the manufacturing standards applying to such equipments.

(A4) Descriptive documents :

Technical file referenced Techfile-3050 ATEX-a dated 10/04/2001.

This file includes 10 items (13 pages).

(A5) Special conditions for safe use

- Maximal ambient temperature : 50°C.

- All gases to be analyzed shall be pure process or mixtures of pure process gases (without any air or oxygen) and the gas shall be outside the flammable range.

- The approval applies to equipment without cable glands. When mounting the flameproof enclosure is the hazardous area, only flameproof cable glands or stopping boxes certified to EN 50018 must be used.

(A6) Essential Health and Safety Requirements

Compliance with the 3<sup>rd</sup> edition of the European Standard EN 50014 (1997), to the second edition of the European Standard EN 50018 (1994) and EN 50019 (1994).





Fontenay-aux-Roses, le 30 OCT. 2001

N/Réf. : MLI/SFe/ ENV 9449

AMETEK Process Instruments  
455, Corporate Blvd.  
Newark, Delaware 19702  
USA

A l'attention de Monsieur ADAMS

## BORDEREAU D'ENVOI

Documents	Nombre d'exemplaires
Avenant 01 ATEX 6007 X/01 à l'attestation d'Examen CE de type LCIE 01 ATEX 6007 X (dossier n° 34 952 010)  1 document connexe authentifié.	1 original
Un extrait significatif du certificat est envoyé au Ministère de l'Industrie, des Postes et Télécommunications et du Commerce Extérieur.  La facture correspondante fera l'objet d'un envoi ultérieur.	

Le secrétariat

Sylvie FENCKI

becertif/03 95/B

### ■ LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES

Société anonyme à Directoire et Conseil de surveillance au capital de 103 592 000 Francs  
RCS Nanterre B 408 363 174 - N° siret : 408 363 174 00017 - APE 743 B

Siège social : 33, avenue du Général Leclerc - BP n° 8 - F 92266 FONTENAY-AUX-ROSES CEDEX  
Tél. : +33 1 40 95 60 60 - Fax : +33 1 40 95 86 56

01-9



(A1) **ATTESTATION D'EXAMEN CE DE TYPE**  
**LCIE 01 ATEX 6007 X du 22 juin 2001**

**AVENANT LCIE 01 ATEX 6007 X/01**

(A1) **EC TYPE EXAMINATION CERTIFICATE**  
**LCIE 01 ATEX 6007 X dated June 22, 2001**

**VARIATION LCIE 01 ATEX 6007 X/01**

(A2) **DÉSIGNATION DE L'ÉQUIPEMENT OU DU**  
**SYSTÈME DE PROTECTION :**

Analyseur d'humidité  
 Type : 3050 OLV  
 Construit par : AMETEK

(A2) **NAME OF EQUIPMENT OR PROTECTIVE SYSTEM :**

Moisture analyzer  
 Type : 3050 OLV  
 Manufactured by : AMETEK

(A3) **OBJET DE L'AVENANT, DESCRIPTION DE**  
**L'APPAREIL OU DU SYSTÈME DE PROTECTION :**

Ajout d'un nouveau module : "Module Zero" permettant une analyse plus précise.

Marquage :  
 Inchangé.

(A3) **SUBJECT OF THE VARIATION, DESCRIPTION OF**  
**EQUIPMENT OR PROTECTIVE SYSTEM :**

Addition of a new model : "Zero Module" allowing a more accurate analysis.

Marking :  
 Unchanged.

(A4) **DOCUMENTS DESCRIPTIFS :**

Dossier de certification n° Techfile-3050ATEX-a.doc Rev. B du 19/09/2001.  
 Ce dossier comprend 6 rubriques (9 pages).

(A4) **DESCRIPTIVE DOCUMENTS :**

Certification file n° Techfile-3050ATEX-a.doc Rev. B dated 19/09/2001.  
 This file includes 6 items (9 pages).

(A5) **CONDITIONS SPÉCIALES POUR UNE UTILISATION**  
**SÛRE :**

Inchangées.

(A5) **SPECIAL CONDITIONS FOR SAFE USE :**

Unchanged.

(A6) **EXIGENCES ESSENTIELLES EN CE QUI**  
**CONCERNE LA SÉCURITÉ ET LA SANTÉ :**

Inchangées.

(A6) **ESSENTIAL HEALTH AND SAFETY**  
**REQUIREMENTS :**

Unchanged.

Fontenay-aux-Roses, le 29 octobre 2001

Le Directeur de l'organisme certificateur  
 Manager of the certification body

**Par délégation**  
**Michel BRÉNON**  
**Directeur adjoint**  
**à la Certification**

Timbre sec/Dry seal

Page 1/1

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**LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES**

Société anonyme à Directoire et Conseil de surveillance au capital de 15 745 984 euros - RCS Nanterre B 408 363 174

33, avenue du Général Leclerc - BP n° 8 - F 92266 FONTENAY-AUX-ROSES CEDEX - Tél. : +33 1 40 95 60 60

13-0



Fontenay-aux-Roses, le 5 septembre 2002

AMETEK Inc.  
455 Corporate Center  
NEWARK DE 19702  
USA

N/Réf. : MBn/CFi/ENV 9712

A l'attention de Monsieur ADAM

## BORDEREAU D'ENVOI

Documents	Nombre d'exemplaires
Avenant 01 ATEX 6007 X/02 à l'attestation d'examen CE de type LCIE 01 ATEX 6007 X (dossier n° 42 626 010)	1 original
1 document connexe authentifié.	
Un extrait significatif du certificat est envoyé au Ministère de l'Industrie, des Postes et Télécommunications et du Commerce Extérieur. La facture correspondante fera l'objet d'un envoi ultérieur.	

Le secrétariat

Cathy FIEVET

■ LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES

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B42626.WPD

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Tél. : +33 1 40 95 60 60 - Fax : +33 1 40 95 86 56 - <http://www.lcie.fr>

01-F



(A1) **ATTESTATION D'EXAMEN CE DE TYPE  
LCIE 01 ATEX 6007 du 22 juin 2001**

**AVENANT LCIE 01 ATEX 6007 X/02**

(A1) **EC TYPE EXAMINATION CERTIFICATE  
LCIE 01 ATEX 6007 dated June 22,2001**

**VARIATION LCIE 01 ATEX 6007 X/02**

(A2) **DESIGNATION DE L'EQUIPEMENT OU DU SYSTEME DE  
PROTECTION :**

Analyseur d'humidité  
Type : 3050 OLV  
Construit par : AMETEK

(A2) **DESIGNATION OF EQUIPMENT OR PROTECTIVE  
SYSTEM :**

Moisture analyzer  
Type : 3050 OLV  
Construit par : AMETEK

(A3) **OBJET DE L'AVENANT, DESCRIPTION DE L'APPAREIL  
OU SYSTEME DE PROTECTION :**

- Correction de l'épaisseur d'un couvercle.

(A3) **SUBJECT OF THE VARIATION, DESCRIPTION OF  
EQUIPMENT OR PROTECTIVE SYSTEM :**

- Correction of a lid thickness.

Marquage :  
Inchangé.

Marking :  
Unchanged.

(A4) **DOCUMENTS DESCRIPTIFS :**

Lettre UL du 22/04/2002 (1 page).  
Plan N° 230517001 Rev G du 18/03/2002 (2 pages).

(A4) **DESCRIPTIVE DOCUMENTS :**

UL letter dated 22/04/2002 (1 page).  
Drawing N° 230517001 Rev G dated 18/03/2002 (2 pages).

(A5) **CONDITIONS SPECIALES POUR UNE UTILISATION  
SURE :**

Inchangées.

(A5) **SPECIAL CONDITIONS FOR SAFE USE :**

Unchanged.

(A6) **EXIGENCES ESSENTIELLES EN CE QUI CONCERNE LA  
SECURITE ET LA SANTE :**

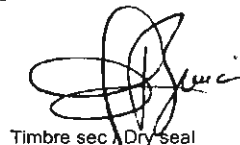
Inchangées.

(A6) **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS :**

Unchanged.

Fontenay-aux-Roses, le 5 septembre 2002

Le Directeur de l'organisme certificateur  
Manager of the certification body



Timbre sec / Dry seal

Par délégation  
Michel BRÉNON  
Directeur adjoint  
à la Certification

Page 1/1

13-c

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**LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES**

Société anonyme à Directoire et Conseil de surveillance au capital de 15 745 984 euros - RCS Nanterre B 408 363 174

33, avenue du Général Leclerc - BP n° 8 - F 92266 FONTENAY-AUX-ROSES CEDEX - Tél. : +33 1 40 95 60 60



# Enclosures & Controls

An Enclosures Control System

February 12, 2002

Metrix Instrument Co  
PMC/BETA

Attention:

Subject: Certificate of Compliance

Dear Sir:

The EGS Curlee #MWD-42-553-GB-G2 meter box is rated for Class I, Division 1 & 2, Group B, C & D, Class II, Division 1 & 2, Group E, F & G. This enclosure is explosion proof and is fabricated in accordance with UL file # E85310 and the following standards.

## Aluminum Association alloy 535.2

## Underwriters Laboratory Standards

#1203	Explosion proof and dust ignition proof electrical equipment.
#698	Industrial control equipment.
#886	Outlet boxes and fittings for use in classified locations.

## Canadian Standards Association Standards

C22.2 #30-M1986	Explosion proof enclosures for use in Class I, Division 1 locations.
C22.2 #213-M1987	Non-incentive electrical equipment for use in Class I, Division 2 locations.
C22.2 #0.5-1982	Threaded conduit entries.

## National Fire Prevention Association

1999	National Electric Code
------	------------------------

The subject enclosures are NEMA 4/7 rated. If you have any questions please feel free to call.

Best Regards  
EGS Enclosures and Control

*David W. Scott*  
Quality Assurance Supervisor



CSA INTERNATIONAL

# Certificate of Compliance

**Certificate:** 2386065 (LR 42129)

**Master Contract:** 150757

**Project:** 2386065

**Date Issued:** February 21, 2011

**Issued to:** Curlee Manufacturing  
A Div. of Appleton Electric, LLC  
13639 Aldine Westfield Rd  
Houston, TX 77039  
USA  
Attention: Leonard Steinbeigle

*The products listed below are eligible to bear the CSA Mark shown*



*Scott Wallace*

**Issued by:** Scott Wallace

## **PRODUCTS**

**CLASS 4418 02** - OUTLET BOXES AND FITTINGS - Boxes - For Hazardous Locations

### **Part A:**

**Class I, Groups B, C and D; Class II, Groups E, F and G; Class III; Enclosure Type 4.**

Series MWL-GB meter boxes with viewing windows (4 inch maximum conduit size):

- Cat No MWL-GB-43-443
- Cat No MWL-GB-53-565
- Cat No MWL-GB-53-664
- Cat No MWL-GB-53-776
- Cat No MWL-GB-53-7710
- Cat No MWL-GB-53-886
- Cat No MWL-GB-74-773
- Cat No MWL-GB-74-776
- Cat No MWL-GB-74-7710
- Cat No MWL-GB-74-794
- Cat No MWL-GB-74-795
- Cat No MWL-GB-74-8106
- Cat No MWL-GB-74-10106



CSA INTERNATIONAL

**Certificate:** 2386065 (LR 42129)

**Master Contract:** 150757

**Project:** 2386065

**Date Issued:** February 21, 2011

- 
- Cat No MWL-GB-96-12126
  - Cat No MWL-GB-96-10126

Series MWS-GB meter boxes with blank covers (4 inch maximum conduit size):

- Cat No MWS-GB-30-442 (1 inch maximum conduit size)
- Cat No MWS-GB-40-443
- Cat No MWS-GB-40-553
- Cat No MWS-GB-40-664
- Cat No MWS-GB-50-565
- Cat No MWS-GB-50-664
- Cat No MWS-GB-50-776
- Cat No MWS-GB-50-7710
- Cat No MWS-GB-50-886
- Cat No MWS-GB-70-773
- Cat No MWS-GB-70-776
- Cat No MWS-GB-70-7710
- Cat No MWS-GB-70-794
- Cat No MWS-GB-70-795
- Cat No MWS-GB-70-8106
- Cat No MWS-GB-70-10106
- Cat No MWS-GB-90-12126
- Cat No MWS-GB-90-10126

Series MWD or MWD-GB meter boxes with domed covers: (4 inch maximum conduit size)

- Cat No MWD or MWD-GB-42-553
- Cat No MWD or MWD-GB-43-553
- Cat No MWD or MWD-GB-45-553
- Cat No MWD or MWD-GB-96-10126
- Cat No MWD or MWD-GB-99-10126
- Cat No MWD or MWD-GB-96-12126
- Cat No MWD or MWD-GB-99-12126

**PART B:**

**Class I, Groups C and D; Class II, Groups E, F and G; Class III; Enclosure Type 4.**





CSA INTERNATIONAL

**Certificate:** 2386065 (LR 42129)

**Master Contract:** 150757

**Project:** 2386065

**Date Issued:** February 21, 2011

---

Series MWL meter boxes with viewing windows (4 inch maximum conduit size):

- Cat No MWL-43-553
- Cat No MWL-43-664
- Cat No MWL-54-565
- Cat No MWL-54-664
- Cat No MWL-54-776
- Cat No MWL-54-7710
- Cat No MWL-54-886
- Cat No MWL-75-773
- Cat No MWL-75-776
- Cat No MWL-75-7710
- Cat No MWL-75-794
- Cat No MWL-75-795
- Cat No MWL-75-8106
- Cat No MWL-75-10106
- Cat No MWL-96-12126
- Cat No MWL-96-10126

Series MWS meter boxes with blank covers: (4 inch maximum conduit size)

- Cat No MWS-40-553
- Cat No MWS-40-664
- Cat No MWS-50-565
- Cat No MWS-50-664
- Cat No MWS-50-776
- Cat No MWS-50-7710
- Cat No MWS-50-886
- Cat No MWS-70-773
- Cat No MWS-70-776
- Cat No MWS-70-7710
- Cat No MWS-70-794
- Cat No MWS-70-795
- Cat No MWS-70-8106
- Cat No MWS-70-10106
- Cat No MWS-90-12126
- Cat No MWS-90-10126

Instrument/transmitter enclosure catalog numbers (4 inch maximum conduit size):

- ETEFC2      1/2 in conduit Flat cover



CSA INTERNATIONAL

**Certificate:** 2386065 (LR 42129)

**Master Contract:** 150757

**Project:** 2386065

**Date Issued:** February 21, 2011

- 
- ETEFC3 3/4 in conduit Flat cover
  - ETEDC2 1/2 in conduit Dome cover
  - ETEDC3 3/4 in conduit Dome cover
  - ETEFCG2 1/2 in conduit Flat cover with window
  - ETEFCG3 3/4 in conduit Flat cover with window
  - ETEFDG2 1/2 in conduit Domed cover with window
  - ETEFDG3 3/4 in conduit Domed cover with window

#### **APPLICABLE REQUIREMENTS**

CAN/CSA C22.2 No. 0-M91	General Requirements - Canadian Electrical Code, Part II
CSA C22.2 No 0.4M1982	Bonding and Grounding of Electrical Equipment (Protective Grounding)
CSA C22.2 No 0.5-1982	Threaded Conduit Entries
CSA C22.2 No 25M1966	Enclosures for Use in Class II, Groups E, F and G Hazardous Locations
CSA C22.2 No 30-M1986	Explosion-Proof Enclosures for Use in Class I Hazardous Locations
CAN/CSA-C22.2 No. 94-M91	Special Purpose Enclosures

#### **MARKINGS**

Submittor's name and/or trademark catalogue designation, hazardous location designation, bilingual caution re use in hazardous locations, bilingual caution re conduit seals within 6 inches of enclosure (Class I, Group B only) bilingual caution re conduit seals within 18 inches of enclosure, Enclosure Type 4 designation (where applicable) and the CSA Monogram appear on a metal nameplate secured by screws, rivets or drive pins. Refer to drawings A-6965, A-7014 and A-7293.

- [Home](#)
- [Equipment Certification](#)
- [Service Facility Certification](#)
- [Certificate Database](#)
- [Contacts](#)

## AUSEx\_1039

**Price: \$27.50 (incl 10 % GST)**

<b>Certificate #:</b>	AUSEx_1039	<b>Issue Date:</b>	4/05/1993
<b>Issue #:</b>	2	<b>Expiry Date:</b>	14/02/2000
		<b>Status:</b>	EXPIRED
<b>Certificate Holder:</b>	Gerard Industries Pty Ltd		
<b>Address:</b>	12 Park Terrace Bowden Adelaide South Australia 5007 Australia		
<b>Manufacturer:</b>	Wilco Electrical Pty Ltd		
<b>Product Description:</b>	Type FS Series   Flameproof Switches		
<b>Equipment Category:</b>	Switches		
<b>Protection Type:</b>	d		
<b>Gas Group:</b>	I IIB		
<b>Marking Group:</b>			
<b>IP Rating:</b>	IP 65		
<b>Test Report #:</b>	LOSC4396	<b>Issued by:</b>	Quality Assurance Services
<b>Standards:</b>	AS 2480-1986 AS 1939-1986		
<b>Notes:</b>	N/A		

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(1) **CERTIFICATE OF CONFORMITY**

(2) KEMA No. Ex-96.D.1862

(3) This certificate is issued for the electrical apparatus:

Vaporizing pressure regulator, Series HPR-2

(4) Manufacturer:

GO, Inc.  
305 S. Acacia St.  
San Dimas, CA 91773  
USA

(5) This electrical apparatus and any acceptable variation thereto is specified in the Annex to this certificate and the documents therein referred to.

(6) KEMA, being an Approved Certification Body in accordance with Article 14 of the Council Directive of the European Communities of 18 December 1975 (76/117/EEC), confirms that the apparatus has been found to comply with the harmonised European standards:

Electrical apparatus for potentially explosive atmospheres

EN 50 014 : 1977 + A1 ... A5, General requirements

EN 50 018 : 1977 + A1 ... A3, Flameproof enclosure "d"

and has successfully met the examination and test requirements which are recorded in a confidential test report.

(7) The apparatus marking shall include the code:

EEEx d IIC T3

(8) The manufacturer of the electrical apparatus referred to in this certificate, has the responsibility to ensure that the apparatus conforms to the specification laid down in the Annex to this certificate and has satisfied routine verifications and tests specified therein.

(9) This apparatus may be marked with the Distinctive Community Mark specified in Annex II to the Commission Directive of 16 January 1984 (84/47/EEC).

Arnhem, 6 November 1997

by order of the Board of Directors of N.V. KEMA

C.M. Boschloo  
Certification Manager

## ANNEX

to Certificate of Conformity KEMA No. Ex-96.D.1862

### Description

The vaporizing pressure regulator, Series HPR-2 consists of a heat exchanger mounted inside a pressure regulation device and an integrally mounted temperature controller in a flameproof housing.

Ambient temperature range -20 °C ... +40 °C.

### Electrical data

Supply .....	120/240 V, 50/60 Hz
Maximum input power .....	150 W

### Installation instruction

The cable entry devices shall be of a certified flameproof type EEx d, suitable for the conditions of use and correctly installed.

### Routine test

Each enclosure shall be submitted to the routine test according to Clause 15.1 of EN 50 018 at a minimum pressure of 12.3 bar.

### Test documentation

1. Certificate of Conformity ISSeP 91C.103.969

signed

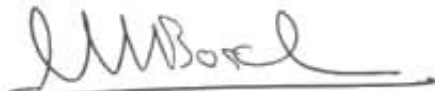
2. Drawing No.	106378, rev. A	)
	106284, rev. A	)
	106334, rev. A	)
	106326, rev. A	)
	110520, rev. A	)
	109889, rev. A	)
	110542, rev. A	)
	106626, rev. A	)
	100425, rev. C	)
	100423, rev. D	)
	109819, rev. D	)
	107885, rev. B	)
	100421, rev. M	)
	062000, rev. A	)
	062008, rev. A	)
	062006, rev. A	)
	062005, rev. A	)
	062001, rev. A	)
	062009, rev. A	)
	062003, rev. A	)
	062004, rev. A	)

19.06.1997

3. Samples

Arnhem, 6 November 1997

by order of the Board of Directors of N.V. KEMA



C.M. Boschloo  
Certification Manager

STANDARDS ASSOCIATION OF AUSTRALIA

*Incorporated by Royal Charter*

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Continuation of Certificate No: Ex 238-2

This is to certify that SAA Certificate Nos Ex 238 and Ex 238-1 issued to:

Govan Drewburn Pty Ltd  
156 Bamfield Road  
West Heidelberg Vic 3081

for 'Goven' Junction Box are hereby extended to clarify the Certification Conditions on the original certificate.

Schedule

Description of Clarification

The certification conditions should read - 'The Junction Box must be used in conjunction with a stopper box when using conduit entries in excess of 25 mm'.

File No: P/3: 80146/M96

Date of Issue: 16 July 1987

Page 1 of 1

This document shall not be reproduced except in full.

This certificate remains the property of the Standards Association of Australia and must be returned to the Association in the event of it being revoked.

## CERTIFICATE FOR FLAMEPROOF ENCLOSURE

No. PLP 771

This certifies that the flameproof enclosure described hereunder has been EXAMINED and TESTED and has been found to comply with the requirements for a flameproof enclosure in accordance with AS C98-1970 Flameproof Enclosure of Electrical Equipment, Including Amendment No.(s) 1 and 2.

This Certificate applies only to the flameproof features of the equipment described herein and does not purport, nor is it intended to certify compliance with the relevant electrical safety requirements of the SAA Wiring Rules, AS 3000 Parts I and II, AS 3000

DETAILS OF EQUIPMENT:

"Govan" control stations as follows:

Cat. No. FC4-H-WP

Cast Aluminium Alloy Enclosure incorporating:

- 6 - Bore and Spigot joints
- 2 - Operating rods
- 4 - 1 in. Conduit Entries

Cat. No. FC4 B202-WP

Cast Aluminium Alloy Enclosure incorporating:

- 5 - Bore and Spigot joints
- 1 - Operating rod
- 4 - 1 in. Conduit Entries

DRAWING NUMBER:

2010	2011	2012	2014	2015	2016	2017	2018	2019	2020
2021	2023	2089	2091	2095	2092	2093	2094	2005	

Ex d IIB T6

GROUPING AND CLASSIFICATION:APPLICANT:

Govan Industries Pty. Ltd.,  
156 Bamfield Road,  
WEST HEIDELBERG, VIC. 3081

MANUFACTURER:

Govan Industries Pty. Ltd.,  
156 Bamfield Road,  
WEST HEIDELBERG, VIC. 3081

TESTING STATION AND REPORT No.:

SCC TR. NO. 50777

REMARKS:Enclosed Electrical Equipment

Cat. No. FC4-H-WP

- 1 - KRAUS AND NAIMER Switch - Cat. No. C17
- 1 - KLOCKNER-MOELLER Switch - Cat. No. Pa2
- 1 - KLOCKNER-MOELLER Switch - Cat. No. K-Ne

Cat. No. FC4 B202-WP

- 1 - KRAUS AND NAIMER Switch - Cat. No. C31

**NOTE:**  
THIS CERT  
SUPERSEDED BY  
EX. 610.  
W. J. Stewart

EL/29

Date: 1977.08.25

*G. J. Reid*  
for Chairman of Committee EL/29

*W. J. Stewart*

Director, Standards Association of  
Australia

# STANDARDS ASSOCIATION OF AUSTRALIA

INCORPORATED BY ROYAL CHARTER

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## CERTIFICATE FOR FLAMEPROOF ENCLOSURE

No. FLP 771-1

### REMARKS:

Govan Drewburn Pty. Ltd.,  
P.O. Box 88,  
West Heidelberg, VIC 3081.

### GOVAN FCA SERIES CONTROL STATIONS

This is to certify that Certificate of Compliance No. FLP 771 issued in respect of the above equipment is hereby extended to cover the following variations:

1. Type FCAC202-WP to include for Kraus & Naimer C31 A202 Style Switch 32 AMP rating
2. FCA2112-WP - Single Switch Unit (16 AMP)
3. FCAF-WP - Single Switch (as above) and one Pilot Light
4. FCA6-WP - As above but 2 Pilot Lights
5. FCA0-WP - Single Switch Unit and one Push Button
6. FCAE-WP - As above but 2 Push Buttons
7. FCAI-WP - Single Push Button
8. FCAJ-WP - Twin Push Button
9. FCAK-WP - Triple Push Button
10. FCAL-WP - Single Push Button & Pilot Light
11. FCA-M-WP - Twin Push Button & Pilot Light
12. FCA-N-WP - Single Push Button & 2 Pilot Lights
13. FCA-O-WP - Single Pilot Light
14. FCA-P-WP - Twin Pilot Light
15. FCA-R-WP - Triple Pilot Light
16. FCA enclosure to be fitted with a Robertshaw temperature controller Cat. No. FCA-TC Flameproof only 20AMP 240 Volt rating Robertshaw EA5 series Drg. No. 2249.

Chairman of Committee EL/29

Director, Standards Association  
Australia

EL/29 7707

Date: 78.10.05  
S.A.F.:DMC/1978-11-17




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## EPEE Certificate: Ex 229



<b>Certificate No.</b>	Ex 229	<b>Latest Issue</b>	Issue 5
<b>Expiry Date</b>	27-03-2000	<b>Issue Date</b>	15-09-1993
<b>Certificate Holder</b>	<b>Expired</b> Burn Brite Lights (Vic) Pty Ltd 2-18 Canterbury Road Kilsyth Melbourne Victoria 3137 Australia		
<b>Equipment Category</b>	Luminaires		
<b>Product Description</b>	Luminaires FLP2   This supplementary certificate relates to the range of luminaires previously certified under SAA Certificate Nos: Ex 229 and Ex 229-1		
<b>Protection Type</b>	Type d		
<b>Marking Code</b>	T5 100 Deg C   Class I   Zone 1		
<b>Gas Group</b>	IIB		
<b>IP Rating</b>	IP 67		
<b>Manufacturer</b>			
<b>Test Report Number</b>	4397A		
<b>Issued By</b>	Quality Assurance Services		
<b>Standard</b>	AS 2480-1986 AS 1939-1986		

### NOTES

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 Release 2.0.0:2.2.2

Received: 24/10/00 8:25;  
Fax sent by : 61 2 8206 6032

61 2 8206 6032 -> Burn Brite Lights;  
QAS PROD CERT

Page 2  
24/10/00 08:14 Pg: 2/2



QUALITY ASSURANCE SERVICES

4 October 2000

Burn Brite Lights (Vic) Pty Ltd  
2-18 Canterbury Road  
Kilsyth VIC 3137

Attention: Mr. Ian Cameron  
Engineering Manager

Our Ref: AUS Ex 678,229, 441  
Contact: N.Baker  
Phone: 61-2 8206 6614  
Fax: 61-2 8206 6032  
Email: noel.baker@qas.com.au

Dear Sir,

RE: Extension of Expiry Date for Certificates AUS Ex 678; AUS Ex 229 & AUS Ex 441

I am pleased to inform you that your request for an extension of the expiry dates for the above Certificates of Conformity is granted on the basis that a submission for revalidation has been lodged with TestSafe Australia.

I confirm that the revised expiry dates for the following Certificates of Conformity are:

- > AUS Ex 678 13 March 2001
- > AUS Ex 229 13 March 2001
- > AUS Ex 441 13 March 2001

Yours sincerely,

Noel Baker  
Project Coordinator  
**ELECTROTECHNOLOGY GROUP**

Paterson Flood Engineers.

Attention Jason

07 3871 0538

Please note that the expiry date has been revised to 13/03/01

John Beards

28/11/00

**EXPLOSION PROTECTED  
ELECTRICAL EQUIPMENT**

**SUPPLEMENTARY**

Certificate No

**Ex 229-5**

# Certificate of Compliance

This is to certify that Standards Australia Certificate Nos. Ex 229, Ex 229-1, Ex 229-2, Ex 229-3 and Ex 229-4 issued to:

**Burn Brits Lights (VIC) Pty Ltd  
2-18 Canterbury Road  
KILSYTH VIC 3137**

for the Luminaires FLP2 Series are hereby extended to include changes as detailed in the following schedule.

**SCHEDULE**

**Description of changes:**

The rating of the single and twin luminaires now has a range from 4W-65W including compact fluorescent lamps.

File: P/3: 93008.M173

Date of Issue: 15 September 1993

Date of Expiry of Validity: 27 March 2000

Page 1 of 1

Signed for and on behalf of Standards Australia



General Manager  
Quality Assurance Services

This certificate is not transferable and remains the property of Standards Australia and must be returned in the event of its being revoked or not renewed

**QUALITY ASSURANCE  
SERVICES**   
Standards Australia

# STANDARDS ASSOCIATION OF AUSTRALIA

*Incorporated by Royal Charter*

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT CERTIFICATE OF COMPLIANCE

Supplementary Certificate No Ex 229-4

This is to certify that SAA Certificate Nos Ex 229, Ex 229-1, Ex 229-2, and Ex 229-3 issued to:

Burn Brite Lights (Vic) Pty Ltd  
2-18 Canterbury Road  
Kilsyth Vic 3137

for the 'Burn Brite' Luminaires FLP 2 Series are hereby extended to include modifications as detailed in the following schedule.

### Schedule

#### Description of Modifications

The range of options has been extended to include the following:

1. Alternative aluminium, nylon or polypropylene lamp assembly adapter boss incorporating a compression bush for use with a silicone rubber compound sealed cable loom
2. Alternative aluminium, nylon or polypropylene lamp assembly adapter boss.
3. Alternative polypropylene lamp visor retaining nut
4. Alternative polycarbonate flame path collar as component for polycarbonate lamp visor
5. Any of the options as listed for the FLP2 series control box on certificate Ex 441-2

Page 1 of 2

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*J. J. Kennedy*  
Director—Administration & Approvals  
Standards Association of Australia

**STANDARDS ASSOCIATION OF AUSTRALIA**  
*Incorporated by Royal Charter*

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Continuation of Certificate No: Ex 229-4

Drawings

4120	Revision 1	2 November 1989
4126	Revision 1	2 November 1989
5033	Original	17 October 1989
21184	Original	22 May 1989
22114	Original	20 October 1989
10226	Issue 7	17 November 1989
38003	Issue 9	25 September 1989
22102	Original	27 January 1986
4127	Revision 1	2 December 1989
4054	Revision 1	2 December 1989
22115	Original	20 October 1989
10002	Issue 6	6 September 1984
22017	Issue 5	29 November 1989
8016	Original	14 November 1989
48536	Original	9 November 1989
22046	Issue 2	2 March 1990

Type of Protection: Ex d IIB T5 IP67 (Equipment fitted with 'C' ring option)  
IP66 (all other configurations)

Test Report: LOSC 4397A to AS 2480-1986 and AS 1939-1986 (including  
Amendments 1 and 2)

File Number: P/3: 89069.M152

Date of Issue: 27 March 1990

Page 2 of 2

*Handwritten signature*

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# STANDARDS ASSOCIATION OF AUSTRALIA

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STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## EXPLOSION PROTECTED ELECTRICAL EQUIPMENT COMPONENT CERTIFICATE

Supplementary Certificate Number: Ex 229-3

This is to certify that SAA Certificate Nos Ex 229, Ex 229-1 and Ex 229-2  
Issued to:

Burn Brite Lights (Vic) Pty Ltd  
2-28 Canterbury Road  
KILSYTH VIC 3137

for 'Burn Brite' Luminaires FLP2 series is hereby extended to include  
modifications to equipment as detailed in the following schedule.

### SCHEDULE

#### Description of Modifications:

Optional use of a polycarbonate outer case assembly for gas group IIB.

#### Drawings:

10226 Issue 5

Type of Protection: Ex d I/IIB T6 IP44

File No: P/3: 86105/M137

Date of Issue: 13 September 1988

Page 1 of 1

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revoked.

*J. L. ...*  
Director—Administration & Approvals  
Standards Association of Australia



## IECEX Certificate of Conformity

### INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEX Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEX SIR 05.0042U** issue No.: **1**  
 Status: **Current**  
 Date of Issue: **2007-04-24** Page 1 of 4

Certificate history:  
~~Issue No. 4 (2010-9-28)~~  
~~Issue No. 3 (2009-11-12)~~  
~~Issue No. 2 (2009-1-16)~~  
 Issue No. 1 (2007-4-24)

Applicant: **Redapt Engineering Co Ltd**  
 Units 46/47 Darlaston Central Trading Est  
 Salisbury Street  
 Darlaston, West Midlands, WS10 8XB  
**United Kingdom**

Electrical Apparatus: **Ranges of Adaptors, Reducers and Stopping Plugs**  
 Optional accessory:

Type of Protection: **Flameproof, Increased Safety and Dust**

Marking: **Ex d I, Ex d IIC, Ex e I, Ex e II, Ex tD A21 IP6X**

Approved for issue on behalf of the IECEX **C Elaby**  
 Certification Body:

Position: **Certification Officer**

Signature:  
 (for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEX Website.

Certificate issued by:

**SIRA Certification Service**  
 South Hill  
 Chislehurst  
 Kent BR7 5EH  
 United Kingdom

**sira**  
 CERTIFICATION



## IECEX Certificate of Conformity

Certificate No.: **IECEX SIR 05.0042U**  
 Date of Issue: **2007-04-24** Issue No.: **1**  
 Page 2 of 4

Manufacturer: **Redapt Engineering Co Ltd**  
 Units 46/47 Darlaston Central Trading Est  
 Salisbury Street  
 Darlaston, West Midlands, WS10 8XB  
**United Kingdom**

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEX Quality system requirements. This certificate is granted subject to the conditions as set out in IECEX Scheme Rules, IECEX 02 and Operational Documents as amended.

#### STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

- IEC 60079-0 : 2004** Electrical apparatus for explosive gas atmospheres - Part 0: General requirements  
 Edition: 4.0  
**IEC 60079-1 : 2003** Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosure 'd'  
 Edition: 5

**IEC 60079-7 : 2001** Electrical apparatus for explosive gas atmospheres - Part 7: increased safety 'e'  
Edition: 3

**IEC 61241-0 : 2004** Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements  
Edition: 1

**IEC 61241-1 : 2004** Electrical apparatus for use in the presence of combustible dust - Part 1: Protection by enclosures "ID"  
Edition: 1

*This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

**TEST & ASSESSMENT REPORTS:**

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

GB/SIR/Ex/TR06.0027/01

Quality Assessment Report:

GB/SIR/QAR06.0014/00



## IECEx Certificate of Conformity

Certificate No.: IECEx SIR 05.0042U

Date of Issue: 2007-04-24

Issue No.: 1

Page 3 of 4

**Schedule**

**EQUIPMENT:**

Equipment and systems covered by this certificate are as follows:

This certificate covers the following ranges of Adaptors, Reducers and Stopping Plugs, for a full description of the products and applicable marking, refer to the Annexe in this certificate:

- AD-U series of adaptors
- RD-U series of reducers
- AE-E series of adaptors and reducers
- AR-D series of adaptors and reducers
- AM-D series of adaptors and reducers
- AF-U series of adaptors and reducers
- PD-U series of stopping plugs
- PA-D and PB-D series of stopping plugs

**CONDITIONS OF CERTIFICATION: NO**

Empty box for conditions of certification.



## IECEx Certificate of Conformity



Certificate No.: IECEX SIR 05.0042U

Date of Issue: 2007-04-24

Issue No.: 1

Page 4 of 4

**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):**

This Issue introduced the following change:

1. To recognise that the supporting Sira report has been modified to introduce minor text amendments and to correct the list of certified products, consequently, the ExTR issue level has changed.

**Annexe:** 05\_0042U Annexe 1 lss1.pdf

# STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 638

(Sheet 1 of 3)

This certifies that the equipment described hereunder has been examined and tested in accordance with the requirements of the Australian standard(s) specified herein, and such equipment has been found to comply with these requirements.

This certificate may be withdrawn at any time if in the opinion of SAA Committee P/3, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been altered or revised to a degree that the equipment is no longer considered suitable for installation in the hazardous location stated, or if the certificate holder has breached any of the terms or conditions under which this certificate was issued.

<b>Description of Equipment</b>  <u>'Crouse-Hinds' DP Series Control Stations</u>  As detailed in Schedule 1	<b>Hazardous Location</b>  Class II Divisions 1 & 2
<b>Drawing No(s)</b>  48-148-GA1 Issue 2, 48-148-GA2 Issue 2 and 48-148-GA3 Issue 3	<b>Type of Protection</b>  DIP T6 Refer Schedule 1 for IP classification
<b>Certification Conditions</b>	<b>Certificate Holder</b>  Crouse-Hinds (Aust) Pty Ltd 31 Moxon Road <u>PUNCHBOWL NSW 2196</u>
<b>Remarks</b>  This equipment is certified for use only in dust atmospheres where both the cloud ignition temperature and the glow temperature of the dusts concerned are greater than 135°C	<b>Manufacturer</b>  Crouse-Hinds (Aust) Pty Ltd 31 Moxon Road <u>PUNCHBOWL NSW 2196</u>
	<b>Test Report No(s)</b>  SCC TR NO: 60142
	<b>Australian Standard(s)</b>  AS 2236-1985
	<b>SAA File Reference</b>  P/3:84197/M122
	<b>Effective Date</b>  1985-04-04
	<b>Date of Issue</b>  1985-04-11

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Director—Administration & Approvals  
Standards Association of Australia

# STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Continuation of Certificate No: Ex 638

(Sheet 2 of 3)

### SCHEDULE 1 Description of Equipment (cont'd)

#### (i) Push Button & Pilot Light Control Stations

<u>Cat. No.</u>	<u>Description</u>
DP00	Junction Box
DP01	Start or stop push button station
DP02	Mushroom head push button (spring return)
DP03	Mushroom head push button (maintained) (turn to release)
DP04	Mushroom head push button (maintained) Key reset
DP05	Key switch
DP06	Selector Switch
DP07	Illuminated push button - specials
DP08	Pilot light
DP09	Rotary switch (see dwg 48-148-GA2)
Suffix	1M or N for 20 mm or 1/2" NPT entry 2M or N for 25 mm or 3/4" NPT entry

Any 2 hole cover incorporating combinations of push button or pilot lights as listed above

e.g. DP18-1M = Start push button in top position  
Pilot light in bottom position  
Base entry 20 mm

NOTE: IP classification IP65 or IP66 as per operator used (refer Drawing No. 48-148-GA1 Issue 1)

#### (ii) Isolating Switches

<u>Cat No.</u>	<u>Pole</u>	<u>Current Rating</u>	<u>Description</u>
DP9-201	2	15 amps at 600V	Lighting Switch
DP9-203	4	20 amps at 600V	Isolating Switch
DP9-212	3	20 amps at 600V	3 Pos Change Over with Off
DP9-222	3	20 amps at 600V	2 Pos Change Over
DP9-401	3	20 amps at 600V	Reversing Centre Off
DP9-178	1	20 amps at 600V	Stop/Start Spring Return to Centre Isolate Off
DP9-007	3	20 amps at 600V	Voltmeter Switch Phase to Phase and Phase to Neutral
DP9-244	1	20 amps at 600V	6 Position and Off

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# STANDARDS ASSOCIATION OF AUSTRALIA

*Incorporated by Royal Charter*

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

## CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Continuation of Certificate No: Ex 638

(Sheet 3 of 3)

### SCHEDULE 1 Description of Equipment (cont'd)

#### Cat No

DP9-101	10 amp Single Pole
DP9-102	10 amp Double Pole
DP9-201	20 amp Single Pole
DP9-202	20 amp Double Pole
DP9-204	20 amp Four Pole
DP9-254	25 amp Four Pole

Suffix            1M or N for 20 mm or ½" NPT entry  
                     2M or N for 25 mm or ¾" NPT entry

NOTE: IP classification IP65 or IP66 as per operator used (refer Drawing No 48-148-GA2 Issue 1)

#### (iii) Junction Boxes

<u>Cat No</u>	<u>Description</u>
DPJ 12	2 way x 20 mm
DPJ 14	4 way x 20 mm
DPJ 22	2 way x 25 mm
DPJ 24	4 way x 25 mm

NOTE: IP classification is IP66

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Standards Association of Australia

# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

## Certificate of Conformity

Certificate No: AUS Ex 638 Issue 0: Original Issue 11/4/1985  
Issue 1: 3/7/1996

Date of Expiry: 3/7/2006

Certificate Holder: Crouse Hinds Australia Pty Limited  
391 Park Road  
REGENTS PARK NSW 2143

Electrical Equipment: DP Series Control Stations and Enclosures

Type of Protection and Marking Code: DIP T6 IP65/IP66  
AUS Ex 638

Manufactured By: Crouse Hinds Australia Pty Limited  
391 Park Road  
REGENTS PARK NSW 2143

Issued by:



***Londonderry Occupational Safety Centre***

**132 Londonderry Road LONDONDERRY NSW 2753**

**Phone: (047) 244 900 Fax: (047) 244 999**

**STANDARDS AUSTRALIA**



Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642

# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Ex 638-1

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.

The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:

AS 2236-1994 Electrical Equipment for Explosive Atmospheres - Dust-excluding Ignition-proof (DIP) Enclosures  
AS 1939-1990 Degrees of Protection Provided by Enclosures of Electrical Equipment (IP Code)

The equipment listed has successfully met the examination and test requirements as recorded in

Test Report No: LOSC 14228  
File Reference: LOSC 95/7184

*K.J. Jiles*

Signed for and on behalf of issuing authority

*Coordinator, Approvals & Certification*

Position

3/7/1996

Date of issue

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Issued by:



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# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

## Schedule

Certificate No: AUS Ex 638 Issue: 1 Date of Issue: 3/7/1996

Certified Equipment: The DP series Enclosures and Control Stations are constructed from cast aluminium and have provisions for electrical access by either glands or conduits. An 'O'-ring seal between the cover and body affords a degree of protection against the ingress of dust and water.

Optionally the cover may accommodate a range of operators and pilot lights to form control stations and/or switch units.

The range of equipment covered is listed in the Table 1.

**Table 1: Equipment Summary**

Enclosure Configuration	Maximum Dissipation	IP Rating	Equipment Summary
DP Series Push Button and Pilot Light Control Stations	23 watts	IP65/IP66	Table 2
DP9 Series Isolating Switches	23 watts	IP65/IP66	Table 3
DPJ Series Junction Box	18 watts	IP66	Table 4
DPJL Series Junction Box	23 watts	IP66	Table 5

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# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No.....Ex.638-1.

**Table 2: 'DP' Series Push Button & Pilot Light Control Stations**

Cat No	Description
DP00	Junction Box
DP01	Start or stop push button station
DP02	Mushroom head push button (spring return)
DP03	Mushroom head push button (maintained) - turn to release
DP04	Mushroom head push button (maintained) - key reset
DP05	Key switch
DP06	Selector switch
DP07	Illuminated push button - specials
DP08	Pilot Light
DP09	Rotary switch

**Table 3: 'DP9' Series Isolating Switches**

Cat No	Poles	Current Rating	Description
DP9-201	2	15 amps	Lighting Switch
DP9-203	4	20 amps	Isolating Switch
DP9-212	3	20 amps	3 Position Change Over with Off
DP9-222	3	20 amps	2 position Change Over
DP9-401	3	20 amps	Reversing Centre Off
DP9-178	1	20 amps	Stop/Start Spring Return to Centre Isolate Off
DP9-007	3	20 amps	Voltmeter Switch Phase to Phase & Phase to Neutral
DP9-244	1	20 amps	6 Position and Off
DP9-101	1	10 amps	Control Switch
DP9-102	2	10 amps	Control Switch
DP9-201	1	20 amps	Control Switch
DP9-202	2	20 amps	Control Switch
DP9-204	4	20 amps	Control Switch
DP9-254	4	25 amps	Control Switch

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# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No.....Ex 638-1

**Table 4: 'DPJ' Series Junction Boxes**

Cat No.	Description
DPJ 12	2 way by 20 mm
DPJ 14	4 way by 20 mm
DPJ 22	2 way by 25 mm
DPJ 24	4 way by 25 mm

**Table 5: DPJL Series Junction Boxes**

Cat No	Description
DPJL	4 way by 50 mm
DPJL	4 way by 40 mm
DPJL	4 way by 32 mm
DPJL	8 way by 25 mm
DPJL	8 way by 20 mm

**Drawing Schedule**

Drawing No	Drawing Title	Issue	Date
31-148-GA1	DIP Junction Box - Cat No DPJL	6	26/6/96
48-148-GA1	DIP Push Button & Pilot Light Control Station	3	26/6/96
48-148-GA2	DIP Isolating Switch	3	26/6/96
48-148-GA3	DIP Junction Box - CatNo DPJ	4	26/6/96

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# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Certificate No. **Ex 11430**

## Certificate of Compliance

This certificate is issued for the electrical equipment:

**Range of Brass Conduit Fittings**

Submitted for certification by: Con-Duit Electrical Manufacturing Pty Ltd  
Factory 22  
41 Bennett Street  
DANDENONG VIC 3175

and manufactured by: Con-Duit Electrical Manufacturing Pty Ltd

This electrical equipment and any acceptable variation thereto is specified in the Schedule or Schedules attached hereto and in the documents referred to therein.

This certifies that the equipment described has been found to comply with AS 2238-1985, AS 2480-1986 and AS 1939-1990.

TYPE OF PROTECTION: Ex d TID IP65 Class 1 Zone 1  
DIP 1985 CLASS II

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP42 and any additional conditions as may be prescribed by Standards Australia.

Test Report No.: NET 91/019, NET 91/020

File: P/3/ 91064.M160

Date of Issue: 31 July 1991

Date of Expiry of Validity: 21 July 2001

Page 1 of 3

Signed for and on behalf of Standards Australia

*Clara Clarke*  
General Manager  
Quality Assurance Services

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**QUALITY ASSURANCE  
SERVICES**  
Standards Australia

Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642



# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Certificate of  
Compliance No

Ex 12450

## Certificate of Compliance

SCHEDULE

Description of Equipment

The Range of Brass Conduit fittings is listed in Schedule 1 and covers the range of metric and imperial conduit thread, NPT, BSP and Pg thread sizes.

Drawings:

F/P1	27 May 1991
F/P2	27 May 1991
F/P3	27 May 1991
F/P4	27 May 1991
F/P5	27 May 1991
F/P6	27 May 1991
F/P7	27 May 1991
F/P8	27 May 1991
F/P9	27 May 1991
F/P10	27 May 1991
F/P11	27 May 1991
F/P12	27 May 1991
F/P13	27 May 1991
F/P14	27 May 1991

Schedule 1

RANGE OF BRASS CONDUIT FITTINGS

1. Metric Stops.  
Part No. SM1, SM2, SM3, SM4, SM5, SM6.  
Size: 20 mm to 63 mm.
2. Imperial Stops.  
Part No. S11, S12, S13, S14, S15, S16.  
Size: 3/4 inch to 2.5 inch.
3. BSP Male to Metric Female Adaptors  
Part No. AM 1-1, AM 2-2, AM 3-3, AM 4-4, AM 5-5, AM 6-6.  
Size: 1/2 inch BSP/20mm to 2 inch BSP/50mm.
4. Metric Reducers  
Part No. RM 1-0, RM 2-1, RM 3-2, RM 4-3, RM 5-4, RM 6-5.  
Size: 20mm/16mm to 63 mm/50mm.

Page 1 of 3

Signed for and on behalf of Standards Australia



General Manager  
Standards Australia

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# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Continuation of  
Certificate No.

Ex. 12450

## Certificate of Compliance

### SCHEDULE 1 (Continued)

5. Metric Nipples  
Part No. MM1, MM2, MM3, MM4, MM5.  
Size: 20 mm to 50 mm.
6. Metric Couplings  
Part No. CM1, CM2, CM3, CM4, CM5, CM6.  
Size: 20mm to 63mm.
7. Metric Male to BSP Female Adaptors  
Part No. AMB 1-1, AMB 2-2, AMB 3-3, AMB 4-4, AMB 5-5, AMB 6-6  
Size: 20 mm/1/2 inch BSP to 63mm/2 inch BSP
8. BSP Male to Metric Female Reducers  
Part No. RMB 1-1, RMB 3-1, RMB 3-2, RMB 4-3, RMB 5-4, RMB 6-5  
Size: 3/4 inch BSP/20mm to 2 inch BSP/50mm.
9. NPT Male to Metric Female Reducers  
Part No. RNM 2-1, RNM 1-1, RNM 3-2, RNM 4-3, RNM 5-4, RNM 6-5  
Size: 3/4 inch NPT/20mm to 2 inch NPT/50mm.
10. NPT Male to Metric Female Adaptors  
Part No. AMN 1-1, AMN 2-2, AMN 3-3, AMN 4-4, AMN 5-5, AMN 6-6  
Size: 1/2 inch NPT/20mm to 2 inch NPT/63mm.
11. Metric Male to NPT Female Adaptors  
Part No. AMN 1-1, AMN 2-2, AMN 3-3, AMN 4-4, AMN 5-5, AMN 6-6  
Size: 20mm/1/2 inch NPT to 63mm/2 inch NPT.
12. Pg Male to Metric Female Adaptors  
Part No. APM 0-1, APM 1-1, APM 2-2, APM 3-3, APM 4-4, APM 5-5  
Size: Pg 13/20mm to Pg 42/30mm.
13. Metric Male to Imperial Female Adaptors  
Part No. AMI 1-1, AMI 2-2, AMI 3-3, AMI 4-4, AMI 5-5  
Size: 20 mm/3/8 inch Imperial to 60 mm/2 inch Imperial
14. Imperial Male to Metric Female Adaptors  
Part No. AIM 0-1, AIM 1-1, AIM 2-2, AIM 3-3, AIM 4-4, AIM 5-5  
Size: 5/8 inch Imperial/20mm to 2 inch Imperial/50mm

Page 3 of 3

Signed for and on behalf of Standards Australia



 Deputy Manager  
Quality Assurance Services

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FLPW

ALCO FLPW NICKEL PLATED CABLE GLAND IP66/68

STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

SHEET 11-12

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 591

(Sheet 1 of 2)

This certifies that the equipment described hereunder has been examined and tested in accordance with the requirements of the Australian standard(s) specified herein, and such equipment has been found to comply with these requirements. This certificate may be withdrawn at any time if in the opinion of SAA Committee P/3, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been amended or revised to a degree that the equipment is no longer considered suitable for installation in the hazardous location stated, or if the certificate holder has breached any of the terms or conditions under which this certificate was issued.

Description of Equipment	Hazardous Location
A range of Cable Glands, Type FLPW As detailed in Schedule 1	Class I Zone 1 Class II Divisions 1 & 2 Type of Protection Ex IIC IPXS
Drawing No(s)	Certificate Holder Reliance Manufacturing Co 160 Breakfast Creek Road NEWSTEAD QLD 4006
2-212 Rev B, 2-213 Rev B, 2-214 Rev A, 2-215 Rev B, 2-218 Rev B, 2-219 Rev B, 2-462, 2-463, 2-554, 2-555, 2-700, 2-701	Manufacturer Reliance Manufacturing Co 160 Breakfast Creek Road NEWSTEAD QLD 4006
Certification Conditions	Test Report No(s) SCC TR NO: 58360 and 60179
Remarks This certificate supersedes SAA Certificate Nos Ex 69 and DIP 91	Australian Standard(s) AS 1823-1984 and AS 1939-1981
	SAA File Reference P/3: 84089/M122
	Effective Date 1985-02-14
	Date of Issue 1985-02-19

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*J. L. ...*  
Director - Administration & Approvals  
Standards Association of Australia

## STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

STANDARDS HOUSE, 60 ARTHUR STREET, NORTH SYDNEY, N.S.W.

SHEET 12-12

## CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Continuation of Certificate No: Ex 591 (Sheet 2 of 2)

## SCHEDULE 1 DESCRIPTION OF EQUIPMENT (cont'd)

A series of plated brass cable glands, incorporating neoprene seals, intended for use with single steel wire armoured circular cables.

The series includes the following glands:

Gland Series	Nominal Mounting Thread Dimensions	
	Diameter	Length
	mm	mm
FLPW202	20	15.3
FLPW203	20	15.3
FLPW204	20	15.3
FLPW205	20	15.3
FLPW206	20	15.3
FLPW253	25	19.0
FLPW254	25	19.0
FLPW255	25	19.0
FLPW256	25	19.0
FLPW323	32	25.4
FLPW324	32	25.4
FLPW325	32	25.4
FLPW326	32	25.4
FLPW403	40	25.4
FLPW404	40	25.4
FLPW405	40	25.4

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*J. Helen Stoney*  
 Director—Administration & Approvals  
 Standards Association of Australia



FLPW

ALCO FLPW NICOTE PLATED CABLE GLAND IP66/68

Certification of

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

SHEET 2-12

Certificate No: AUS Ex 591 Issue 0: Original Issue 19/02/1985  
 Issue 2: 10/10/1995

Date of Expiry: 10/10/2005

Certificate Holder: Reliance Manufacturing Company  
 40-42 Ross Street  
 NEWSTEAD Queensland 4006

Electrical Equipment: Range of Cable Terminating Glands "Alco" Series FLPW 202 to FLPW 755

Type of Protection and Marking Code: Ex IIIC IP66/IP68 (30 metres) Class I Zone 1 and Class II

Manufactured By: Reliance Manufacturing Company  
 40-42 Ross Street  
 NEWSTEAD Queensland 4006

Issued by:



*Londonderry Occupational Safety Centre*

132 Londonderry Road LONDONDERRY NSW 2753

Phone: (047) 244 900 Fax: (047) 244 999

**STANDARDS AUSTRALIA**

Standards Australia Quality Assurance Services Pty Limited A.C.N. 090 811 612



FLPW

ALCO FLPW NICOTE PLATED CABLE GLAND 1866/82

# Certification of EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by Standards Australia Quality Assurance Services

*This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.*

*The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:*

- AS 1828-1984 Electrical Equipment for Explosive Atmospheres - Cable Glands
- AS 1939-1990 Degrees of Protection Provided by Enclosures of Electrical Equipment (IP Code)

SHEET 3-12

*The equipment listed has successfully met the examination and test requirements as recorded in:*

Test Report No: LOSC 12689

File Reference: LOSC 94/6708

*G. Langford*  
 Signed for and on behalf of issuing authority  
*Testing Engineer*  
 Position

10.10.1996  
Date of issue

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**STANDARDS AUSTRALIA**

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Certification of

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

Schedule

SHEET 4-12

Certificate No: AUS Ex 591 Issue: 2 Date of Issue: 10/10/95

**Certified Equipment:** The Reliance "Alco" series "FLPW" Cable Terminating Glands provide for termination of armoured cables having nominal overall diameters over bedding ranging from a minimum of 6.00mm to a maximum of 66.70 mm. Sealing of the cable entry is achieved by means of compression washers which grip the cable sheath and bedding when the gland nut and sleeve are tightened. The armour wires are clamped by merging cones when the sleeve is tightened.

The cable glands are suitable for installation in enclosures having type of explosion-protection Ex "d", "o", "p", "n" and DIP.

**Allowable Variations:**

1. The range of cable glands is consolidated into one certificate Ex 591 and Group I is included.
2. Because of the method of product stockholding, it is agreed that "FLPW" glands which currently carry the Certificate No: Ex 585 may continue to be sold for a period of twelve months from the date of issue of this certificate.  
Certificate Ex 585 will be withdrawn on the 10th October 1996.
3. Abbreviated marking is permitted because of space and tooling problems. The following marking detail need not be shown on each assembly:
  - (i) "Ex" and
  - (ii) Suffix "X" providing the Certificate Holder complies with the conditions of manufacture.

Issued by:



*Londonderry Occupational Safety Centre*

132 Londonderry Road LONDONDERRY NSW 2753  
Phone: (047) 244 900 Fax: (047) 244 999

**STANDARDS AUSTRALIA**

Standards Australia Quality Assurance Services Pty Limited A.C.N. 050 611 642



FLPW

ALCO FLPW NICKEL PLATED CABLE GLAND IP66/68

Page 5 of 29 for FLPW glands

Certification of

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by Standards Australia Quality Assurance Services

Addendum to Certificate No. **Ex: 391-3**

Conditions of Certification:

SHEET 5-12

It is a condition of manufacture that:

1. The manufacturer's instructions for the installation of the cable glands shall be made available for use by the installer.

Each gland shall be supplied with an impervious washer for the mounting thread as specified in the product catalogue to maintain the Degree of Protection IP68 at the point of entry to the enclosure when the installation so requires.

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*Londonderry Occupational Safety Centre*

132 Londonderry Road LONDONDERRY NSW 2753

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4 of 9



FLPW

ALCO (FLPW) NICOTE PLATED CABLE GLAND IP66/68

## Certification of EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex: 591-2

SCHEDULE

SHEET 6-12

RANGE OF "Alco" CABLE GLANDS FOR LISTING UNDER ONE  
CERTIFICATE NUMBER - AUS Ex: 591

GLAND			GLAND		
Ref No.	dia. mm	Length mm	Ref. No.	dia. mm	Length mm
FLPW 202	20	15.8	FLPW 502	50	28.6
FLPW 203	20	15.8	FLPW 503	50	28.6
FLPW 204	20	15.8	FLPW 504	50	28.6
FLPW 205	20	15.8	FLPW 505	50	28.6
FLPW 206	20	15.8	-	-	-
FLPW 253	25	19.0	FLPW 634	63	28.6
FLPW 254	25	19.0	FLPW 634	63	28.6
FLPW 255	25	19.0	FLPW 635	63	28.6
FLPW 256	25	19.0	FLPW 636	63	28.6
FLPW 323	32	25.4	-	-	-
FLPW 324	32	25.4	-	-	-
FLPW 325	32	25.4	-	-	-
FLPW 326	32	25.4	-	BSP	-
FLPW 403	40	25.4	FLPW 753	2 1/2"	28.6
FLPW 404	40	25.4	FLPW 754	2 1/2"	28.6
FLPW 405	40	25.4	FLPW 755	2 1/2"	28.6
Original Certificate AUS Ex 591			Original Certificate AUS Ex 585		

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Addendum to Certificate No. Ex: 591-2

Drawing Schedule

SHEET 7-12

Drawing No	Drawing Title	Revision/ Issue	Date
FLPW 202-405 (Range)			
2-219	Gland Details	D	14 Sep 1993
2-212	Gland Details	D	14 Sep 1993
2-213	Gland Details	D	14 Sep 1993
2-214	Gland Details	C	14 Sep 1993
2-215	Gland Details	D	14 Sep 1993
2-218	Gland Details	D	14 Sep 1993
463	Gland Details	F	14 Sep 1993
2-463	Gland Details	B	14 Sep 1993
2-700	FLPW Cable Gland Schedule Min. Cable Diameters	Original	20 Nov 1984
2-701	FLPW Cable Gland Schedule Min. Cable Diameters	Original	20 Nov 1984
1-1202	Seal Detail	D	24 May 1993
1-1203	Seal Detail	D	24 May 1993
1-1204	Seal Detail	D	24 May 1993
1-1205	Seal Detail	D	24 May 1993
1-1206	Seal Detail	E	24 May 1993
1-1207	Seal Detail	D	24 May 1993
1-1208	Seal Detail	D	24 May 1993
162-405	FLPW Seal Details	F	25 May 1993
FLPW 244-263	Mounting Thread Seal	Initial	28 Jun 1993
FLPW 282-405	Marking Details - FLPW Cable Gland	Initial	16 May 1995
FLPW 502-755 (Range)			
FLPW 502-755 Sheet 1 of 2	Marking Details - FLPW Cable Glands	Initial	15 May 1995
FLPW 502-755 Sheet 2 of 2	Cable Glands	A	31 Aug 1994
FLPW 59	Clamp	A	20 Oct 1991

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Addendum to Certificate No. Ex: 591-2

SHEET 8-12

Drawing No.	Drawing Title	Revision Issue	Date Issued
FLPW 502-755 (Range) continued			
KLPW 60	Body	A	16 Oct 1991
FLPW 61	Cone	A	20 Oct 1991
FLPW 63/67/502/503	Sleeve	A	23 Oct 1991
WG 502-WG 755	Seal Details	B	26 May 1993
FLPW 502-635	Seal Details	D	25 May 1993
FLPW 62	Nut	C	05 Jan 1990
FLPW 64	Body	A	16 Oct 1991
FLPW 65	Cone	A	20 Oct 1991
FLPW 66	Nut	C	05 Jan 1990
FLPW 68	Clamp	A	20 Oct 1991
FLPW 69	Body	A	16 Oct 1991
FLPW 70	Cone	A	20 Oct 1991
FLPW 71	Nut	C	05 Jan 1990
FLPW 72/76/504/505	Sleeve	A	27 Oct 1991
FLPW UEP1A-UPTS	Seal Details	B	26 May 1993
FLPW 73	Body	A	16 Oct 1991
FLPW 74	Cone	A	20 Oct 1991
FLPW 75	Nut	C	05 Jan 1990
FLPW 77	Body	A	27 Oct 1991
FLPW 78	Clamp	A	15 Feb 1994

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Page 7 of 29

# Certification of EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

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Addendum to Certificate No. **Ex 591-2**

Drawing No.	Drawing Title	Revision/Issue	Date
<b>SHEET 9-12</b>			
FLPW 502-755 (Range) - continued			
FLPW 79	Cone	A	29 Nov 1991
FLPW 80	Nut	B	05 Jan 1990
FLPW 81	Sleeve	A	16 Feb 1994
FLPW 82	Body	A	27 Oct 1991
FLPW 83	Clamp	A	15 Feb 1994
FLPW 84	Cone	A	29 Nov 1991
FLPW 85	Nut	B	05 Jan 1990
FLPW 86	Sleeve	A	16 Feb 1994
FLPW 87	Body	A	27 Oct 1991
FLPW 88	Clamp	A	15 Feb 1994
FLPW 89	Cone	A	29 Nov 1991
FLPW 90	Nut	C	28 Feb 1994
FLPW 91	Sleeve	A	16 Feb 1994
FLPW 92	Body	A	27 Oct 1991
FLPW 93	Cone	A	29 Nov 1991
FLPW 94	Nut	C	28 Feb 1994
FLPW 95	Sleeve	A	16 Feb 1994
FLPW 97	Clamp	A	15 Feb 1994
FLPW 99	Nut	B	05 Jan 1990
FLPW 100	Sleeve	A	16 Feb 1994

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Page 9 of 29



FLPW

ALCO 'FLPW' NICOTE PLATED CABLE GLAND 'P66/68'

Page 10 of 29 for FLPW glands

*Certification of*

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex: 591-2

**SHEET 10-12**

Drawing No.	Drawing Title	Revision	Date
FLPW 502-753 (Range) - continued			
FLPW 102	Clamp	A	15 Feb 1994
FLPW 104	Nut	B	03 Jan 1990
FLPW 105	Sleeve	A	16 Feb 1994
FLPW 107	Clamp	A	15 Feb 1994
FLPW 109	Nut	B	03 Jan 1990
FLPW 110	Sleeve	A	16 Feb 1994
1-1421	Body	Original	08 Jun 1979
1-1423	Conc	Original	11 Jun 1979
SW.FLPW 8/95	Table - ALCO "FLPW" Cable Glands	No reference	Aug 1995
SW.FLPW 8/95.A.	Appendix II - FLPW Fitting Instructions	No reference	Aug 1995

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21/05 02 10.05 FAX 100002009 RMC CUST SERV

Certification of

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

**Certificate of Conformity**

Certificate No.: **Ex 2420U** Issue 0: **22 February 1999** Original Issue

Date of expiry: **22 February 2009**

Certificate Holder: **Reliance Manufacturing Company  
40 Ross Street  
NEWSTEAD QLD 4006**

Electrical Equipment: **Range of ALCO UFPR Cable Glands  
(See Table 1)**

Type of Protection and Marking Code: **Ex I/IIC IP66/68 Class I Zone 1  
DIP IP66/68 Class II  
AUS Ex 2420U**

Manufactured by: **Reliance Manufacturing Company**

Issued by:



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21/09 02 10.09 FAX 1800002009 RMC CUSTOM SERVICE 01000

# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q7134) of the scheme.

The electrical equipment and any acceptable variation to it specified in the schedule to this certificate and the identified documents, was found to comply with the following standards:


- AS 2380.1 - 1989 Electrical equipment for explosive atmospheres - Explosion-protection techniques - Part 1 : General requirements
- AS 2380.2 - 1991 Electrical equipment for explosive atmospheres - Explosion-protection techniques - Part 2 : Flameproof enclosure d (Amdt 1, 13 July 1992)
- AS 2380.6 - 1988 Electrical equipment for explosive atmospheres - Explosion-protection techniques - Part 6 : Increased safety
- AS 2236 - 1994 Electrical equipment for explosive atmospheres - Dust-excluding ignition-proof (DIP) enclosure (Amdt 1, 5 March 1998)
- AS 1828 - 1984 Electrical equipment for explosive atmospheres - Cable glands

*This certificate does not ensure compliance with electrical safety and performance requirements other than those included in the standards listed above.*

The equipment listed has successfully met the examination and test requirements as recorded in

Test Report No: NM98/0002

File Reference: 97/0360 (P80762)

  
Signed for and on behalf of issuing authority

Senior Engineer - Certification  
Engineering, Testing and Certification Centre

Position

22 February 1999

Date of issue

This certificate and schedule may not be reproduced except in full.

This certificate is not transferable and remains the property of Standards Australia Quality Assurance Services and must be returned in the event of its being revoked or not renewed.

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Certificate No.: Ex 2420U

Issue: 0



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# Certification of

# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

## Schedule

Equipment:

The series of ALCO, UFPR unarmoured cable glands covered by this certificate are listed in Table 1. The glands are of nickel plated brass/gunmetal or stainless steel construction and have neoprene grommets, compressed fibre washers and mounting thread fibre washers. Extension nuts of brass construction are an option for cable glands UFPR20A to UFPR32B.

Table 1. Range of ALCO UFPR Cable Glands

Model		Entry Thread Size	Cable diameter (mm)	
Brass	Stainless Steel		Minimum	Maximum
UFPR20A	UFPR20AS	M20	6.20	9.10
UFPR20B	UFPR20BS	M20	9.10	12.00
UFPR20C	UFPR20CS	M20	12.00	14.50
UFPR25A	UFPR25AS	M25	14.50	18.20
UFPR32A	UFPR32AS	M32	18.20	21.90
UFPR32B	UFPR32BS	M32	21.90	25.60
UFPR40A	UFPR40AS	M40	25.60	30.00
UFPR40B	UFPR40BS	M40	29.80	34.20
UFPR50A	UFPR50AS	M50	34.20	39.10
UFPR50B	UFPR50BS	M50	39.10	44.00
UFPR63A	UFPR63AS	M63	44.00	48.70
UFPR63B	UFPR63BS	M63	48.70	55.50
UFPR250A	UFPR250AS	2.5"	55.50	62.40
UFPR275A	UFPR275AS	2.75"	62.40	69.30
UFPR300A	UFPR300AS	3.0"	69.30	76.10
UFPR350A	UFPR350AS	3.5"	76.10	83.00
UFPR350B	UFPR350BS	3.5"	83.00	89.90
UFPR400A	UFPR400AS	4.0"	89.90	96.60
UFPR400B	UFPR400BS	4.0"	96.60	103.00

Issued by:

Certificate No.: Ex 2420U Issue: 0 Date of Issue: 22 February 1999



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# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. : **Ex 2420U**

Issue: **0**

Date of Issue: **22 February 1999**

Drawings:

DRAWING No.	DRAWING TITLE	REVISION No.	DRAWN/REVISION DATE
UFPR20A - 40B	UFPR CABLE GLANDS	ORIG	15.12.98
UFPR20AS - 40BS	UFPR CABLE GLANDS STAINLESS STEEL	ORIG	15.12.98
UFPR50A - 400B	UFPR CABLE GLANDS	ORIG	15.12.98
UFPR50AS - 400BS	UFPR CABLE GLANDS STAINLESS STEEL	ORIG	15.12.98
UB 55	MOUNTING THREAD FIBRE WASHERS FOR I.P. INSTALLATIONS	C	08.12.98
UFP 447- 454	SEALS UFPR 20A - 40B	ORIG	20.11.98
UFP 455 - 465	SEALS UFPR 50A - 400B	ORIG	20.11.98
UFP 504 - 511	WASHERS UFPR 20A - 275A	ORIG	20.08.98
UFP 512 - 516	WASHERS UFPR300A - UFPR400B	ORIG	20.08.98
EN 61	EXTENSION NUT - UFPR 20A	ORIG	24.08.98
EN 62	EXTENSION NUT - UFPR 20B	ORIG	24.08.98
EN 63	EXTENSION NUT - UFPR 20C	ORIG	24.08.98
EN 64	EXTENSION NUT - UFPR 25A	ORIG	24.08.98
EN 65	EXTENSION NUT - UFPR 32A	ORIG	24.08.98
EN 66	EXTENSION NUT - UFPR 32B	ORIG	24.08.98
UFP 466	BODY - UFPR20A	ORIG	26.11.98
UFP 466S	BODY - UFPR 20A - STAINLESS STEEL	ORIG	26.11.98
UFP 467	BODY - UFPR20B	ORIG	26.11.98
UFP 467S	BODY - UFPR 20B STAINLESS STEEL	ORIG	26.11.98

(DRAWINGS CONTINUED NEXT PAGE)

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# EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No..... : Ex 2420U

Issue: 0

Date of Issue: 22 February 1999

DRAWING NO.	DRAWING TITLE	REVISION NO.	DRAWN/ REVISION DATE
UFP 468	BODY UFP 20C	ORIG	25.11.98
UFP 468S	BODY UFP 20C - STAINLESS STEEL	ORIG	26.11.98
UFP 469	BODY - UFP 25A	ORIG	26.11.98
UFP 469S	BODY - UFP 25A - STAINLESS STEEL	ORIG	26.11.98
UFP 470	NUT - UFP 20A	ORIG	30.11.98
UFP 470S	NUT - UFP 20A - STAINLESS STEEL	ORIG	30.11.98
UFP 471	NUT - UFP 20B	ORIG	30.11.98
UFP 471S	NUT - UFP 20B - STAINLESS STEEL	ORIG	30.11.98
UFP 472	NUT - UFP 20C	ORIG	30.11.98
UFP 472S	NUT - UFP 20C - STAINLESS STEEL	ORIG	30.11.98
UFP 473	NUT - UFP 25A	ORIG	30.11.98
UFP 473S	NUT - UFP 25A - STAINLESS STEEL	ORIG	30.11.98
UFP 474	BODY - UFP 50A	ORIG	06.08.98
UFP 474S	BODY - UFP 50A - STAINLESS STEEL	ORIG	06.08.98
UFP 475	BODY - UFP 50B	ORIG	06.08.98
UFP 475S	BODY - UFP 50B - STAINLESS STEEL	ORIG	06.08.98
UFP 476	BODY - UFP 63A	ORIG	06.08.98
UFP 476S	BODY - UFP 63A - STAINLESS STEEL	ORIG	06.08.98
UFP 477	BODY - UFP 63B	ORIG	06.08.98
UFP 477S	BODY - UFP 63B - STAINLESS STEEL	ORIG	06.08.98
UFP 478	BODY - UFP 40A	ORIG	26.08.98

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Certification of

**EXPLOSION PROTECTED ELECTRICAL EQUIPMENT**

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. : Ex 2420U

Issue: 0

Date of Issue: 22 February 1999

DRAWING NO.	DRAWING TITLE	REVISION NO.	DRAWN/ REVISION DATE
UFP 478S	BODY - UFPR 40A - STAINLESS STEEL	ORIG	26.08.98
UFP 479	BODY - UFPR 40B	ORIG	26.08.98
UFP 479S	BODY - UFPR 40B - STAINLESS STEEL	ORIG	26.08.98
UFP 480	BODY - UFPR 32A	ORIG	26.08.98
UFP 480S	BODY - UFPR 32A - STAINLESS STEEL	ORIG	26.08.98
UFP 481	BODY - UFPR 32B	ORIG	26.08.98
UFP 481S	BODY - UFPR 32B - STAINLESS STEEL	ORIG	26.08.98
UFP 482	BODY - UFPR250A	ORIG	06.08.98
UFP 482S	BODY - UFPR250A - STAINLESS STEEL	ORIG	06.08.98
UFP 483	BODY - UFPR275A	ORIG	06.08.98
UFP 483S	BODY - UFPR275A - STAINLESS STEEL	ORIG	06.08.98
UFP 484	BODY - UFPR 300A	ORIG	06.08.98
UFP 484S	BODY - UFPR 300A - STAINLESS STEEL	ORIG	06.08.98
UFP 485	BODY - UFPR 350A	ORIG	06.08.98
UFP 485S	BODY - UFPR 350A - STAINLESS STEEL	ORIG	06.08.98
UFP 486	BODY - UFPR 350B	ORIG	06.08.98
UFP 486S	BODY - UFPR 350B - STAINLESS STEEL	ORIG	06.08.98
UFP 487	BODY - UFPR 400A	ORIG	06.08.98
UFP 487S	BODY - UFPR 400A - STAINLESS STEEL	ORIG	06.08.98
UFP 488	BODY - UFPR 400B	ORIG	06.08.98
UFP 488S	BODY - UFPR 400B - STAINLESS STEEL	ORIG	06.08.98

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Issue: 0

Date of Issue: 22 February 1999

DRAWING NO.	DRAWING TITLE	REVISION NO.	DRAWN/ REVISION DATE
UFP 489	NUT - UFPR 32A	ORIG	04.12.98
UFP 489S	NUT - UFPR 32A - STAINLESS STEEL	ORIG	04.12.98
UFP 490	NUT - UFPR 32B	ORIG	04.12.98
UFP 490S	NUT - UFPR 32B - STAINLESS STEEL	ORIG	04.12.98
UFP 491	NUT - UFPR 40A	ORIG	04.12.98
UFP 491S	NUT - UFPR 40A - STAINLESS STEEL	ORIG	04.12.98
UFP 492	NUT - UFPR 40B	ORIG	04.12.98
UFP 492S	NUT - UFPR 40B - STAINLESS STEEL	ORIG	04.12.98
UFP 493	NUT UFPR 50A	ORIG	04.12.98
UFP 493S	NUT UFPR 50A - STAINLESS STEEL	ORIG	04.12.98
UFP 494	NUT UFPR 50B	ORIG	19.08.98
UFP 494S	NUT UFPR 50B - STAINLESS STEEL	ORIG	19.08.98
UFP 495	NUT - UFPR 63A	ORIG	19.08.98
UFP 495S	NUT - UFPR 63A - STAINLESS STEEL	ORIG	19.08.98
UFP 496	NUT - UFPR 63B	ORIG	19.08.98
UFP 496S	NUT - UFPR 63B - STAINLESS STEEL	ORIG	19.08.98
UFP 497	NUT - UFPR 250A	ORIG	19.08.98
UFP 497S	NUT - UFPR 250A - STAINLESS STEEL	ORIG	19.08.98
UFP 498	NUT - UFPR 275A	ORIG	19.08.98
UFP 498S	NUT - UFPR 275A - STAINLESS STEEL	ORIG	19.08.98
UFP 499	NUT - UFPR 300A	ORIG	19.08.98

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Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. : Ex 2420U

Issue: 0

Date of Issue: 22 February 1999

DRAWING NO.	DRAWING TITLE	REVISION No.	DRAWN/ REVISION DATE
UFP 499S	NUT - UFPR 300A - STAINLESS STEEL	ORIG	19.08.98
UFP 500	NUT - UFPR 350A	ORIG	19.08.98
UFP 500S	NUT - UFPR 350A - STAINLESS STEEL	ORIG	19.08.98
UFP 501	NUT - UFPR 350B	ORIG	19.08.98
UFP 501S	NUT - UFPR 350B - STAINLESS STEEL	ORIG	19.08.98
UFP 502	NUT - UFPR 400A	ORIG	19.08.98
UFP 502S	NUT - UFPR 400A - STAINLESS STEEL	ORIG	19.08.98
UFP 503	NUT - UFPR 400B	ORIG	19.08.98
UFP 503S	NUT - UFPR 400B - STAINLESS STEEL	ORIG	19.08.98

Additional Information:

For the degree of protection of IP68, glands were tested at a depth of 40m for a period of 30 minutes.

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## **6 Datasheets and Electrical Drawings**

Documentation in relation to this section is to be included and maintained by APA Group.



## 7 Calculations

Documentation in relation to this section is to be included and maintained by APA Group.

Calculations need to be confirmed for equipment installed in hazardous areas. These include heat dissipation calculation for Ex e and intrinsically safe barrier assessment for Ex i, which are relevant for the ADP sites.

This section contains sample calculation sheet for intrinsically safe barrier assessment and extracts from AS 2381.6-1993 and AS 2381.7-1989.

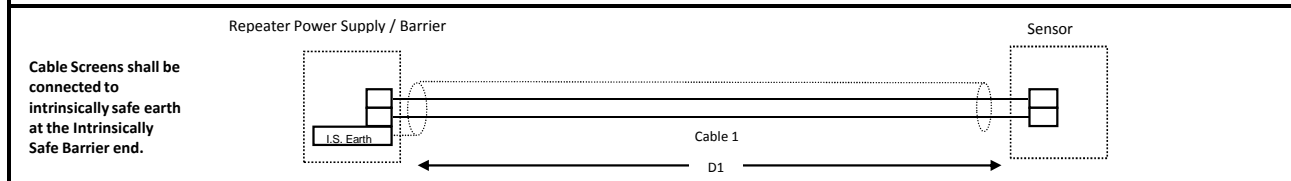
# Intrinsically Safe Barrier Assessment Sheet



Document No:		Prepared By:	
Site:		Checked:	
Loop Description:		QA:	
Loop Drawing Number:		Approved:	
		Date:	

**Hazardous Area:**

H. A. Report: <input style="width: 80%;" type="text"/>	Area Class: <input style="width: 80%;" type="text"/>
H. A. Drawing No.: <input style="width: 80%;" type="text"/>	Gas Group: <input style="width: 80%;" type="text"/>
	Temperature Class: <input style="width: 80%;" type="text"/>



**I.S. Device details (Hazardous Area) [Note 2]**

Tag: <input style="width: 90%;" type="text"/> Type of instrument: <input style="width: 90%;" type="text"/> Manufacturer: <input style="width: 90%;" type="text"/> Model Number: <input style="width: 90%;" type="text"/> Serial No: <input style="width: 90%;" type="text"/> Certificate Number: <input style="width: 90%;" type="text"/> Certifying Authority: <input style="width: 90%;" type="text"/> Protection Type: <input style="width: 90%;" type="text"/>	Max Voltage Um: <input style="width: 80%;" type="text"/> V O/C Voltage Uo: <input style="width: 80%;" type="text"/> V S/C Current Io: <input style="width: 80%;" type="text"/> mA Power Po: <input style="width: 80%;" type="text"/> mW Allowable Cap. Co: <input style="width: 80%;" type="text"/> uF Allowable Ind. Lo: <input style="width: 80%;" type="text"/> mH L/Ro: <input style="width: 80%;" type="text"/> uH/Ohm
---	---

**Cables:**

Cable 1:	Cable 2:	Total Cable:
Tag: <input style="width: 80%;" type="text"/>	Tag: <input style="width: 80%;" type="text"/>	
Capacitance: <input style="width: 80%;" type="text"/> uF/m	Capacitance: <input style="width: 80%;" type="text"/> uF/m	Capacitance: <input style="width: 80%;" type="text"/> uF
Inductance: <input style="width: 80%;" type="text"/> mH/m	Inductance: <input style="width: 80%;" type="text"/> mH/m	Inductance: <input style="width: 80%;" type="text"/> mH
L/Rc: <input style="width: 80%;" type="text"/> mH/Ohm	L/Rc: <input style="width: 80%;" type="text"/> mH/Ohm	Max L/Rc: <input style="width: 80%;" type="text"/> mH/Ohm
Length(D1): <input style="width: 80%;" type="text"/> m	Length(D2): <input style="width: 80%;" type="text"/> m	

**I.S. Apparatus Parameters (Hazardous Area):**

Tag: <input style="width: 90%;" type="text"/> Type of instrument: <input style="width: 90%;" type="text"/> Manufacturer: <input style="width: 90%;" type="text"/> Model Number: <input style="width: 90%;" type="text"/> Serial No: <input style="width: 90%;" type="text"/> Certificate Number: <input style="width: 90%;" type="text"/> Certifying Authority: <input style="width: 90%;" type="text"/> Protection Type: <input style="width: 90%;" type="text"/>	O/C Voltage Ui: <input style="width: 80%;" type="text"/> V S/C Current li: <input style="width: 80%;" type="text"/> mA Power Pi: <input style="width: 80%;" type="text"/> mW Capacitance Ci: <input style="width: 80%;" type="text"/> uF Inductance Li: <input style="width: 80%;" type="text"/> mH
---	---

**Checks:**

			PASS/FAIL/NA
1	Uo <= Ui	<=	
2	Io <= li	<=	
3	Po <= Pi	<=	
4	Ci+C <sub>Cable</sub> <= Co	<=	
6	Li+L <sub>Cable</sub> <= Lo	<=	
OR			
7	L/R <sub>Cable</sub> < L/Ro	<	

**Conclusion:** The circuit IS Loop Calculation

**Notes:**

- 1- Calculation is based on AS.NZS 2381.1:2005, AS2381.7-1989 & AS/NZS 60079.25:2004 for a single power supply loop in an intrinsically safe system.
- 2- The I.S. Barrier is an integral part of the discrete input wireless transmitter.
- 3- The above calculation, check and conclusion are also applicable to wireless transmitter LSL and LSL level switch I.S. circuits used for pump 1161C/D, 1162C/D, 1163C/D and 1164C/D sealoil pots.
- 4- The level switch in this I.S. Circuit is classified as simple device.

APPENDIX A  
DETERMINATION OF EXTERNAL CIRCUIT PARAMETERS  
FOR INTRINSICALLY SAFE SYSTEMS

(This Appendix forms an integral part of this Standard.)

**A1 CERTIFICATION METHODS.** As specified in Clause 1.4, intrinsically safe electrical equipment may be certified under one of three categories as follows:

- (a) *Self-contained equipment.* Since this equipment has no external cabling, there are no external parameters to be specified, and hence, such equipment will not be considered further in this Appendix.
- (b) *Entity concept equipment.*
- (c) *Integrated systems.*

**A2 PARAMETERS TO BE DEFINED.**

**A2.1 Entity concept equipment.** For certified entity concept equipment the following parameters should be defined:

- (a) *Associated electrical equipment.*
  - (i) Maximum open circuit voltage ( $U_o$ ).
  - (ii) Maximum output current ( $I_o$ ).
  - (iii) Maximum external capacitance ( $C_o$ ).
  - (iv) Maximum external inductance ( $L_o$ ).
  - (v) Maximum external connected inductance to resistance ratio ( $L/R$ ).
- (b) *Intrinsically safe equipment.*
  - (i) Maximum input voltage ( $U_i$ ).
  - (ii) Maximum input current ( $I_i$ ).
  - (iii) Maximum internal capacitance ( $C_i$ ).
  - (iv) Maximum internal inductance ( $L_i$ ).

The parameters are marked on the equipment or specified in the accompanying documentation.

**A2.2 Integrated systems.** For integrated systems, either one of the following cable parameters should be defined:

- (a) Maximum capacitance, inductance, and inductance to resistance ratio.
- (b) Maximum cable lengths for defined cable types.

These parameters are specified in the system documentation or the certificate.

**A3 INSTALLATION OF ENTITY CONCEPT EQUIPMENT.** For entity concept equipment to be installed, the total of the cable parameters and those for the intrinsically safe equipment shall be less than those permitted to be connected to the associated electrical equipment, i.e.

- (a)  $C_i + C_{\text{cable}} < C_o$ ; and
- (b) either  $L_i + L_{\text{cable}} < L_o$ , or  $L/R_{\text{cable}} < L/R$ .

Also, the voltage and current allowed for the intrinsically safe equipment shall be greater than those available from the associated electrical equipment, i.e.  $U_i > U_o$ ;  $I_i > I_o$ .

Where shunt diode safety barriers are being used and their capacitance, inductance and  $L/R$  ratio parameters have not been specified in the documentation, the values specified in Table A1 may be used.

**A4 INSTALLATION OF INTEGRATED SYSTEMS.** For an integrated system to be installed correctly, the cable characteristics shall be below those specified in the system certification, i.e. the total cable capacitance and either the total lumped cable inductance or the  $L/R$  ratio must be less than those shown in the certificate or installation diagram. Cable characteristics may be obtained from the manufacturer or the values specified in Tables A2 and A3 may be used.

Alternatively, the following cable characteristics represent probable maximums:

- (a)  $C = 0.11 \mu\text{F}/\text{km}$ .
- (b)  $L = 0.8 \text{ mH}/\text{km}$ .
- (c)  $L/R = 56 \mu\text{H}/\Omega$ .

If the parameters are only specified in the system certification for Group IIC they may be multiplied by 3 for Group IIB, by 8 for Group IIA, or by 10 for Group I installations.

Where the system documentation specifies cable types and corresponding lengths it is simply a matter of adhering to those specific requirements.

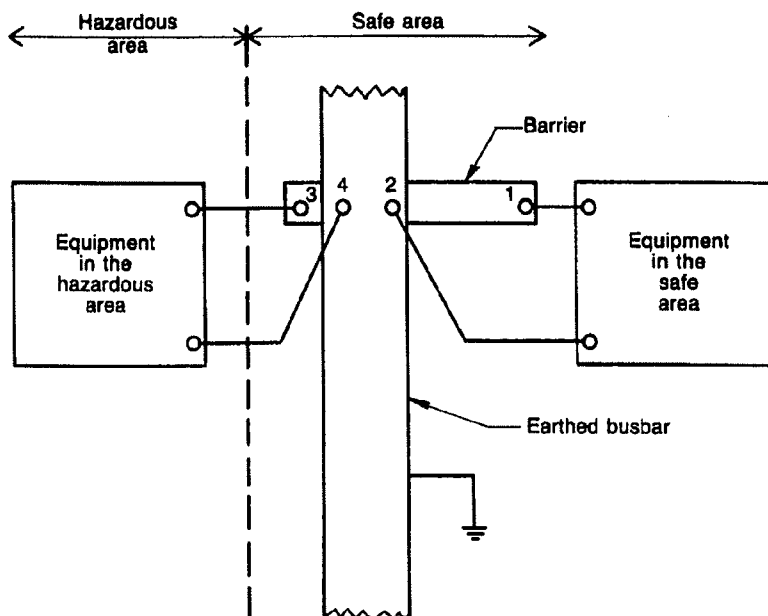
**TABLE A1**  
**EXTERNAL PARAMETERS**  
**MAXIMUM VALUES FOR GROUP IIC (HYDROGEN)\***

Barrier type	Permissible configuration	Max. permissible capacitance $\mu\text{F}$	Max. permissible inductance $\text{mH}$	Max. permissible $L/R$ ratio $\mu\text{H}/\Omega$
27 V 270 $\Omega$	Figure A1	0.15	3.7	55
22 V 150 $\Omega$	Figure A1	0.2	1.5	40
15 V 100 $\Omega$	Figure A1	0.8	1.5	60
	Figure A2	0.8	1.5	60
10 V 47 $\Omega$	Figure A1	3.0	1.0	80
	Figure A2	3.0	1.0	80
	Figure A3	0.2	1.0	40
47 V 10 $\Omega$	Figure A1	>1 000	0.16	100
	Figure A2	>1 000	0.16	100
	Figure A3	3.0	0.16	50
1 V 2 $\Omega$	Figure A1	>1 000	0.16	320
	Figure A2	>1 000	0.16	320
	Figure A3	>1 000	0.16	160

\* For most practical purposes, the value for gases of Group IIB are 3 times these values, and for gases of Group IIA are 8 times these values.

† The  $L/R$  ratio of the cable is defined as follows:

$$L/R \text{ ratio} = \frac{\text{Inductance per unit length } (\mu\text{H})}{\text{Resistance per unit length } (\Omega)}$$



NOTE: Barrier can be either positive or negative.

**FIGURE A1** INSTALLATION CONFIGURATION 2-WIRE SYSTEM  
WITH SINGLE BARRIER

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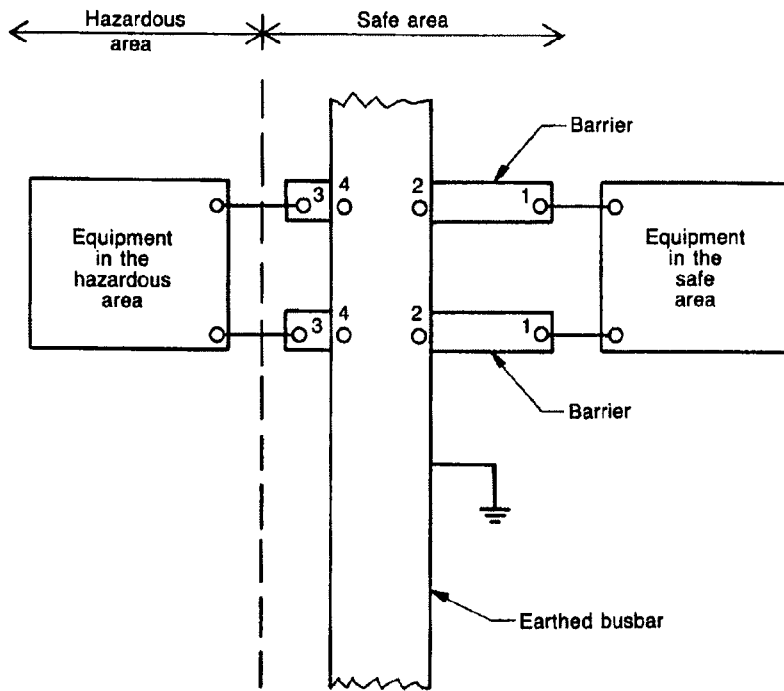


FIGURE A2 INSTALLATION CONFIGURATION 2-WIRE SYSTEM WITH TWO BARRIERS OF LIKE POLARITY

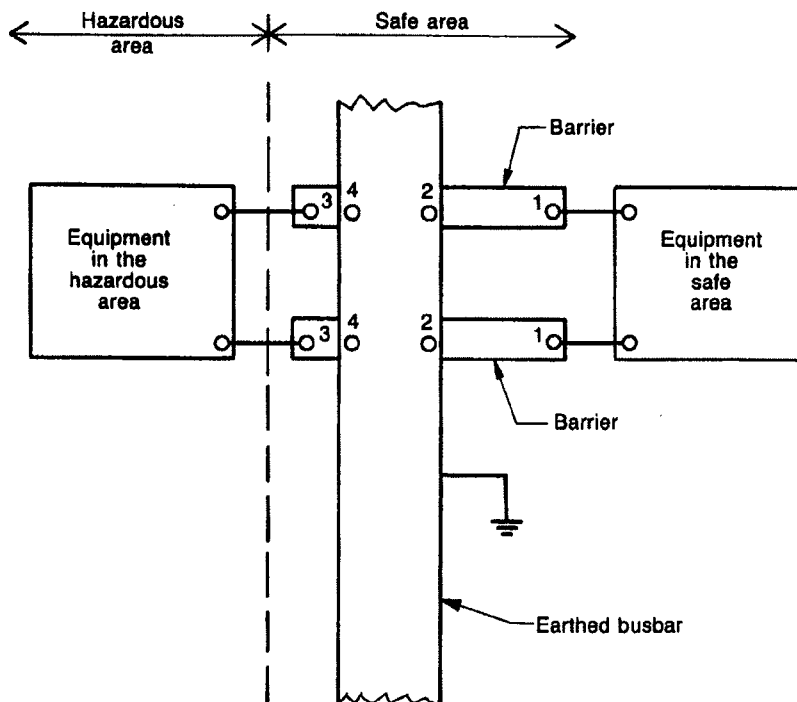


FIGURE A3 INSTALLATION CONFIGURATION 2-WIRE SYSTEM WITH TWO BARRIERS OF OPPOSITE POLARITY

**TABLE A2**  
**TYPICAL CABLE CHARACTERISTICS FOR PVC CABLES WITH 0.3 mm**  
**RADIAL THICKNESS**

Nominal conductor size, number and dia. of wires	7/0.3 mm (0.5 mm <sup>2</sup> )		7/0.5 mm (1.5 mm <sup>2</sup> )	
	Screened	Unscreened	Screened	Unscreened
Conductor resistance at 20°C (Ω/100 m)	3.8	3.8	1.4	1.4
Capacitance of pairs (μF/km)	0.145	0.090	0.2	0.12
Inductance at 1 kHz (mH/km)	0.9	0.9	0.8	0.8
L/R ratio (μH/ohm)	12	12	31	31

**TABLE A3**  
**TYPICAL CABLE CHARACTERISTICS FOR**  
**2-CORE MICC CABLE**

Nominal conductor size (mm <sup>2</sup> )	1
Conductor resistance single core (Ω/100 m)	3.45
Capacitance of pairs (μF/km)	0.1194
Capacitance, conductor to earth (μF/km)	1.1612
Inductance at 1 kHz (mH/km)	0.684
L/R ratio (μH/ohm)	20

APPENDIX C  
SELECTION OF Ex e COMPONENTS  
(Normative)

**C1 GENERAL** Each enclosure is allocated a permissible maximum dissipating power, expressed in watts, taking into account—

- (a) the dissipation per component for a given cable conductor size;
- (b) the size of each cable used and the resistance of its length, equal to the diagonal of the enclosure;
- (c) the maximum allowable current for the Ex e component or the maximum current allowable for each cable, if below the maximum allowable for the terminal block; and
- (d) the bunching of cables within each enclosure and the effect this has in producing 'hot spots'.

The selection of an acceptable combination in any assembly is based upon the requirement that enclosures shall not exceed a specified total dissipation of power (in watts) from the cables and the components which are to be housed within each enclosure.

The permissible maximum dissipating power (*MDP*) for the temperature classification of the enclosure, determined by test, will appear on the manufacturer's rating plate, e.g. 15.5 W.

Having established maximum dissipation of power from the enclosures, the wired assembly may be expressed in power loss in the following way:

$$\text{Dissipation per terminal: } P = I^2[R_t + L \times R_c] \quad \dots \text{E(1)}$$

$$P = I^2[R_t + R_d] \quad \dots \text{E(2)}$$

where

*P* = power dissipation, in watts

*I* = current through terminal (max. allowable or limited by cable size)

*R<sub>t</sub>* = internal resistance of terminal, in ohms

*R<sub>c</sub>* = cable resistance per metre, in ohms

*L* = length of cable equal to the diagonal of the enclosure, in metres

*MDP* = maximum dissipating power, in watts—the sum total of all terminals and wiring within the enclosure

*R<sub>d</sub>* = resistance of a length of cable equal to the diagonal of the enclosure

Therefore, for a combination of terminals and cables the watts loss can be calculated from the basic test information and cable data as follows:

$$MDP = aP_1 + bP_2 + cP_3 \dots + zP_n \quad \dots \text{E(3)}$$

where

*aP<sub>1</sub>*; *bP<sub>2</sub>*; *cP<sub>3</sub>*, ... *zP<sub>n</sub>* represent the heat dissipation of different combinations and numbers (*a*; *b*; *c* ... *z*) of terminals and cables.

**C2 EXAMPLE: SELECTION OF TERMINAL BLOCKS FOR COMPLIANCE WITH T6 CLASSIFICATION**

Assume that the following is derived from tests:

Enclosure *MDP* = 15 watt

Terminal block TBK2.5 = 15 A max.

Terminal block TBK16 = 47 A max.

$L$  = 270 mm

A.  **$P$  (TBK2.5) for**

$P_1$  3 amps 0.5 mm<sup>2</sup> cable = 0.092 W

$P_2$  12 amps 1.0 mm<sup>2</sup> cable = 0.763 W

$P_3$  15 amps 2.5 mm<sup>2</sup> cable = 0.530 W

B.  **$P$  (TBK16) for**

$P_4$  47 amps 16 mm<sup>2</sup> cable = 0.790 W

Maximum number of allowable terminals:

$$P_1 \text{ only} = \frac{15.0}{0.092} = 163; \text{ or}$$

$$P_2 \text{ only} = \frac{15.0}{0.763} = 19; \text{ or}$$

$$P_3 \text{ only} = \frac{15.0}{0.530} = 28; \text{ or}$$

$$P_4 \text{ only} = \frac{47.0}{0.790} = 59;$$

Now assume the following combination of terminals—

$$(60 \times P_1) + (6 \times P_2) + (3 \times P_3) + (3 \times P_4)$$

$$(60 \times 0.092) + (6 \times 0.763) + (3 \times 0.530) + (3 \times 0.790)$$

Total Heat Dissipation is—

$$5.52 + 4.578 + 1.590 + 2.37 = \mathbf{14.058 \text{ Watt}}$$

It is concluded that the combination of terminals and cables does not exceed MDP of 15 W and is therefore satisfactory for T6.

NOTE: The cables should not be bunched in quantities greater than the number of cores from each cable or conduit entering the enclosure and in any case should not exceed six per bunch.

**C3 CABLE SELECTION v TERMINAL SELECTION** The maximum current density permitted in any conductor inside or outside the enclosure is to be established as though the conductors are insulated with V75 material and enclosed in conduit in air and derated according to the ambient temperature and in any case not less than 50°C as established according to AS 3008.1. Additional derating factors may be necessary where bunching of cables occurs.

However, where the cables are run in situations that allow an increase of current-carrying capacity, the Ex e installation is placed at risk, particularly when the cable enters the terminal enclosure.

It is important to keep in mind that—

- (a) the Ex e terminal block rated current must not be exceeded; and
- (b) the cable connected to each terminal block is of a size acceptable to that block and the current carried by that cable complies with the requirements of Clause 2.7.2.



**C4 FACTORS TO BE CONSIDERED IN SELECTING EQUIPMENT CERTIFIED**

**TO Ex e** The establishment of criteria which can lead to practical installation of terminal boxes for use in Class I, Zones 1 and 2 hazardous areas can only be made by testing and from the tests a manufacturer can tabulate and mark—

- (a) maximum power for each enclosure to meet the temperature class—generally T6 or as certified;
- (b) maximum current per Ex e terminal—marked thereon, in amps;
- (c) resistance per terminal, in ohms;
- (d) average length per conductor—box diagonal in metres;
- (e) resistance per conductor length, in ohms;
- (f) actual load current per terminal for the installation in amps; and
- (g) maximum current per conductor, in amps in accordance with AS 3008.1.

For a particular manufacturer's terminal box, these criteria lead to the following tabulations:

**TABLE C1**  
**CONDUCTOR RESISTANCE PER BOX FOR EACH CONDUCTOR SIZE**

Size mm <sup>2</sup>	Enclosure types				
	No. 1	No. 2	No. 3	No. 4	No. 5
0.5	$\frac{\text{ohms}/1000\ m \times L}{1000}$ where <i>L</i> is in metres				
1.0					
2.5					
4.0					
6.0					
10.0					
16.0					
25.0					
35.0					
50.0					
70.0					
95.0					

**TABLE C2**  
**TERMINAL/COMPONENT RESISTANCE (*R<sub>t</sub>*)**

Component type	Average resistance (ohms)
TBK 2.5	Determined by test
TBK 4	
TBK 6	
TBK 10	
TBK ... <i>n</i>	

From Tables C1 and C2, details for each enclosure can be derived:

Assume ..... Enclosure type box No. 1. **MDP = 15 watt**

Ex e component			Cable	Total
Type	Qty	Load or rating A	mm <sup>2</sup>	W
TBK 2.5	60	3.0	0.5	5.52
TBK 2.5	6	12.0	1.0	4.578
TBK 2.5	3	15.0	2.5	1.590
TBK 16	3	47.0	16.0	2.37
<b>Enclosure Total =</b>				<b>14.058</b>

It is possible to determine a large variety of enclosure combinations for different components, given—

- (a) conductor resistance;
- (b) component resistance;
- (c) current drawn through each cable and component; and
- (d) enclosure MDP.

The manufacturer should be able to supply details of certified components and enclosures. Cable resistances are readily available from tables or the enclosure manufacturer may provide the values for each enclosure size and each cable length, equal to the enclosure diagonals.

**C5 ENCLOSURE CONTENTS AND LABEL** Having established the contents for each enclosure for a known application, it is important that any spare space within is **not** filled at some later stage with equipment which—

- (a) exceeds the certified MDP;
- (b) is not certified Ex e; or
- (c) arcs or sparks.

The user or the supplier should attach to the inside of the enclosure a label showing—

- (i) certified MDP;
- (ii) original component contents; and
- (iii) calculated total power dissipation of original installed components.

If the user changes the contents, it would be his responsibility to secure a revised list, having first established that the enclosure temperature class and certified MDP will not be exceeded by the proposed changes.

## **8 Manufacturer's Data Report (MDR) & Installation, Operation and Maintenance (IOM) Manual**

Documentation in relation to this section is to be included and maintained by APA Group.

## 9 Maintenance Records

Documentation in relation to this section is to be included and maintained by APA Group.  
This section includes sample maintenance sheet.





# MAINTENANCE REGISTER

APA Group

Site:

DATE	DESCRIPTION	ASSOCIATED TAGS	DOSSIER UPDATE AS REQUIRED (YES / NO / NA)								REMARKS
			P&ID	DATASHEET	HA EQUIPMENT REGISTER	CERTIFICATE OF CONFORMITY	INSTALLATION CHECK LIST	REPAIR & EXAMINATION REPORT	HA CLASSIFICATION	HA DRAWING	



### MAINTENANCE REGISTER

APA Group 

Site: \_\_\_\_\_

DATE	DESCRIPTION	ASSOCIATED TAGS	DOSSIER UPDATE AS REQUIRED (YES / NO / NA)								REMARKS
			P&ID	DATASHEET	HA EQUIPMENT REGISTER	CERTIFICATE OF CONFORMITY	INSTALLATION CHECK LIST	REPAIR & EXAMINATION REPORT	HA CLASSIFICATION	HA DRAWING	

## **10 Inspection Records**

Close visual inspection to confirm equipment installations was performed by Daniel Williams, a sub-contract industrial/commercial electrician from Sitzler during a site visit on 2 August 2011.

This Section contains the inspection sheets. The Section also contains sample inspection sheet(s) for future inspection.

Documentation in relation to this section is to be maintained by APA Group.



Ref: I:\data\sitzler\contracts\darwin\bsbj12\fyf1 fyfe Pty Ltd hazardous areas reporting award 28.07.11\fyf1 fyfe southern end pipeline\reports\mereenie meter station\electrical equipment for hazardous area summary report - mereenie 23.08.11.doc

**23 August 2011**

FYFE PTY LTD  
Level 3, 80 Flinders St  
Adelaide SA 5000

**Attention: Tony Bird**

Dear Tony,

**RE: AMADEUS PIPELINE – MEREENIE METER STATION**

**HAZARDOUS AREA ELECTRICAL INSPECTION REPORTING**

Please find attached hazardous area device inspection sheets for the above site completed as part of the visual grade of inspection reporting completed on August 2<sup>nd</sup> 2011. In addition we also provide a copy of FYFE's instrument index revised to include the actions required to ensure device and/or installation compliance to Australian standards.

We list the items of deliverables requested by FYFE below and trust the scope of work delivered is in accordance with the specified requirements.

1. Preparation of hazardous area device inspection check-sheets
2. Attend sites and inspect all electrical equipment at each site
3. Complete inspection check-sheets for each instrument
4. Production of a memo stating what work was done and a summary of rectification work
5. To provide ongoing support to the client, it is recommended that a cost estimate is provided for any rectification work.

The level of electrical inspections were carried out in accordance with the Australian/New Zealand Standard AS/NZS 60079 series for explosive atmospheres and in particular parts 14 and 17 relating to electrical installations, design, selection, inspections and maintenance. The grade of inspection completed was a combination of visual and close techniques as defined within the above standard. The inspections were conducted on energised equipment with emphasis on the condition reporting of the equipment and installation techniques applicable to the hazardous area classification and associated environment. It is acknowledged that at the commissioning date of the original installation the Australian standards have since been revised which has been taken into consideration in the evaluation of each device compliance.

A broad range of findings have been identified and documented within the 'action required' section of each check sheet in order to identify the non compliance of the equipment/installation with respect to current standards.

In some cases the nameplate detail of the installed equipment was illegible and hence the equipment hazardous area rating and associated certificate of conformity could not be identified. In general terms, this particular equipment appeared to be of a flameproof method of explosion protection, in accordance with American Standards, which is considered common for the vintage and type of equipment identified.



The compilation of our inspection findings across the installation is provided as follows:

1. Equipment and cable identification labelling required (where not provided) and alteration of existing where incorrectly labelled in accordance with the piping and instrumentation diagrams and electrical loop drawings.
2. Remediation and application of blue cable sheathing and/or labelling to clearly identify intrinsically safe installations.
3. Remediation and/or replacement of existing cabling where long term ultraviolet damage has occurred.
4. Equipotential bonding (or at least testing for compliance) of conductive equipment/stands to control static electricity.
5. Provide cable support system at instrument (where excess provided) to avoid cable damage and ultimately effecting the explosion protection level of the wiring system such as fortuitous contact with pipe work or equipment containing flammable gases.
6. Re-tensioning of cable entry gland at instrument compromising the ingress protection and/or explosion protection rating of the equipment.
7. Conduit sealing (compound barrier) between flameproof equipment to mitigate the effects of pressure-piling.
8. Replacement of inappropriately certified blanking plugs on equipment.
9. Replacement of equipment impending failure due to the age and poor condition.
10. Further investigation by way of conformity assessment for functional equipment in satisfactory condition however not certified to Australian Standards.

It is evident that the lifetime expectancy of some equipment installed would be considered nearing its nominal design life of 30 years. Where nil evidence of hazardous area certification exists it is recommended that replacement of this existing equipment be made with equipment certified to Australian standards to extend the lifecycle of the installation. For example, the replacement of the solenoid associated with the station limit valve actuator. Where certification is not applicable, such as simple devices as part of an I.S. installation, and the nameplate is illegible, equipment replacement is recommended for ongoing serviceability. For example, replacement of the temperature switch associated with the station inlet.

Where Australian certification exists valid at the time of installation and the general condition is acceptable for use within the hazardous area, minor remediation works in conjunction with a maintenance plan is recommended to maintain compliance in accordance with current standard requirements. For example, the re-application of blue cable sheathing or equipment/cable labelling to identify an intrinsically safe installation.

In summary, a range of non-compliance issues were clearly evident from the visual inspections completed on site. For recently installed equipment the required remediation works could be completed without the need for de-energising (most cases) in-service equipment. For equipment which is considered beyond its design life then complete replacement rather than refurbishment is recommended before equipment failure.

The establishment of a regular periodic maintenance regime with respect to hazardous area compliance is recommended as a minimum in accordance with AS/NZS 60079 Part 14/17.

We look forward to providing further advice and discussions with FYFE in order to assist the client with a remediation plan and associated cost estimating of the works. Trusting the above is satisfactory, please do not hesitate to contact the undersigned should you require any further information on the above or attached.

Yours faithfully,



**Neville Green**  
**Engineering Services Manager**  
Encl. Device Inspection Sheets,  
Instrument Index – Sitzler Revised

**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsbj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

005 007  
006

**Specifications**

**General**

Device ID or tag: <b>TE-9-M000</b>	Asset:
Circuit ID: <b>J002</b>	Physical location: <b>MERIBIANIE - INLET.</b>
Area classification :	Environment: (hot?) <b>EXTERNAL - COVERED.</b>

**Data from Label**

Apparatus type: (light, JB, Motor) <b>TEMP ELEMENT</b>	Type of protection: (d,e, i, n, p etc) <b>IS</b>
Manufacturer: <b>?</b>	Gas group: (IIA/B/C) <b>? Simple device.</b>
Full model number: <b>?</b>	Temp class: (T1-T6) <b>?</b>
Serial number: <b>?</b>	Certificate number: <b>?</b>
IP Class <b>?</b>	Test authority: (BAS, PTB, SAA etc) <b>?</b>

Number of cables: **1**

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:			<b>RMT</b>
Model:			<b>78521NO000</b>
Gland type of protection: (d,e)			<b>S/N: 220393.</b>

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	<del>X</del>
2 Equipment ID or circuit ID is correct	all	X	<del>X</del>
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	<del>X</del>
4 There are no damage or evidence of unauthorised modifications	all	X	<del>X</del>
5 Bolts, cable entries and blanking elements are correct and tight	all	X	<del>X</del>
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	<del>X</del>
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<del>X</del>
14 Entity calculation/documentation is available	i	X	<del>X</del>

**B Installation**

1 Type of cable is appropriate, cables are undamaged	all	X	<del>X</del>
2 Sealing of ducts and/or conduits is satisfactory	all	X	X
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U,X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	X
12 Ducts, pipes and enclosures are in good condition	p	X	X
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	✓
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	✓
2	No undue accumulation of dust or dirt	all	X	✓
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required **TEMP COVER INSTALLED.**

Contractor (write): <b>DAN WILLIAMS</b>	Inspector	Supervisor	Client (write):	Inspector
Date: <b>2/8/11</b>			Date:	

Device ID or tag

Action required to make device compliant:

**- Blue sheath to cable or IS labelling required.**

Reviewed by: **N. GREEN**  
 Date: **22/8/11**  
 Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:



**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\sbsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

**Specifications**

002

**General**

Device ID or tag: <b>TSHH-12-1000</b>	Asset:
Circuit ID: <b>5005</b>	Physical location: <b>MERRENIE - INLET</b>
Area classification:	Environment (hot?): <b>EXTERNAL WITH COVER</b>

**Data from Label**

Apparatus type: (light, JB, Motor) <b>TEMP</b>	Type of protection: (d,e, i, n, p etc) <b>? IS</b>
Manufacturer: <b>ASHCROFT</b>	Gas group: (IIA/B/C)
Full model number: <b>?</b>	Temp class: (T1-T6) <b>?</b>
Serial number: <b>?</b>	Certificate number: <b>?</b>
IP Class <b>?</b>	Test authority: (BAS, PTB, SAA etc) <b>?</b>

Number of cables: **1**

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:	<b>?</b>		<b>?</b>
Model:	<b>?</b>		<b>?</b>
Gland type of protection: (d,e)	<b>?</b>		<b>?</b>

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	X
2	Equipment ID or circuit ID is correct	all	X	X
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	X
4	There are no damage or evidence of unauthorised modifications	all	X	X
5	Bolts, cable entries and blanking elements are correct and tight	all	X	X
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14	Entropy calculation/documentation is available	i	X	X
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	X
2	Sealing of ducts and/or conduits is satisfactory	all	X	X
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required **EARTH MOUNTING FRAME, REPLACE EQUIPMENT WITH CERTIFIED EQUIPMENT.**

Contractor (write): Inspector <b>DAN WILLIAMS</b>	Supervisor	Client (write): Inspector
Date: <b>2/8/11</b>		Date:

Device ID or tag

Action required to make device compliant:

- Nil action required (has area) for I.S. device however recommend replacing switch due to illegible nameplate.

Reviewed by: <b>N. GREEN</b>
Date: <b>22/8/11</b>
Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):  
 Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\enders\sbsj11\yf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

003  
004

### General

Device ID or tag: <b>PSHH-15</b>	Asset: <b>Station Inlet Pressure</b>
Circuit ID: <b>3006</b>	Physical location: <b>MERRENIIE - INLET,</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL - COVERED</b>

### Data from Label

Apparatus type: (light, JB, Motor) <b>PRESSURE SWITCH</b>	Type of protection: (d,e, i, n, p etc) <b>is</b>
Manufacturer: <b>ESA Square D</b>	Gas group: (IIA/B/C) <b>CLII DIV 2 GR F, G &amp; CLII</b>
Full model number: <b>9012 GCN-2 E</b>	Temp class: (T1-T6) <b>?</b>
Serial number: <b><del>02287</del> ?</b>	Certificate number: <b>-</b>
IP Class <b>?</b>	Test authority: (BAS, PTB, SAA etc) <b>UL</b>

Number of cables: \_\_\_\_\_

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	<b>?</b>		<b>?</b>
Model:			
Gland type of protection: (d,e)			

## Inspection

Circle as checked

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	<input checked="" type="checkbox"/>
7	Lamp rating, type and position correct	all	X	<input checked="" type="checkbox"/>
8	Electrical connections are tight	all	X	<input checked="" type="checkbox"/>
9	Hermetically sealed devices are undamaged	n	X	<input checked="" type="checkbox"/>
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	<input checked="" type="checkbox"/>
11	Motor fans have sufficient clearance	motors only	X	<input checked="" type="checkbox"/>
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entropy calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	<input checked="" type="checkbox"/>
4	Integrity of conduit system and interface with mixed system is maintained	all	X	<input checked="" type="checkbox"/>
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	<input checked="" type="checkbox"/>
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	<input checked="" type="checkbox"/>
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	<input checked="" type="checkbox"/>
9	Special certification conditions U,X or B have been complied with	all	X	<input checked="" type="checkbox"/>
10	Cables/spare cores are terminated satisfactorily	all	X	<input checked="" type="checkbox"/>
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	<input checked="" type="checkbox"/>
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	<input checked="" type="checkbox"/>
14	Protective gas flow/pressure is adequate	p	X	<input checked="" type="checkbox"/>
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	<input checked="" type="checkbox"/>
16	Pre-energising purge period is adequate	p	X	<input checked="" type="checkbox"/>
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	<input checked="" type="checkbox"/>

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	<input checked="" type="checkbox"/>

Faults found? (circle as appropriate)

No:

Yes: List action required **ID TAG, COVER MOUNT EARTH, IS CABLES**

Contractor (write): <b>J. Williams</b>	Inspector	Supervisor	Client (write):	Inspector
Date: <b>2/8/11</b>			Date:	

Device ID or tag

Action required to make device compliant:

**- Nil action required as above items are addressed.**

Reviewed by: <b>D. GREEN</b>
Date: <b>2/8/11</b>
Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):

Date:



**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsbj11fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

**Specifications**

003  
004

**General**

Device ID or tag: <b>PSHM-1SA</b>	Asset: <b>Station Inlet Pressure</b>
Circuit ID: <b>5039</b> ✓	Physical location: <b>MEREBENT - INLET</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL - COVERED</b>

**Data from Label**

Apparatus type: (light, JB, Motor) <b>PRESSURE SWITCH</b>	Type of protection: (d, e, i, n, p etc) <b>IS</b> ✓
Manufacturer: <b>SA Square D</b>	Gas group: (IIA/B/C) <b>CL II DIV 2 GR F, G &amp; C III</b>
Full model number: <b>9012 GEN-2 C</b>	Temp class: (T1-T6) <b>?</b>
Serial number: <b>?</b>	Certificate number: <b>?</b>
IP Class <b>?</b>	Test authority: (BAS, PTB, SAA etc) <b>UL</b>

Number of cables: **1**

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:	<b>?</b>		<b>?</b>
Model:			
Gland type of protection: (d, e)			

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	⊗
2	Equipment ID or circuit ID is correct	all	X	⊗
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗
4	There are no damage or evidence of unauthorised modifications	all	X	⊗
5	Bolts, cable entries and blanking elements are correct and tight	all	X	⊗
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	⊗
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗
14	Entropy calculation/documentation is available	i	X	⊗
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	⊗
2	Sealing of ducts and/or conduits is satisfactory	all	X	⊗
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	⊗ -
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U, X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	⊗ N/A
12	Ducts, pipes and enclosures are in good condition	p	X	⊗ N/A
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	⊗ N/A
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required LADJLINK, IS CALCS

Contractor (write): Inspector <u>D. WILLIAMS</u>	Supervisor	Client (write): Inspector
Date: <u>2/8/11</u>		Date:

Device ID or tag

Action required to make device compliant:

- Nil action required as above items are addressed.

Reviewed by: <u>P. LEAN</u>
Date: <u>22/8/11</u>
Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):  
Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsbj11\yf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

004 009  
008

### General

Device ID or tag: <b>PT-14-M000</b>	Asset: <b>Station Inlet Pressure</b>
Circuit ID: <b>J004</b>	Physical location: <b>MERESBIE - INLET</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL COVERS.</b>

### Data from Label

Apparatus type: (light, JB, Motor) <b>PRESSURE TRANSDUCER</b>	Type of protection: (d,e, i, n, p etc) <b>ia-2 d</b>
Manufacturer: <b>ROSEMOUNT 3051</b>	Gas group: (IIA/B/C) <b>II C</b>
Full model number: <b>3501/3001</b>	Temp class: (T1-T6) <b>T4</b>
Serial number: <b>R50930784</b>	Certificate number: <b>AOS Ex 1347X</b>
IP Class <b>65</b>	Test authority: (BAS, PTB, SAA etc)

Number of cables: **1**

### For each cable entry


	gland 1	gland 2	others <b>BUNG</b>
Gland manufacturer:	<b>?</b>		<b>REDMAT</b>
Model:	<b>?</b>		<b>PA-D, M20</b>
Gland type of protection: (d,e)	<b>?</b>		<b>JEC Ex SIR 05.0042U</b>

### Inspection

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entropy calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	
2	No undue accumulation of dust or dirt	all	X	
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required *MOUNTING PLATE EARTH BOWS.*

Contractor (write): Inspector <i>D. WILLIAMS</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

- Cable fixing/support at instrument required*
- verify nameplate to ensure I.S. certification.*

Reviewed by: <i>D. GREEN</i>
Date: <i>2/8/11</i>
Priority:

Comments:

---

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated
Supervisor (write):
Date:



**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

**Specifications**

011

**General**

Device ID or tag: <b>25C/250-17</b>	Asset:
Circuit ID: <b>5009</b>	Physical location: <b>MISLENER - INLET</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL</b>

**Data from Label**

Apparatus type: (light, JB, Motor) <b>JB</b>	Type of protection: (d,e, i, n, p etc) <b>I.S. refer loop deg. MTC000-7012</b>
Manufacturer: <b>?</b>	Gas group: (IIA/B/C) <b>?</b>
Full model number: <b>?</b>	Temp class: (T1-T6) <b>?</b>
Serial number: <b>?</b>	Certificate number: <b>?</b>
IP Class <b>?</b>	Test authority: (BAS, PTB, SAA etc) <b>?</b>

Number of cables:

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:			<b>?</b>
Model:			<b>?</b>
Gland type of protection: (d,e)			<b>?</b>

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entropy calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	<input checked="" type="checkbox"/>

Faults found? (circle as appropriate)

No:

Yes: List action required **LABELLING**

Contractor (write): Inspector <b>D. WILLIAMS</b>	Supervisor	Client (write): Inspector
Date: <b>2/8/11</b>		Date:

Device ID or tag

Action required to make device compliant:

- Blue sheathing to cable or IS labelling required.
- General condition of installation is poor.

Reviewed by: **N. GREEN**  
Date: **22/8/11**  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:

**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

**Specifications**

010  
~~011~~

**General**

Device ID or tag: <b>SEV-17 + (JR)</b>	Asset:
Circuit ID: <b>JO31</b>	Physical location: <b>MERGENIE - INLET</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERRNR</b>

**Data from Label**

Apparatus type: (light, JB, Motor) <b>JB</b>	Type of protection: (d,e, i, n, p etc) <b>?</b>	<b>HAS GASKET</b>
Manufacturer: <b>SAE</b>	Gas group: (IIA/B/C) <b>II B.</b>	
Full model number:	Temp class: (T1-T6) <b>T6</b>	
Serial number:	Certificate number: <b>PLP 693 DIP 45.</b>	
IP Class	Test authority: (BAS, PTB, SAA etc) <b>SAA</b>	

Number of cables: **1**

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:	<b>?</b>		<b>BSUNGS X 2</b>
Model:	<b>?</b>		<b>APPROX 25mm</b>
Gland type of protection: (d,e)	<b>?</b>		<b>?</b>

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1	Equipment (incl group and temp class) is appropriate for area classification	all	X
2	Equipment ID or circuit ID is correct	all	X
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X
4	There are no damage or evidence of unauthorised modifications	all	X
5	Bolts, cable entries and blanking elements are correct and tight	all	X
6	Flange facings are clean and undamaged	d	X
7	Lamp rating, type and position correct	all	X
8	Electrical connections are tight	all	X
9	Hermetically sealed devices are undamaged	n	X
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X
11	Motor fans have sufficient clearance	motors only	X
12	Installation clearly labelled	i	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X
14	Entropy calculation/documentation is available	i	X
<b>B Installation</b>			
1	Type of cable is appropriate, cables are undamaged	all	X
2	Sealing of ducts and/or conduits is satisfactory	all	X
3	Stopper boxes or barrier glands are properly filled	d	X
4	Integrity of conduit system and interface with mixed system is maintained	all	X
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X
6	Fault loop impedance is satisfactory	power outlets	X
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X
9	Special certification conditions U,X or B have been complied with	all	X
10	Cables/spare cores are terminated satisfactorily	all	X
11	No obstructions adjacent to flameproof flanged joint	d	X
12	Ducts, pipes and enclosures are in good condition	p	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X
14	Protective gas flow/pressure is adequate	p	X
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X
16	Pre-energising purge period is adequate	p	X
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:  List action required **BUNGS, SUN DAMAGED CABLE**

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

- Insufficient information to determine method of protection however it is suspected flameproof prevails.
- Sun damaged cable requires replacement.
- Cable T/Box appear to have DPO certification only.
- Solenoid valve direct connected to T/Box may require conduit seal.
- Recommend replacement of T/Box, solenoid & damaged cable.

Reviewed by: *P. GREEN*  
Date: *2/18/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:



# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\sbsj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

012

## Specifications

### General

Device ID or tag: PDISH-21-0000	Asset: Meter Run # 1 or Filter Sep?
Circuit ID: NONE	Physical location: MERBENIE - V-580
Area classification: 1	Environment: (hot?)

### Data from Label

Apparatus type: (light, JB, Motor) P TRANSMITTER	Type of protection: (d,e, i, n, p etc) d
Manufacturer: ROSEMOUNT	Gas group: (IIA/B/C) IIC #
Full model number: 3051/3001	Temp class: (T1-T6) T5
Serial number: R50872668	Certificate number: AUS EX 1347X (Exd)
IP Class 65	Test authority: (BAS, PTB, SAA etc) test safe.

Number of cables:

### For each cable entry

	gland 1	gland 2	others BUNG
Gland manufacturer:	?		REDAPT
Model:	?		PAD M20
Gland type of protection: (d,e)	3		7 d

## Inspection

Circle as checked

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	(X)
2	Equipment ID or circuit ID is correct	all	X	(X)
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	(X)
4	There are no damage or evidence of unauthorised modifications	all	X	(X)
5	Bolts, cable entries and blanking elements are correct and tight	all	X	(X)
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	(X)
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	(X)
14	Entropy calculation/documentation is available	i	X	(X)
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	(X)
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	(X)
12	Ducts, pipes and enclosures are in good condition	p	X	(X)
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	(X)
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required **CIRCUIT ID**

Contractor (write): Inspector <b>D. WILLIAMS</b>	Supervisor	Client (write): Inspector
Date: <b>2/8/11</b>		Date:

Device ID or tag

Action required to make device compliant:

\* Note: Loop drawing indicates IS circuit, hence consider without sufficient information. Refer loop diag. M10000-7012.  
 - Cable ID required, instrument ID incorrect.  
 - Blue sheath to cable or IS labelling required.  
 - Verify instrument is an IS device.

Reviewed by: **D. GREEN**  
 Date: **24/8/11**  
 Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\vendors\sbsj11\y11 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

013

TONYS PHOTOS  
1619 1021 1023  
1020 1022

## Specifications

### General

Device ID or tag: LSH-21-1000	Asset: Filter Separator
Circuit ID: NONE	Physical location: MERRIBENTIE - U-530
Area classification: ?	Environment: (hot?) EXTERNA

### Data from Label

Apparatus type: (light, JB, Motor) LEVER TRANSMITTER	Type of protection: (d,e, i, n, p etc) d IS?
Manufacturer: FRANK W. MURPHY MFG INC	Gas group: (IIA/B/C) IIB
Full model number: L1200DPT	Temp class: (T1-T6) T6
Serial number: ?	Certificate number: AUS Ex 609
IP Class ?	Test authority: (BAS, PTB, SAA etc)

Number of cables:

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:		JB CROUSE HINDS	BUNN
Model:		DPT DIP	
Gland type of protection: (d,e)		AUS Ex 638 IP16 T6	

### Inspection

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	X
2 Equipment ID or circuit ID is correct	all	X	X
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	X
4 There are no damage or evidence of unauthorised modifications	all	X	X
5 Bolts, cable entries and blanking elements are correct and tight	all	X	X
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	X
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14 Entity calculation/documentation is available	i	X	X

### B Installation

1 Type of cable is appropriate, cables are undamaged	all	X	X
2 Sealing of ducts and/or conduits is satisfactory	all	X	X
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U,X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	X
12 Ducts, pipes and enclosures are in good condition	p	X	X
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required **CIRCUIT IO, LOOSE CABLE ENTRY**

Contractor (write): Inspector <i>D. WILLIAMS</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

- Cable IO required. Installation may
- cable entry is loose, ~~require~~ require attention with respect to an explosion proof conduit seal as noted in installation instructions relating to pressure pilling with adjacent junction box, if End adopted.
- Ex certificate for junction box is applicable to DIP installations. Nil reference to flammable gas installations
- Loop drawings indicate IS circuitry, however nil evidence found of IS barriers installed.

Reviewed by: *N. GREEN*  
Date: *18/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:



**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

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014  
1019 1021 1023  
1020 1022

**Specifications**

**General**

Device ID or tag: <b>LSH-24-P600 ?</b>	Asset:
Circuit ID: <b>NONE</b>	Physical location: <b>MCCABIE - V-530</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL</b>

**Data from Label**

Apparatus type: (light, JB, Motor)	Type of protection: (d, e, i, n, p etc) <b>d, IS?</b>
Manufacturer: <b>FRANK W MURPHY</b>	Gas group: (IIA/B/C) <b>II B</b>
Full model number: <b>L1200 DPOT</b>	Temp class: (T1-T6) <b>T6</b>
Serial number: <b>?</b>	Certificate number: <b>Aus Ex 609</b>
IP Class <b>?</b>	Test authority: (BAS, PTB, SAA etc)

Number of cables: 1

**For each cable entry**

	gland 1	JB gland 2	others
Gland manufacturer:	?	SAE	?
Model:	?	FNJI (20mm)	?
Gland type of protection: (d, e)	?	SAA FLA B93 DP45	?

GROUP 11A T6

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	⊗
2 Equipment ID or circuit ID is correct	all	X	⊗
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗
4 There are no damage or evidence of unauthorised modifications	all	X	⊗
5 Bolts, cable entries and blanking elements are correct and tight	all	X	⊗
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	⊗ -
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗
14 Entity calculation/documentation is available	i	X	X

**B Installation**

1 Type of cable is appropriate, cables are undamaged	all	X	⊗
2 Sealing of ducts and/or conduits is satisfactory	all	X	⊗
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	⊗
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U, X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	⊗
12 Ducts, pipes and enclosures are in good condition	p	X	X
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required **DEVICE + CABLE PD REQUIRED, JOB BONDS + GRAND.**

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/18/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*Refer same notes as LSH-21*

Reviewed by: <i>N. GREEN</i>
Date: <i>12/5/11</i>
Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):  
Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices

Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\sbj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

020 021

### General

Device ID or tag: PT 22	Asset: Motor Run #1
Circuit ID: J620	Physical location: MERRIBIE
Area classification: ?	Environment: (hot?) EXTENSIVE

### Data from Label

Apparatus type: (light, JB, Motor) PRESSURE TX	Type of protection: (d, e, i, n, p etc) ia
Manufacturer: ROSEMOUNT	Gas group: (IIA/B/C) IIC
Full model number: 3051 PCEA22A18 MS17	Temp class: (T1-T6) T5
Serial number: 08 58996	Certificate number: 1249 Y
IP Class -	Test authority: (BAS, PTB, SAA etc) AUSEY

Number of cables: 1

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:	?		DUNK REOAPT
Model:			M20
Gland type of protection: (d,e)			Exd IIC BAS No. 83218u

### Inspection

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entity calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are <u>undamaged</u>	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes

List action required *IS cables*

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*- Blue Sheath to cable or IS labelling required*

Reviewed by: <i>N. Green</i>
Date: <i>18/8/11</i>
Priority:

Comments: <i><del>None</del></i>
All action items now completed: <input type="checkbox"/>
Job closed: <input type="checkbox"/>

Device now fully compliant, spreadsheet register has been updated
Supervisor (write):
Date:



# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices

Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\lenders\bsbj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

019 021

### General

Device ID or tag:	FT 22A	Asset:	Meter Room #1
Circuit ID:	J010	Physical location:	MERSEBAIR
Area classification :		Environment: (hot?)	EXTERNAE - COVERED

### Data from Label

Apparatus type: (light, JB, Motor)	P. Ty	Type of protection: (d,e, i, n, p etc)	ia
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	II C
Full model number:	3051 PDRA22 LSM517	Temp class: (T1-T6)	T5
Serial number:	0858994	Certificate number:	1299 X
IP Class	?	Test authority: (BAS, PTB, SAA etc)	AUS Ex

Number of cables:

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:			BUNG REPAIR
Model:			M20
Gland type of protection: (d,e)			Exd IIC BAS No 9312184

### Inspection

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entropy calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	<input checked="" type="checkbox"/>

Faults found? (circle as appropriate)

No:

Yes List action required 15 CABLES.

Contractor (write): Inspector <u>D. WILLIAMS</u>	Supervisor	Client (write): Inspector
Date: <u>2/8/11</u>		Date:

Device ID or tag

Action required to make device compliant:

- Blue sheath to cable or IS labelling required.
- Cable ID required to be changed from J010 to J014.

Reviewed by: M. GREEN  
Date: 14/8/11  
Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\yf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

018 021

## Specifications

### General

Device ID or tag: <b>FT 22</b>	Asset: <b>Meter Run #1</b>
Circuit ID: <b>ADAMS JO19</b>	Physical location: <b>MERRENE</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL LOWEXP</b>

### Data from Label

Apparatus type: (light, JB, Motor) <b>P. Ty</b>	Type of protection: (d,e, i, n, p etc) <b>ig</b>
Manufacturer: <b>ROSEMOUNT</b>	Gas group: (IIA/B/C) <b>IIc</b>
Full model number: <b>3051 PO2A 22A 13MS17</b>	Temp class: (T1-T6) <b>T5</b>
Serial number: <b>0858995</b>	Certificate number: <b>1249X</b>
IP Class <b>?</b>	Test authority: (BAS, PTB, SAA etc)

Number of cables: **1**

### For each cable entry

	gland 1	gland 2	others <b>BUNG</b>
Gland manufacturer:	<b>?</b>		<b>RODAPT</b>
Model:			<b>M20</b>
Gland type of protection: (d,e)			<b>Exd IIC BAS No. 8312194</b>

## Inspection

Circle as checked

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	<input checked="" type="checkbox"/>
7	Lamp rating, type and position correct	all	X	<input checked="" type="checkbox"/>
8	Electrical connections are tight	all	X	<input checked="" type="checkbox"/>
9	Hermetically sealed devices are undamaged	n	X	<input checked="" type="checkbox"/>
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	<input checked="" type="checkbox"/>
11	Motor fans have sufficient clearance	motors only	X	<input checked="" type="checkbox"/>
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entropy calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	<input checked="" type="checkbox"/>
4	Integrity of conduit system and interface with mixed system is maintained	all	X	<input checked="" type="checkbox"/>
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	<input checked="" type="checkbox"/>
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	<input checked="" type="checkbox"/>
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	<input checked="" type="checkbox"/>
9	Special certification conditions U,X or B have been complied with	all	X	<input checked="" type="checkbox"/>
10	Cables/spare cores are terminated satisfactorily	all	X	<input checked="" type="checkbox"/>
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	<input checked="" type="checkbox"/>
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	<input checked="" type="checkbox"/>
16	Pre-energising purge period is adequate	p	X	<input checked="" type="checkbox"/>
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	<input checked="" type="checkbox"/>

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<del>X</del>
2	No undue accumulation of dust or dirt	all	X	<del>X</del>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes List action required *IS correct.*

Contractor (write): <i>D. Williams</i>	Inspector	Supervisor	Client (write):	Inspector
Date: <i>2/8/11</i>			Date:	

Device ID or tag

Action required to make device compliant:

- Cable ID required to be changed from JO19 to JO15.
- Blue sheath to cable or IS labelling required.

Reviewed by: *M. Green*  
 Date: *18/8/11*  
 Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):  
 Date:



**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

**Specifications**

0718 042

**General**

Device ID or tag:	TT 22	Asset:	Meter Run #1
Circuit ID:	5021	Physical location:	MERREENIE
Area classification :		Environment: (hot?)	EXTERNAL

**Data from Label**

Apparatus type: (light, JB, Motor)	TEMP TX	Type of protection: (d, e, i, n, p etc)	ia
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	II C
Full model number:	3144P D2A217MSFS	Temp class: (T1-T6)	T6
Serial number:	01170768	Certificate number:	02-3794X
IP Class	66	Test authority: (BAS, PTB, SAA etc)	AUS Ex

Number of cables:

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:	ALCO		
Model:	FLPW 203		
Gland type of protection: (d,e)			

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	⊗
2 Equipment ID or circuit ID is correct	all	X	⊗
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗
4 There are no damage or evidence of unauthorised modifications	all	X	⊗
5 Bolts, cable entries and blanking elements are correct and tight	all	X	⊗
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	⊗ -
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗
14 Entity calculation/documentation is available	i	X	⊗ -

<b>B Installation</b>			
1 Type of cable is appropriate, cables are undamaged	all	X	⊗
2 Sealing of ducts and/or conduits is satisfactory	all	X	⊗
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	⊗ - NOTE
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U,X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	⊗
12 Ducts, pipes and enclosures are in good condition	p	X	X
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/14</i>		Date:

Device ID or tag

Action required to make device compliant:

- Intrinsically safe identification required to installation, i.e. blue sheath, label etc.
- Equipment + cable labels required.

Reviewed by: *N. Green*  
 Date: *17/8/14*  
 Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:

**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsbj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

015 021

**Specifications**

**General**

Device ID or tag: <u>PT 25</u>	Asset: <u>Meter Run #2</u>
Circuit ID: <u>J016</u>	Physical location: <u>MERCENIE -</u>
Area classification: <u>?</u>	Environment: (hot?) <u>EXTERNAL - COVERED</u>

**Data from Label**

Apparatus type: (light, JB, Motor) <u>PRESSURE TX</u>	Type of protection: (d, e, i, n, p etc) <u>ic</u> <u>X</u>
Manufacturer: <u>ROSEMOUNT</u>	Gas group: (IIA/B/C) <u>IIc</u> <u>HC</u>
Full model number: <u>3051 P65A-22A1AMS17</u>	Temp class: (T1-T6) <u>T5</u> <u>T6</u>
Serial number: <u>0587032</u>	Certificate number: <u>T249X</u>
IP Class <u>65.?</u>	Test authority: (BAS, PTB, SAA etc) <u>Aus Ex</u>

Number of cables: 1

For each cable entry	gland 1	ADAPTOR gland 2	others
Gland manufacturer:	<u>?</u>	<u>NO CERT</u>	<u>BUNG NO CERT</u>
Model:			
Gland type of protection: (d,e)			

**Inspection**

Circle as checked

A Equipment		Applicable to protection type:	Internal	External
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<u>⊗</u>
2	Equipment ID or circuit ID is correct	all	X	<u>⊗</u>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<u>⊗</u>
4	There are no damage or evidence of unauthorised modifications	all	X	<u>⊗</u>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<u>⊗</u>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<u>⊗</u>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<u>⊗</u>
14	Entropy calculation/documentation is available	i	X	<u>⊗</u>
<b>B Installation</b>				
1	Type of cable is <u>appropriate</u> cables are undamaged	all	X	<u>⊗</u> → ?
2	Sealing of ducts and/or conduits is satisfactory	all	X	<u>⊗</u>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<u>⊗</u> -
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<u>⊗</u>
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	



18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required **BUNG, ADAPTER CERTS**

Contractor (write): Inspector <b>D. WILLIAMS</b>	Supervisor	Client (write): Inspector
Date: <b>2/8/11</b>		Date:

Device ID or tag

Action required to make device compliant:

- Cable ID to be changed from J016 to J020.
- Blue sheath to cable or IS labelling required.

Reviewed by: **N. GREEN**  
Date: **18/8/11**  
Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:

**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

**Specifications**

016 021

**General**

Device ID or tag: FT 25A	Asset: Meter Run #2
Circuit ID: J018	Physical location: MEREENIE
Area classification: ?	Environment: (hot?) EXTERNAL - COVERED.

**Data from Label**

Apparatus type: (light, JB, Motor) PRESSURE TX	Type of protection: (d,e, i, n, p etc) Ex i g
Manufacturer: ROSEMOUNT	Gas group: (IIA/B/C) II C
Full model number: 3051 PD2A 22A1A MSL7	Temp class: (T1-T6) T5 (Amb 40°C)
Serial number: 0587026	Certificate number: 1249 X
IP Class: ?	Test authority: (BAS, PTB, SAA etc) AUSEX

Number of cables: 1

**For each cable entry**

	gland 1	ADAPTIVE gland 2	others
Gland manufacturer:	?	NO CERT	BUNIG NO CERT
Model:			
Gland type of protection: (d,e)			

**Inspection**

		Circle as checked	
		Internal	External
<b>A Equipment</b>	Applicable to protection type:		
1	Equipment (incl group and temp class) is appropriate for area classification	all	X
2	Equipment ID or circuit ID is correct	all	X
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X
4	There are no damage or evidence of unauthorised modifications	all	X
5	Bolts, cable entries and blanking elements are correct and tight	all	X
6	Flange facings are clean and undamaged	d	X
7	Lamp rating, type and position correct	all	X
8	Electrical connections are tight	all	X
9	Hermetically sealed devices are undamaged	n	X
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X
11	Motor fans have sufficient clearance	motors only	X
12	Installation clearly labelled	i	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X
14	Entropy calculation/documentation is available	i	X
<b>B Installation</b>			
1	Type of cable is appropriate, cables are undamaged	all	X
2	Sealing of ducts and/or conduits is satisfactory	all	X
3	Stopper boxes or barrier glands are properly filled	d	X
4	Integrity of conduit system and interface with mixed system is maintained	all	X
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X
6	Fault loop impedance is satisfactory	power outlets	X
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X
9	Special certification conditions U,X or B have been complied with	all	X
10	Cables/spare cores are terminated satisfactorily	all	X
11	No obstructions adjacent to flameproof flanged joint	d	X
12	Ducts, pipes and enclosures are in good condition	p	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X
14	Protective gas flow/pressure is adequate	p	X
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X
16	Pre-energising purge period is adequate	p	X
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X

MOUNTING PLATE NO RAMP

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<del>(X)</del>
2	No undue accumulation of dust or dirt	all	X	<del>(X)</del>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required

BUNTS, ADAPTORS 'NO CERT, CABLE TYPE?'

Contractor (write): Inspector	Supervisor	Client (write): Inspector
Date:		Date:

Device ID or tag

Action required to make device compliant:

- Cable ID to be changed from J014 to J018.
- Blue sheath to cable or IS labelling required.

Reviewed by: N. GREEN  
 Date: 18/8/11  
 Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices

Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\sbsj11\vf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

017 021

## Specifications

### General

Device ID or tag: FT 25	Asset: Meter Run #2
Circuit ID: JOIS	Physical location: MCR BENTON
Area classification: ?	Environment: (hot?) EXTERNAL - COVERED

### Data from Label

Apparatus type: (light, JB, Motor) PRESSURE TX	Type of protection: (d, e, i, n, p etc) ia d
Manufacturer: ROSEMONT	Gas group: (IIA/B/C) IIC IIC
Full model number: 3051 PD2A 22A14MSJ7	Temp class: (T1-T6) T5 T6
Serial number: 0587027	Certificate number: 1249X
IP Class: 65. ?	Test authority: (BAS, PTB, SAA etc) AUS EX

Number of cables: 1

For each cable entry	gland 1	ADAPTOR gland 2	others
Gland manufacturer:	?	NO CERT	BUNNY NO CERT
Model:			
Gland type of protection: (d,e)			

## Inspection

Circle as checked

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entropy calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U, X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

List action required MOUNTING PLATE EARTH, BONDING, ADAPTORS + ~~LEADS~~ NO CORD

Contractor (write): Inspector <i>D. WILLIAMS</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:  
 - Cable ID required to be done from 2015 to 2019  
 - Blue sheath to cable or IS labelling required.

Reviewed by: *M. GREEN*  
 Date: *18/8/11*  
 Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:



**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsbj11\fy11 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

**Specifications**

0714 043

**General**

Device ID or tag: TT 25	Asset: Meter Room 2
Circuit ID: NONE	Physical location: MEREENIE
Area classification :	Environment: (hot?) EXTERNAL

**Data from Label**

Apparatus type: (light, JB, Motor) TEMPERATURE TX	Type of protection: (d,e, i, n, p etc) ia
Manufacturer: ROSEMOUNT	Gas group: (IIA/B/C) IIC
Full model number: 3144P D2A 217 MS FS	Temp class: (T1-T6) T6
Serial number: 01170778	Certificate number: AUS EX 02.3794 X
IP Class 66	Test authority: (BAS, PTB, SAA etc) AUS EX

Number of cables: 1

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:	ALCO		
Model:	FLPW 20S		
Gland type of protection: (d,e)			

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	⊗
2 Equipment ID or circuit ID is correct	all	X	⊗
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗
4 There are no damage or evidence of unauthorised modifications	all	X	⊗
5 Bolts, cable entries and blanking elements are correct and tight	all	X	⊗
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	⊗
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗
14 Entity calculation/documentation is available	i	X	⊗

**B Installation**

1 Type of cable is appropriate, cables are undamaged	all	X	⊗
2 Sealing of ducts and/or conduits is satisfactory	all	X	⊗
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	⊗ - NONE
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U,X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	⊗
12 Ducts, pipes and enclosures are in good condition	p	X	⊗
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	⊗
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

**Faults found? (circle as appropriate)**
**No:**
**Yes:** 

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

**Action required to make device compliant:**

- Intrinsically safe identification required to installation  
e.g. blue sheath, label etc.
- Equipment + cable labels required.

 Reviewed by: *N. GREEN*  
 Date: *17/5/11*  
 Priority:

**Comments:**

 All action items now completed:   
 Job closed: 

 Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:



**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\enders\bsj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

TONYS PHOTOS  
1009  
1010

0718 039

**Specifications**

**General**

Device ID or tag: <u>SV-29 GS m 1010</u>	Asset: <u>GAS SAMPLER GS-1495</u>
Circuit ID: <u>J032</u>	Physical location: <u>MORGENIE</u>
Area classification: <u>?</u>	Environment: (hot?) <u>EXTERNAL - COVERED</u>

**Data from Label**

Apparatus type: (light, JB, Motor) <u>SOLENOID</u>	Type of protection: (d,e, i, n, p etc) <u>Ex me</u>
Manufacturer: <u>LUCIFER</u>	Gas group: (IIA/B/C) <u>II C</u>
Full model number:	Temp class: (T1-T6) <u>TS</u>
Serial number: <u>821003</u>	Certificate number: <u>321-1</u>
IP Class	Test authority: (BAS, PTB, SAA etc) <u>Aus Ex</u>

Number of cables: 1

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:	<u>ALCO</u>		
Model:	<u>FLP V 204</u>		
Gland type of protection: (d,e)			

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	<u>(X)</u>
2 Equipment ID or circuit ID is correct	all	X	<u>(X)</u>
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	<u>(X)</u>
4 There are no damage or evidence of unauthorised modifications	all	X	<u>(X)</u>
5 Bolts, cable entries and blanking elements are correct and tight	all	X	<u>(X)</u>
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	X
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14 Entity calculation/documentation is available	i	X	X

**B Installation**

1 Type of cable is appropriate, cables are undamaged	all	X	<u>(X)</u>
2 Sealing of ducts and/or conduits is satisfactory	all	X	<u>(X)</u>
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<u>(X) - NO EARTH</u>
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U,X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	<u>(X)</u>
12 Ducts, pipes and enclosures are in good condition	p	X	X
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required

Contractor (write): Inspector <i>D. Wiggins</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

- As Ex m would not normally be applied to wiring connections, the installation is considered Ex e.
- Insufficient information on Clisul Elbow connector to suggest ex rating hence recommend its removal and connect the Ex d cable gland directly or through an adaptor if required.
- Equipotential bonding connection required.

Reviewed by: <i>D. Green</i>
Date: <i>22/8/11</i>
Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):  
Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\vendors\sbsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

Specifications TOMYS 0978 PHOTO 0648 023  
0699 024

### General

Device ID or tag: <u>HEAT TRACING (UP HIGH)</u>	Asset: <u>Near Daniel Analyser</u>
Circuit ID: <u>NONE</u>	Physical location: <u>MERRENTINE</u>
Area classification: <u>?</u>	Environment: (hot?) <u>EXTERNAL - COVERED</u>

### Data from Label

Apparatus type: (light, JB, Motor) <u>THERMOSTAT</u>	Type of protection: (d,e, i, n, p etc) <u>d</u>
Manufacturer: <u>THERMON</u>	Gas group: (IIA/B/C) <u>II C</u>
Full model number: <u>ETH10 120 CU</u>	Temp class: (T1-T6) <u>T6</u>
Serial number: <u>0603 093</u>	Certificate number: <u>AUSEX 3039</u>
IP Class <u>66</u>	Test authority: (BAS, PTB, SAA etc)

Number of cables: 3

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:	<u>HANKE</u>	<u>ALCO</u>	<u>ALCO</u>
Model:	<u>SX 353/Ax 20mm</u>	<u>FLDN/204</u>	<u>DFPR20C</u>
Gland type of protection: (d,e)	<u>Ex d IIC</u>	<u>Ex d IIC</u>	<u>AUSEX</u>

2x BUNGS  
 BIPASS  
 Exod  
 E1-12

### Inspection

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hemetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14	Entropy calculation/documentation is available	i	X	X
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required *Environment.*

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*- Label required to capillary flexible conduit.*

Reviewed by: *N. Green*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:



**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

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**Specifications**

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0977  
PAOTO - 0698 0700 023  
0699 0704 024

**General**

Device ID or tag: <b>HEATTRACING (UP HIGH) ?</b>	Asset: <b>Near Daniel Analyser</b>
Circuit ID: <b>NONE</b>	Physical location: <b>MIEREENIK</b>
Area classification: <b>7.</b>	Environment: (hot?) <b>EXTERNAL - COVERED.</b>

**Data from Label**

Apparatus type: (light, JB, Motor) <b>JB</b>	Type of protection: (d,e, i, n, p etc) <b>d</b>
Manufacturer: <b>CROUSE HINDS</b>	Gas group: (IIA/B/C) <b>IIC</b>
Full model number: <b>GUBAØ1MP SPO19</b>	Temp class: (T1-T6) <b>T6</b>
Serial number: <b>0503-086</b>	Certificate number: <b>262X AUS Ex</b>
IP Class <b>66</b>	Test authority: (BAS, PTB, SAA etc)

Number of cables: **3**

**For each cable entry**

	gland 1	-gland 2	others
Gland manufacturer:	<b>ALCO</b>	<b>ALCO</b>	<b>GRAND ADAPTAFLUX</b>
Model:	<b>UFPR20C</b>	<b>FLAW204</b>	<b>SFL25M25/FA</b>
Gland type of protection: (d,e)	<b>AUS Ex 24204</b>	<b>AUS Ex 591</b>	<b>AUS Ex 21004</b>

2x BUNG  
NO CERT

**Inspection**

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entropy calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	<input checked="" type="checkbox"/>
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

**Faults found? (circle as appropriate)**
**No:**
 **Yes:**

 List action required **BUNDS, EARTHING, PRESSURE PLUGS?**

Contractor (write): Inspector <b>D. Williams</b>	Supervisor	Client (write): Inspector
Date: <b>2/8/11</b>		Date:

Device ID or tag

**Action required to make device compliant:**

- Labels (tags) required to cabling and enclosure.
- Uncertified blank plugs x 2 require replacement.

 Reviewed by: **N. GREEN**  
 Date: **17/8/11**  
 Priority:

**Comments:**

 All action items now completed:   
 Job closed: 

 Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:

**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

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**Specifications**

**General**

Device ID or tag: <b>THELSON JB</b>	Asset:
Circuit ID: <b>NONE</b>	Physical location: <b>MEREDIANE</b>
Area classification: <b>1</b>	Environment: (hot?) <b>EXTERNAL - COVERED</b>

**Data from Label**

Apparatus type: (light, JB, Motor) <b>JB</b>	Type of protection: (d, e, i, n, p etc) <b>Ex e</b>
Manufacturer: <b>WEIDMULLER</b>	Gas group: (IIA/B/C) <b>II C</b>
Full model number:	Temp class: (T1-T6) <b>T6</b>
Serial number: <b>570</b>	Certificate number: <b>614 X</b>
IP Class <b>K4 / IP 66 / 67</b>	Test authority: (BAS, PTB, SAA etc) <b>AUS EX</b>

Number of cables: **2**

**For each cable entry**

	in gland 1	HEMTRALE gland 2 OUT	others
Gland manufacturer:	<b>ALCO</b>	<b>HAWKE</b>	<b>ADAPTERS X2</b>
Model:	<b>FLPW 204</b>	<b>SAME SX 252/AX</b>	<b>?</b>
Gland type of protection: (d,e)		<b>Ex d II C</b>	<b>AUS EX 92X + 15BX</b>

**Inspection**

Circle as checked

A Equipment		Applicable to protection type:	Internal	External
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14	Entropy calculation/documentation is available	i	X	X

B Installation		Applicable to protection type:	Internal	External
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U, X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	<input checked="" type="checkbox"/>
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	



18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<del>X</del>
2	No undue accumulation of dust or dirt	all	X	<del>X</del>
3	Electrical insulation is clean and dry	all	X	

**Faults found? (circle as appropriate)**
**No:**
 **Yes**


<b>Contractor (write):</b> Inspector	<b>Supervisor</b>	<b>Client (write):</b> Inspector
<b>Date:</b>		<b>Date:</b>

Device ID or tag

**Action required to make device compliant:**

- Labels (tags) required to cabling + enclosure.
- Further verification of illegible adaptors required.

Reviewed by: <b>N. GREEN</b> Date: <b>17/9/11</b> Priority:
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**Comments:**

 All action items now completed:   
 Job closed: 

Device now fully compliant, spreadsheet register has been updated Supervisor (write): Date:
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# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\lenders\bsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

029  
030  
DANIEL SYSTEM  
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### General

Device ID or tag: JB UPSTREAM FRONT	Asset: GAS CHROM.
Circuit ID:	Physical location: MEREENIE
Area classification :	Environment: (hot?) EXTERNAL

### Data from Label

Apparatus type: (light, JB, Motor) JB	Type of protection: (d, e, i, n, p etc) AS BELOW
Manufacturer: CROUSE CURLEE	Gas group: (IIA/B/C) CLASS I GROUPS A B C D CLASS II GROUPS G F G2
Full model number: MWS 60 50 565	Temp class: (T1-T6)
Serial number: 109773	Certificate number: 3227 LR42129
IP Class NEMA 4	Test authority: (BAS, PTB, UL CSA)

Number of cables:

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:			
Model:			
Gland type of protection: (d,e)			



### Inspection

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1	Equipment (incl group and temp class) is appropriate for area classification	all	X
2	Equipment ID or circuit ID is correct	all	X
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X
4	There are no damage or evidence of unauthorised modifications	all	X
5	Bolts, cable entries and blanking elements are correct and tight	all	X
6	Flange facings are clean and undamaged	d	X
7	Lamp rating, type and position correct	all	X
8	Electrical connections are tight	all	X
9	Hermetically sealed devices are undamaged	n	X
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X
11	Motor fans have sufficient clearance	motors only	X
12	Installation clearly labelled	i	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X
14	Entropy calculation/documentation is available	i	X
<b>B Installation</b>			
1	Type of cable is appropriate, cables are undamaged	all	X
2	Sealing of ducts and/or conduits is satisfactory	all	X
3	Stopper boxes or barrier glands are properly filled	d	X
4	Integrity of conduit system and interface with mixed system is maintained	all	X
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X
6	Fault loop impedance is satisfactory	power outlets	X
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X
9	Special certification conditions U,X or B have been complied with	all	X
10	Cables/spare cores are terminated satisfactorily	all	X
11	No obstructions adjacent to flameproof flanged joint	d	X
12	Ducts, pipes and enclosures are in good condition	p	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X
14	Protective gas flow/pressure is adequate	p	X
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X
16	Pre-energising purge period is adequate	p	X
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	
2	No undue accumulation of dust or dirt	all	X	
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>17/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*- Conformity assessment required*

Reviewed by: <i>N. GREEN</i>
Date: <i>17/8/11</i>
Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated
Supervisor (write):
Date:

**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsbj11\y1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

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PART OF ANALYSER

4 of 6

**Specifications**

**General**

Device ID or tag: CHROM SYSTEM UPSTM Box	Asset: GAS CHROM.
Circuit ID:	Physical location: MEREENIE
Area classification :	Environment: (hot?)

**Data from Label**

Apparatus type: (light, JB, Motor) JB	Type of protection: (d,e, i, n, p etc)
Manufacturer: CURLEE	Gas group: (IIA/B/C) class I groups BCD class II groups EFG
Full model number: MWS GB 50565	Temp class: (T1-T6)
Serial number: 110083	Certificate number: 32L7 LR42129
IP Class NEMA 4	Test authority: (BAS, PTB, SAA etc) UL/CSA

Number of cables:

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:			
Model:			
Gland type of protection: (d,e)			

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entropy calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	<input checked="" type="checkbox"/>
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	<input checked="" type="checkbox"/>
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>17/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*- Conformity assessment required*

Reviewed by: <i>N. GREEN</i>
Date: <i>17/8/11</i>
Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):

Date:



# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

029  
030

DRAWN SYSTEM

~~048~~

2 of 6

### General

Device ID or tag: CHA DSTM FRONT	Asset: GAS CHROM.
Circuit ID:	Physical location: MEREENIE
Area classification :	Environment: (hot?) EXTERNAL

### Data from Label

Apparatus type: (light, JB, Motor) JB	Type of protection: (d,e, i, n, p etc) AS BELOW
Manufacturer: CARLEE	Gas group: (IIA/B/C) CLASS 1 GROUPS B, C & D CLASS II GROUPS E, F & G
Full model number: MWS GB 50 S65	Temp class: (T1-T6)
Serial number: 109773	Certificate number: 3227 / LR4224
IP Class NEMA 4	Test authority: (BAS, PTB, SAA etc) UL / CSA

Number of cables: 5

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:			
Model:			
Gland type of protection: (d,e)			

### Inspection

Inspection	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1	Equipment (incl group and temp class) is appropriate for area classification	all	X
2	Equipment ID or circuit ID is correct	all	X
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X
4	There are no damage or evidence of unauthorised modifications	all	X
5	Bolts, cable entries and blanking elements are correct and tight	all	X
6	Flange facings are clean and undamaged	d	X
7	Lamp rating, type and position correct	all	X
8	Electrical connections are tight	all	X
9	Hermetically sealed devices are undamaged	n	X
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X
11	Motor fans have sufficient clearance	motors only	X
12	Installation clearly labelled	i	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X
14	Entropy calculation/documentation is available	i	X
<b>B Installation</b>			
1	Type of cable is appropriate, cables are undamaged	all	X
2	Sealing of ducts and/or conduits is satisfactory	all	X
3	Stopper boxes or barrier glands are properly filled	d	X
4	Integrity of conduit system and interface with mixed system is maintained	all	X
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X
6	Fault loop impedance is satisfactory	power outlets	X
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X
9	Special certification conditions U,X or B have been complied with	all	X
10	Cables/spare cores are terminated satisfactorily	all	X
11	No obstructions adjacent to flameproof flanged joint	d	X
12	Ducts, pipes and enclosures are in good condition	p	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X
14	Protective gas flow/pressure is adequate	p	X
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X
16	Pre-energising purge period is adequate	p	X
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

**Yes:**

Contractor (write): <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>17/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:  
*- Conformity attestation required*

Reviewed by: *N. Green*  
 Date: *17/8/11*  
 Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:



# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices

Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\lenders\bsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

029  
030

PART OF ANALYSIS  
EXd BOXES.

1 of 6  
(double side)

## Specifications

### General

Device ID or tag: <b>CHROM. SYSTEM (DSM)</b>	Asset: <b>GAS CHROM.</b>
Circuit ID: <b>BACK</b>	Physical location: <b>MEREEMIE</b>
Area classification :	Environment: (hot?) <b>EXTERNAL</b>

### Data from Label

Apparatus type: (light, JB, Motor) <b>JB</b>	Type of protection: (d,e, i, n, p etc) <b>AS BELOW</b>
Manufacturer: <b>CURLEE</b>	Gas group: (IIA/B/C) <b>CLASS I GROUPS BCD CLASS II GROUPS EFG</b>
Full model number: <b>MWS GR 50565</b>	Temp class: (T1-T6)
Serial number: <b>109773</b>	Certificate number: <b>3227 LR42129</b>
IP Class <b>NEMA 4</b>	Test authority: (BAS, PTB, SAA etc) <b>UL / CSA</b>

**NEMA 4 ENCL 4.**

Number of cables:

### For each cable entry

gland 1

gland 2

others

Gland manufacturer:			
Model:			
Gland type of protection: (d,e)			

### Inspection

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2 Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4 There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5 Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	X
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14 Entity calculation/documentation is available	i	X	X

### B Installation

1 Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2 Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U,X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12 Ducts, pipes and enclosures are in good condition	p	X	<input checked="" type="checkbox"/>
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	<input checked="" type="checkbox"/>
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>17/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*FRONT SIDE 75mm - LEFT BOX TO STOP BOX  
125mm - RIGHT BOX TO STOP BOX  
REAR SIDE 150mm - LEFT SIDE TOP JOBS TO STOP BOX  
170mm - " " BOTTOM JOBS " "  
(SAME ON RIGHT SIDE)*

*NO EX BUNGS.*

*Nil hazardous area certification evident for equipment. use in Australia unless conformity assessment deems compliance.*

Reviewed by: *N. GREEN*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

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~~0725~~ 048

## Specifications

### General

Device ID or tag: THERMOSTAT HEAT TRACE	Asset: New Daniel Analyser
Circuit ID:	Physical location: MEREENIE
Area classification :	Environment: (hot?) EXTERNAL

### Data from Label

Apparatus type: (light, JB, Motor) THERMOSTAT	Type of protection: (d,e, i, n, p etc) Exd
Manufacturer: THERMON	Gas group: (IIA/B/C) IIC
Full model number: ETH 10120CU	Temp class: (T1-T6) T6
Serial number: 0503-086	Certificate number: AUSEx 3039
IP Class G6	Test authority: (BAS, PTB, SAA etc)

Number of cables: 2

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:	ALCO	ALCO	ADAPTA FLEX
Model:	FLPW 204	UFPR 20C	SPL25/M25/FP
Gland type of protection: (d,e)			Ex d

## Inspection

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1	Equipment (incl group and temp class) is appropriate for area classification	all	X
2	Equipment ID or circuit ID is correct	all	X
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X
4	There are no damage or evidence of unauthorised modifications	all	X
5	Bolts, cable entries and blanking elements are correct and tight	all	X
6	Flange facings are clean and undamaged	d	X
7	Lamp rating, type and position correct	all	X
8	Electrical connections are tight	all	X
9	Hermetically sealed devices are undamaged	n	X
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X
11	Motor fans have sufficient clearance	motors only	X
12	Installation clearly labelled	i	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X
14	Entropy calculation/documentation is available	i	X

NOTE



### B Installation

1	Type of cable is appropriate, cables are undamaged	all	X
2	Sealing of ducts and/or conduits is satisfactory	all	X
3	Stopper boxes or barrier glands are properly filled	d	X
4	Integrity of conduit system and interface with mixed system is maintained	all	X
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X
6	Fault loop impedance is satisfactory	power outlets	X
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X
9	Special certification conditions U,X or B have been complied with	all	X
10	Cables/spare cores are terminated satisfactorily	all	X
11	No obstructions adjacent to flameproof flanged joint	d	X
12	Ducts, pipes and enclosures are in good condition	p	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X
14	Protective gas flow/pressure is adequate	p	X
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X
16	Pre-energising purge period is adequate	p	X
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X

NOTE

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	
2	No undue accumulation of dust or dirt	all	X	
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:  
*- Label required to capillary flexible conduit.*

Reviewed by: *N. GREEN*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:



# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\enders\bsj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

0774 047  
0725 048

## Specifications

### General

Device ID or tag: <b>HEAT TRACING J/Box</b>	Asset: <b>Near Daniel Analyser</b>
Circuit ID: <b>NONE</b>	Physical location: <b>MERLEENIE</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL</b>

### Data from Label

Apparatus type: (light, JB, Motor) <b>JB</b>	Type of protection: (d, e, i, n, p etc) <b>ExA</b>
Manufacturer: <b>CROUSE-HINDS</b>	Gas group: (IIA/B/C) <b>II. C</b>
Full model number: <b>GUBA01K66185</b>	Temp class: (T1-T6) <b>T6</b>
Serial number:	Certificate number: <b>262 X</b>
IP Class <b>66</b>	Test authority: (BAS, PTB, SAA etc) <b>AusEx</b>

Number of cables: **3**

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	<b>ALCO</b>	<b>ALCO</b>	<b>ADAPTABLE</b>
Model:	<b>FLPW264</b>	<b>VFPR 20C</b>	<b>SPL25/MS/FP</b>
Gland type of protection: (d, e)			<b>EXC</b>

BUNGS NOT CORRECT

## Inspection


	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1	Equipment (incl group and temp class) is appropriate for area classification	all	X
2	Equipment ID or circuit ID is correct	all	X
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X
4	There are no damage or evidence of unauthorised modifications	all	X
5	Bolts, cable entries and blanking elements are correct and tight	all	X
6	Flange facings are clean and undamaged	d	X
7	Lamp rating, type and position correct	all	X
8	Electrical connections are tight	all	X
9	Hermetically sealed devices are undamaged	n	X
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X
11	Motor fans have sufficient clearance	motors only	X
12	Installation clearly labelled	i	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X
14	Entropy calculation/documentation is available	i	X
<b>B Installation</b>			
1	Type of cable is appropriate, cables are undamaged	all	X
2	Sealing of ducts and/or conduits is satisfactory	all	X
3	Stopper boxes or barrier glands are properly filled	d	X
4	Integrity of conduit system and interface with mixed system is maintained	all	X
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X
6	Fault loop impedance is satisfactory	power outlets	X
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X
9	Special certification conditions U, X or B have been complied with	all	X
10	Cables/spare cores are terminated satisfactorily	all	X
11	No obstructions adjacent to flameproof flanged joint	d	X
12	Ducts, pipes and enclosures are in good condition	p	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X
14	Protective gas flow/pressure is adequate	p	X
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X
16	Pre-energising purge period is adequate	p	X
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X

BUNGS

NONE

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	
2	No undue accumulation of dust or dirt	all	X	
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required

Contractor (write): Inspector <i>DN, users</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

- Labels required to cabling and enclosure.
- Uncertified blank plugs requires replacement.

Reviewed by: *N. GREEN*  
 Date: *17/8/11*  
 Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):

Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj111\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d, ex-e, ex-i, ex-n, ex-p and other ex devices.doc

PROTOS 0704 0703  
027 028  
PART OF HAZARDOUS ANALYSER  
5 of 6

## Specifications

### General

Device ID or tag: <b>CHROM SYSTEM JB (30)</b>	Asset: <b>GAS CHROM.</b>
Circuit ID: <b>J024</b>	Physical location: <b>MEREDONIE</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL COVERED</b>

### Data from Label

Apparatus type: (light, JB, Motor) <b>JB DO3</b>	Type of protection: (d, e, i, n, p etc) <b>?</b> (d)
Manufacturer: <b>ADALET</b>	Gas group: (IIA/B/C) <b>CLASS I GROUPS EFG CLASS II GROUPS EF2G</b>
Full model number: <b>030903</b>	Temp class: (T1-T6) <b>?</b>
Serial number: <b>?</b>	Certificate number: <b>?</b>
IP Class	Test authority: (BAS, PTB, SAA etc) <b>UL / CSA</b>

Number of cables:

### For each cable entry

	gland 1	ADAPTOR gland 2	others
Gland manufacturer:	<b>?</b>	<b>NO CERT</b>	<b>BUNGS X 3 NO CERTS</b>
Model:			
Gland type of protection: (d, e)			

## Inspection

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14	Entropy calculation/documentation is available	i	X	X
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U, X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

NONE

13m...



18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	<input checked="" type="checkbox"/>

Faults found? (circle as appropriate)

No:

Yes:

List action required

Contractor (write): Inspector <i>D. WILLIAMS</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*- Conformity assessment required*

Reviewed by: *N. GREEN*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:

**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\lenders\bsbj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

TONYS PHOTOS  
0996  
0997

PART OF AMATEC SYSTEM.

029  
~~0726~~  
049  
lot 6

**Specifications**

**General**

Device ID or tag: <b>SOLENOID</b>	Asset: <b>GAS CHROM.</b>
Circuit ID:	Physical location: <b>MERGENIO</b>
Area classification:	Environment: (hot?) <b>EXTERNAL</b>

**Data from Label**

Apparatus type: (light, JB, Motor)	Type of protection: (d, e, i, n, p etc)
Manufacturer: <b>ASCO</b>	Gas group: (IIA/B/C) <b>CL2 DIV1 GRABCD</b>
Full model number: <b>EF8016 G2 Solenoid</b>	Temp class: (T1-T6) <b>165°C</b>
Serial number: <b>A879895</b>	Certificate number:
IP Class <b>ENCLOSURE TYPE 3, 3S, 4, 4X, 6, 6P, 7&amp;9</b>	Test authority: (BAS, PTB, SAA etc) <b>UL CSA</b>

Number of cables:

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:			
Model:			
Gland type of protection: (d,e)			

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entropy calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U, X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	<input checked="" type="checkbox"/>
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	<input checked="" type="checkbox"/>
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>17/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*NO STORAGE BOX  
- Conformity assessment required.*

Reviewed by: *N. GREEN*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:

**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\lenders\bsj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

TONY'S PHOTOS  
1003 1005 (FOAM COVERED)  
1004 0910

**Specifications**

**General**

Device ID or tag: MA M000	Asset: MOISTURE ANALYSER
Circuit ID: J023 A / J022 / SWA	Physical location: MERCEINIG
Area classification: ?	Environment: (hot?) EXTERNAL

**Data from Label**

Apparatus type: (light, JB, Motor) WATER ANALYSER	Type of protection: (d, e, i, n, p etc) ?
Manufacturer: AMETEK	Gas group: (IIA/B/C) CLASS A GROUP 1 GROUPS BCD
Full model number: 3050 OLV	Temp class: (T1-T6) T6
Serial number: ?	Certificate number: 876L
IP Class: ?	Test authority: (BAS, PTB, SAA etc) UL

Number of cables:

**For each cable entry**

	POWER gland 1	CABLE gland 2	others CABLE
Gland manufacturer:	NOT ACCESSIBLE	ALCO	ALCO
Model:		FLPW 203	FLPW 202
Gland type of protection: (d,e)			

**Inspection**

Circle as checked

		Applicable to protection type:	Internal	External
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	(X)
2	Equipment ID or circuit ID is correct	all	X	(X)
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	(X)
4	There are no damage or evidence of unauthorised modifications	all	X	(X)
5	Bolts, cable entries and blanking elements are correct and tight	all	X	(X)
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14	Entropy calculation/documentation is available	i	X	X
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	(X)
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U, X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	(X)
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

**Faults found? (circle as appropriate)**
**No:**
**Yes:**

List action required

Contractor (write): Inspector <i>D. Whynans</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*- Nil hazardous area certification evident for equipment use in Australia. Conformity attestation required for analyser.*

Reviewed by: *N. GREEN*

Date: *22/8/11*

Priority:

Comments:

All action items now completed: 

Job closed: 

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):

Date:



# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\enders\sbsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d, ex-e, ex-i, ex-n, ex-p and other ex devices.doc

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0914

0716 040  
0717 041

## Specifications

### General

Device ID or tag: <b>WATER ANALYSER</b>	Asset: <b>MOISTURE ANALYSER</b>
Circuit ID: <b>J023-A</b>	Physical location: <b>MERRENER</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTREME</b>

### Data from Label

Apparatus type: (light, JB, Motor) <b>SWITCH/ISOLATOR</b>	Type of protection: (d,e, i, n, p etc) <b>d ✓</b>
Manufacturer: <b>WILCO</b>	Gas group: (IIA/B/C) <b>I/II B</b>
Full model number: <b>FS 110 CI</b>	Temp class: (T1-T6) <b>T6</b>
Serial number: <b>?</b>	Certificate number: <b>1039</b>
IP Class <b>? IP65 (cert'd)</b>	Test authority: (BAS, PTB, SAA etc) <b>AUS Ex</b>

Number of cables: **2**

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:	<b>ALCO</b>	<b>ALCO</b>	
Model:	<b>FLAN 205</b>	<b>FLAN 205</b>	
Gland type of protection: (d,e)			

### Inspection

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1	Equipment (incl group and temp class) is appropriate for area classification	all	X
2	Equipment ID or circuit ID is correct	all	X
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X
4	There are no damage or evidence of unauthorised modifications	all	X
5	Bolts, cable entries and blanking elements are correct and tight	all	X
6	Flange facings are clean and undamaged	d	X
7	Lamp rating, type and position correct	all	X
8	Electrical connections are tight	all	X
9	Hermetically sealed devices are undamaged	n	X
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X
11	Motor fans have sufficient clearance	motors only	X
12	Installation clearly labelled	i	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X
14	Entropy calculation/documentation is available	i	X
<b>B Installation</b>			
1	Type of cable is appropriate, cables are undamaged	all	X
2	Sealing of ducts and/or conduits is satisfactory	all	X
3	Stopper boxes or barrier glands are properly filled	d	X
4	Integrity of conduit system and interface with mixed system is maintained	all	X
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X
6	Fault loop impedance is satisfactory	power outlets	X
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X
9	Special certification conditions U,X or B have been complied with	all	X
10	Cables/spare cores are terminated satisfactorily	all	X
11	No obstructions adjacent to flameproof flanged joint	d	X
12	Ducts, pipes and enclosures are in good condition	p	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X
14	Protective gas flow/pressure is adequate	p	X
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X
16	Pre-energising purge period is adequate	p	X
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X

NO EARTHS

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*- Label to identify switch junction box required.*

Reviewed by: *N. GREEN*  
 Date: *2/8/11*  
 Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:



# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices

Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj111fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

0709 033  
0710 034

## Specifications

### General

Device ID or tag: WATER ANALYSER 33	Asset: MOISTURE ANALYSER
Circuit ID: ?	Physical location: MEREENIE
Area classification: ?	Environment: (hot?) EXTERNAL - COVERED

### Data from Label

Apparatus type: (light, JB, Motor) JB	Type of protection: (d, e, i, n, p etc)
Manufacturer: CROUSE HINDS USA	Gas group: (IIA/B/C) CL I CR A B C D CL II CR E F G
Full model number: OIO 5235	Temp class: (T1-T6) ?
Serial number: ?	Certificate number: ?
IP Class: ?	Test authority: (BAS, PTB, SAA etc) UL / CSA

Number of cables: 2

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:	KILLARK	ALCO	BULLY NO EGT..
Model:	R21 A - 398	FLP W 204	
Gland type of protection: (d, e)	HL FOR HAZ LOC. CUSSI, II&III		

### Inspection

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1	Equipment (incl group and temp class) is appropriate for area classification	all	X
2	Equipment ID or circuit ID is correct	all	X
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X
4	There are no damage or evidence of unauthorised modifications	all	X
5	Bolts, cable entries and blanking elements are correct and tight	all	X
6	Flange facings are clean and undamaged	d	X
7	Lamp rating, type and position correct	all	X
8	Electrical connections are tight	all	X
9	Hermetically sealed devices are undamaged	n	X
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X
11	Motor fans have sufficient clearance	motors only	X
12	Installation clearly labelled	i	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X
14	Entropy calculation/documentation is available	i	X
<b>B Installation</b>			
1	Type of cable is appropriate, cables are undamaged	all	X
2	Sealing of ducts and/or conduits is satisfactory	all	X
3	Stopper boxes or barrier glands are properly filled	d	X
4	Integrity of conduit system and interface with mixed system is maintained	all	X
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X - None
6	Fault loop impedance is satisfactory	power outlets	X
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X
9	Special certification conditions U, X or B have been complied with	all	X
10	Cables/spare cores are terminated satisfactorily	all	X
11	No obstructions adjacent to flameproof flanged joint	d	X
12	Ducts, pipes and enclosures are in good condition	p	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X
14	Protective gas flow/pressure is adequate	p	X
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X
16	Pre-energising purge period is adequate	p	X
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	(X)
2	No undue accumulation of dust or dirt	all	X	(X)
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required

Contractor (write): <i>D. Williams</i>	Inspector	Supervisor	Client (write):	Inspector
Date: <i>2/8/11</i>			Date:	

Device ID or tag

Action required to make device compliant:

- Equipment/label required.
- Nil hazardous area certification to Australian Standards.

Reviewed by: <i>D. GREEN</i>
Date: <i>17/8/11</i>
Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):

Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices

Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\sbsj11\yf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

0709 033  
0710 034

### General

Device ID or tag: <u>MOISTURE ANALYSER SOLENOID</u>	Asset: <u>MOISTURE ANALYSER</u>
Circuit ID:	Physical location: <u>MORSEBIE</u>
Area classification :	Environment: (hot?) <u>EXTERNAL - LOW</u>

### Data from Label

Apparatus type: (light, JB, Motor) <u>SOLENOID</u>	Type of protection: (d,e, i, n, p etc) <u>d</u>
Manufacturer: <u>GO</u>	Gas group: (IIA/B/C) <u>IIC</u>
Full model number:	Temp class: (T1-T6) <u>T3</u>
Serial number:	Certificate number: <u>KEMA Ex 96 D 1862</u>
IP Class	Test authority: (BAS, PTB, SAA etc)

Number of cables:

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer: <u>KILLARK</u>			
Model: <u>R21 A-3A8</u>			
Gland type of protection: (d,e) <u>UL HAR LOC CLASS I, II, III</u>			

### Inspection

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1	Equipment (incl group and temp class) is appropriate for area classification	all	X
2	Equipment ID or circuit ID is correct	all	X
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X
4	There are no damage or evidence of unauthorised modifications	all	X
5	Bolts, cable entries and blanking elements are correct and tight	all	X
6	Flange facings are clean and undamaged	d	X
7	Lamp rating, type and position correct	all	X
8	Electrical connections are tight	all	X
9	Hermetically sealed devices are undamaged	n	X
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X
11	Motor fans have sufficient clearance	motors only	X
12	Installation clearly labelled	i	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X
14	Entropy calculation/documentation is available	i	X
<b>B Installation</b>			
1	Type of cable is appropriate, cables are undamaged	all	X
2	Sealing of ducts and/or conduits is satisfactory	all	X
3	Stopper boxes or barrier glands are properly filled	d	X
4	Integrity of conduit system and interface with mixed system is maintained	all	X
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X
6	Fault loop impedance is satisfactory	power outlets	X
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X
9	Special certification conditions U,X or B have been complied with	all	X
10	Cables/spare cores are terminated satisfactorily	all	X
11	No obstructions adjacent to flameproof flanged joint	d	X
12	Ducts, pipes and enclosures are in good condition	p	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X
14	Protective gas flow/pressure is adequate	p	X
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X
16	Pre-energising purge period is adequate	p	X
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X

NOISE

NO PARTS

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required

Contractor (write): Inspector	Supervisor	Client (write): Inspector
Date:		Date:

Device ID or tag

Action required to make device compliant:

- Device labelled 'Out of Service'
- Nil hazardous area certification detail available for use in Australia hence non compliant unless conformity assessment deems compliance.
- Equipment label required.

Reviewed by: *N. GREEN*  
 Date: *17/8/11*  
 Priority:

Comments:

All action items now completed:   
 Job closed:

Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:



**Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices**



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\yf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

**Specifications**

022

**General**

Device ID or tag: <b>PT 32</b>	Asset: <b>GAS CHROM.</b>
Circuit ID: <b>NONE</b>	Physical location: <b>MIRRENE</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL - COVERED</b>

**Data from Label**

Apparatus type: (light, JB, Motor) <b>PRESSURE TV</b>	Type of protection: (d,e, i, n, p etc) <b>ia/n/d</b>
Manufacturer: <b>ROSEMOUNT</b>	Gas group: (IIA/B/C) <b>IIC</b>
Full model number: <b>3051/300</b>	Temp class: (T1-T6) <b>T5</b>
Serial number: <b>91562771</b>	Certificate number: <b>03.13477 / 12497 (ia/n)</b>
IP Class <b>IP66</b>	Test authority: (BAS, PTB, SAA etc) <b>Aus Ex</b>

Number of cables:

For each cable entry	gland 1	gland 2	others <b>BUNG</b>
Gland manufacturer:	<b>ALCO</b>		<b>REDAPT</b>
Model:	<b>W201R</b>		<b>PL-D M20</b>
Gland type of protection: (d,e)	<b>Ed IIC</b>		<b>Exd IIC SIRA99 M20x113</b>

**Inspection**

		Applicable to protection type:	Circle as checked	
			Internal	External
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isotators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entity calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	<input checked="" type="checkbox"/>
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	<input checked="" type="checkbox"/>
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes. List action required *IS CABLES, CIRCUIT ID*

Contractor (write): Inspector <i>D. WILLIAMS</i>	Supervisor	Client (write): Inspector
Date: <i>18/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

- Cable I.D required.
- Blue sheath to cable or IS labelling required.

Reviewed by: <i>N. GREEN</i>
Date: <i>18/8/11</i>
Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated

Supervisor (write):  
Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and SITZLER other Ex devices

Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\enders\bsbj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

037  
038  
0713  
0714 (EARTH OR FRAME)

## Specifications

### General

Device ID or tag: <u>END JB</u>	Asset:
Circuit ID: <u>P008 / P005</u>	Physical location: <u>MERGEENIE</u>
Area classification: <u>1</u>	Environment: (hot?) <u>EXTERNAL - COVERED</u>

### Data from Label

Apparatus type: (light, JB, Motor) <u>240V JB</u>	Type of protection: (d,e, i, n, p etc)
Manufacturer: <u>SAE</u>	Gas group: (IIA/B/C) <u>II B</u>
Full model number:	Temp class: (T1-T6) <u>T5</u>
Serial number:	Certificate number: <u>FLP 693</u>
IP Class	Test authority: (BAS, PTB, SAA etc) <u>SAA</u>

Number of cables: 3

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:	<u>ALCO</u>	<u>NOT ACCESSIBLE</u>	<u>ALCO</u>
Model:	<u>FLPV 205</u>		<u>FLP W245</u>
Gland type of protection: (d,e)	<u>Exd</u>		

BUNG NO CERT

## Inspection

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	<u>(X)</u>
2 Equipment ID or circuit ID is correct	all	X	<u>(X)</u>
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	<u>(X)</u>
4 There are no damage or evidence of unauthorised modifications	all	X	<u>(X)</u>
5 Bolts, cable entries and blanking elements are correct and tight	all	X	<u>(X)</u>
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	X
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14 Entity calculation/documentation is available	i	X	X

### B Installation

1 Type of cable is <u>appropriate</u> , cables are undamaged	all	X	<u>(X)</u>
2 Sealing of ducts and/or conduits is satisfactory	all	X	<u>(X)</u>
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<u>(X)</u> ← <u>NO EARTH</u>
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U,X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	<u>(X)</u>
12 Ducts, pipes and enclosures are in good condition	p	X	X
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	



18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

- Uncertified blanking plug.
- UV damage to outer sheath of double insulated cable.
- Equipment label required

Reviewed by: *N. LARSEN*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

073 044

### General

Device ID or tag: <b>HIGH 240V JB</b>	Asset:
Circuit ID: <b>NONR</b>	Physical location: <b>MERGENIE</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL</b>

### Data from Label

Apparatus type: (light, JB, Motor) <b>JB</b>	Type of protection: (d,e, i, n, p etc) <b>d</b>
Manufacturer: <b>GOVAN</b>	Gas group: (IIA/B/C) <b>II B</b>
Full model number: <b>FC4 PCS</b>	Temp class: (T1-T6) <b>T6</b>
Serial number:	Certificate number: <b>EX 238 FLP 771</b>
IP Class <b>65</b>	Test authority: (BAS, PTB, SAA etc)

Number of cables: **4**

### For each cable entry

	gland 1 (Btm)	gland 2	others
Gland manufacturer:	<b>ALCO</b>	<b>ALCO</b>	<b>ALCO</b>
Model:	<b>FLPW 204</b>	<b>FLPW 206</b>	<b>FLPW 204</b>
Gland type of protection: (d,e)			<b>AUS Ex Sq1</b>

### Inspection

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2 Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4 There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5 Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14 Entity calculation/documentation is available	i	X	X

### B Installation

1 Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2 Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/> - NONR
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U,X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12 Ducts, pipes and enclosures are in good condition	p	X	X
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	6
2	No undue accumulation of dust or dirt	all	X	6
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

**Yes:**

List action required

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*- Equipment + cable labels required*

Reviewed by: *N. GREEN*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\enders\bsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

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## Specifications

### General

Device ID or tag: LIGHTS	Asset:
Circuit ID: ABNR	Physical location: MERRIBIE
Area classification: ?	Environment: (hot?) EXTERNAL

### Data from Label

Apparatus type: (light, JB, Motor) LIGHT	Type of protection: (d, e, i, n, p etc) d
Manufacturer: BURN BRIGHT LIGHTS	Gas group: (IIA/B/C) II B
Full model number: 2x90 240/250 HPF	Temp class: (T1-T6) T6
Serial number: ?	Certificate number: 229 ✓
IP Class 44	Test authority: (BAS, PTB, SAA etc) AUS Ex

Number of cables: 1

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:	ALCO		BUNG X2
Model:	FLPW 205		NO CERT
Gland type of protection: (d,e)			

## Inspection



Circle as checked

Inspection	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	X
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14	Entropy calculation/documentation is available	i	X	X

<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	
2	No undue accumulation of dust or dirt	all	X	
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

Contractor (write): Inspector <i>O. WILLIAMS</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

- Replace? uncertified blanking plug.
- Equipment/cable labels required.

Reviewed by: *N. GREEN*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:



# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsbj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

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### General

Device ID or tag: LIGHT SWITCH	Asset:
Circuit ID: NONE	Physical location: MEREENIE
Area classification: ?	Environment: (hot?) EXTERNAL

### Data from Label

Apparatus type: (light, JB, Motor) LIGHT SWITCH	Type of protection: (d,e, i, n, p etc) Exd
Manufacturer: GOVAN	Gas group: (IIA/B/C) IIB
Full model number: AAA FCLFA 203 ad	Temp class: (T1-T6) T6
Serial number: 1	Certificate number: ? 63
IP Class 65	Test authority: (BAS, PTB, SAA etc) <del>DLP</del>

Number of cables: 3

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:	ALCO	ALCO	ALCO
Model:	FLPW 204	FLPW 204	FLPW 204
Gland type of protection: (d,e)			

### Inspection

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	⊗
2 Equipment ID or circuit ID is correct	all	X	⊗
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗
4 There are no damage or evidence of unauthorised modifications	all	X	⊗
5 Bolts, cable entries and blanking elements are correct and tight	all	X	⊗
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	X
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X
14 Entity calculation/documentation is available	i	X	X

### B Installation

1 Type of cable is appropriate, cables are undamaged	all	X	⊗
2 Sealing of ducts and/or conduits is satisfactory	all	X	⊗
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	⊗ - NONE
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U,X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	⊗
12 Ducts, pipes and enclosures are in good condition	p	X	X
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	X
2	No undue accumulation of dust or dirt	all	X	X
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

- Equipment I.D. labelling not provided.
- Haz. area certification not legible.
- J/Box appears to have been modified as model number had been covered via lockout mechanism.

Reviewed by: *N. GREEN*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:



# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwintenders\sbsj11\fy1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

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### General

Device ID or tag: <b>Pressure Switch</b>	Asset: <b>GAS CHEM.</b>
Circuit ID:	Physical location: <b>MERENIE</b>
Area classification:	Environment: (hot?) <b>EXTERNAL</b>

### Data from Label

Apparatus type: (light, JB, Motor)	Type of protection: (d,e, i, n, p etc) <b>CLASS I DIV I GROUP 1 CLASS II DIV I</b>
Manufacturer: <b>ASHCROFT</b>	Gas group: (IIA/B/C)
Full model number: <b>AP SN7 DCS 04</b>	Temp class: (T1-T6)
Serial number: <b>C3014246</b>	Certificate number: <b>UL 297G</b>
IP Class: <b>?</b>	Test authority: (BAS, PTB, SAA etc)

Number of cables: **0**

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:			
Model:			
Gland type of protection: (d,e)			

### Inspection

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2 Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4 There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5 Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13 Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14 Entity calculation/documentation is available	i	X	<input checked="" type="checkbox"/>

### B Installation

1 Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2 Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3 Stopper boxes or barrier glands are properly filled	d	X	
4 Integrity of conduit system and interface with mixed system is maintained	all	X	
5 Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6 Fault loop impedance is satisfactory	power outlets	X	
7 Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8 Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9 Special certification conditions U,X or B have been complied with	all	X	
10 Cables/spare cores are terminated satisfactorily	all	X	
11 No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12 Ducts, pipes and enclosures are in good condition	p	X	<input checked="" type="checkbox"/>
13 Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	<input checked="" type="checkbox"/>
14 Protective gas flow/pressure is adequate	p	X	
15 Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16 Pre-energising purge period is adequate	p	X	
17 Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required

Contractor (write): Inspector <i>D. G. Green</i>	Supervisor	Client (write): Inspector
Date: <del>17/8/11</del> 17/8/11		Date:

Device ID or tag

Action required to make device compliant:

- Instrument I.D. label required.
- Nil haz area certification detail available for use in Australia, non compliant, unless conformity assess. deems compliance.
- Switch directly connected to T/Box of unknown certification.

Reviewed by: *N. GREEN*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\y11 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

07H 035  
07H 036

## Specifications

### General

Device ID or tag: SWITCH	Asset:
Circuit ID: P007	Physical location: MERRIBIE
Area classification: ?	Environment: (hot?) EXTERNAL - COVERED

### Data from Label

Apparatus type: (light, JB, Motor) LIGHT SWITCH	Type of protection: (d, e, i, n, p etc) Div 1-2 Exd
Manufacturer: WILCO	Gas group: (IIA/B/C) 1, 2, 3 A GASES CLASS DIV 1, 2
Full model number: ? WFS 110	Temp class: (T1-T6) CLASS 1 FLP 559
Serial number: ?	Certificate number: ? AUS Ex FLP 559
IP Class	Test authority: (BAS, PTB, SAA etc)

Number of cables: 2

### For each cable entry

	gland 1	gland 2	others
Gland manufacturer:	NOT ACCESSIBLE	NOT ACCESSIBLE	
Model:			
Gland type of protection: (d,e)			

## Inspection

Circle as checked

	Applicable to protection type:	Circle as checked	
		Internal	External
<b>A Equipment</b>			
1 Equipment (incl group and temp class) is appropriate for area classification	all	X	⊗
2 Equipment ID or circuit ID is correct	all	X	⊗
3 Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗
4 There are no damage or evidence of unauthorised modifications	all	X	⊗
5 Bolts, cable entries and blanking elements are correct and tight	all	X	⊗
6 Flange facings are clean and undamaged	d	X	
7 Lamp rating, type and position correct	all	X	
8 Electrical connections are tight	all	X	
9 Hermetically sealed devices are undamaged	n	X	
10 Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11 Motor fans have sufficient clearance	motors only	X	
12 Installation clearly labelled	i	X	X
13 Safety barriers/isolators installed as per certification and securely earthed where required -	i	X	X
14 Entity calculation/documentation is available	i	X	X

<b>B Installation</b>			
1	Type of cable is appropriate, cables are undamaged	all	X ⊗
2	Sealing of ducts and/or conduits is satisfactory	all	X ⊗
3	Stopper boxes or barrier glands are properly filled	d	X
4	Integrity of conduit system and interface with mixed system is maintained	all	X
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X ⊗
6	Fault loop impedance is satisfactory	power outlets	X
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X
9	Special certification conditions U, X or B have been complied with	all	X
10	Cables/spare cores are terminated satisfactorily	all	X
11	No obstructions adjacent to flameproof flanged joint	d	X ⊗
12	Ducts, pipes and enclosures are in good condition	p	X X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X X
14	Protective gas flow/pressure is adequate	p	X
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X
16	Pre-energising purge period is adequate	p	X
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

**Yes:**

List action required

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>2/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

- Equipment label required.
- Certification detail unavailable.

Reviewed by: *D. GREEN*  
Date: *17/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:



# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and other Ex devices



Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsbj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

### General

Device ID or tag: <b>P015H-24-P000</b>	Asset: <b>Motor Run / Filter Sep #2</b>
Circuit ID: <b>F011</b>	Physical location: <b>MORDEENIA</b>
Area classification :	Environment: (hot?) <b>EXTERNAL</b>

### Data from Label

Apparatus type: (light, JB, Motor) <b>PRESSURE TRANSDUCER</b>	Type of protection: (d,e, i, n, p etc) <b>d</b>
Manufacturer: <b>ROSEMOUNT</b>	Gas group: (IIA/B/C) <b>II C</b>
Full model number: <b>3051/3001</b>	Temp class: (T1-T6) <b>T5</b>
Serial number: <b>-</b>	Certificate number: <b>AVS Ex 1347X</b>
IP Class <b>65</b>	Test authority: (BAS, PTB, SAA etc)

Number of cables: 1

### For each cable entry

	gland 1	gland 2	others <b>BUNG</b>
Gland manufacturer:	<b>?</b>		<b>?</b>
Model:	<b>?</b>		<b>?</b>
Gland type of protection: (d,e)	<b>?</b>		<b>?</b>

## Inspection

Circle as checked

		Applicable to protection type:	Internal	External
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entropy calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	<input checked="" type="checkbox"/>
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	<input checked="" type="checkbox"/>
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>25/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*REFER SAME NOTES AS PDISH-21*

*\* NOTE : INSPECTION SHEET COMPILED OFFSITE BY PHOTOS ONLY.  
VARIABLES UNFORSEEN MAY EXIST*

Reviewed by: <i>N. GREEN</i>
Date: <i>26/8/11</i>
Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated
Supervisor (write):
Date:

# Hazardous area device inspection sheet for Ex-d, Ex-e, Ex-i, Ex-n, Ex-p and

Based on AS/NZS 60079 part 17

Ref: I:\data\sitzler\company operations\darwin\tenders\bsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

## Specifications

### General

Device ID or tag: <b>LSH-24A</b>	Asset: <b>Meter Run / Filter Laps # 2</b>
Circuit ID: <b>? 5013</b>	Physical location: <b>METROLINE</b>
Area classification :	Environment: (hot?) <b>EXTERNAL</b>

### Data from Label

Apparatus type: (light, JB, Motor) <b>LEVEL TRANSMITTER</b>	Type of protection: (d,e, i, n, p etc) <b>d</b>
Manufacturer: <b>FRANK W MORPHY</b>	Gas group: (IIA/B/C) <b>11B</b>
Full model number: <b>L12 00DPDT</b>	Temp class: (T1-T6) <b>T6</b>
Serial number: <b>?</b>	Certificate number: <b>AUS Ex 609</b>
IP Class <b>?</b>	Test authority: (BAS, PTB, SAA etc)

Number of cables:

### For each cable entry

	gland 1	gland 2 <b>JB</b>	others
Gland manufacturer:		<b>SAA</b>	
Model:		<b>FNST (20mm)</b>	
Gland type of protection: (d,e)		<b>SAA FLP 6.93 DIP45</b>	
		<b>KRUP 11B</b>	

### Inspection

		Applicable to protection type:	Circle as checked	
			Internal	External
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	⊗
2	Equipment ID or circuit ID is correct	all	X	⊗
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗
4	There are no damage or evidence of unauthorised modifications	all	X	⊗
5	Bolts, cable entries and blanking elements are correct and tight	all	X	⊗
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	⊗
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗
14	Entity calculation/documentation is available	i	X	⊗
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	⊗
2	Sealing of ducts and/or conduits is satisfactory	all	X	⊗
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	⊗
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	⊗
12	Ducts, pipes and enclosures are in good condition	p	X	⊗
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	⊗
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	



18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

Contractor (write): Inspector <i>D. Williams</i>	Supervisor	Client (write): Inspector
Date: <i>25/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*REFER SAME NOTES AS LSH-21 excluding DIP note.*  
*\* NOTE : INSPECTION SHEET COMPILED OFFSITE BY PHOTOS ONLY.*  
*VARIABLES UNFORSEEN MAY EXIST.*

Reviewed by: *N. Green*  
 Date: *26/8/11*  
 Priority:

Comments:

All action items now completed:

Job closed:

Device now fully compliant, spreadsheet register has been updated  
 Supervisor (write):  
 Date:

Ref: I:\data\sitzler\company operations\darwin\enders\sbsj11\fyf1 - haz area inspections\hazardous area inspection forms\hazardous area device inspection sheet for ex-d,ex-e,ex-i,ex-n,ex-p and other ex devices.doc

**Specifications**

**General**

Device ID or tag: <b>LSH -24 - P000</b>	Asset: <b>Meter Run / Filter Sep # 2</b>
Circuit ID: <b>- JO12</b>	Physical location: <b>MERIDENIE</b>
Area classification: <b>?</b>	Environment: (hot?) <b>EXTERNAL</b>

**Data from Label**

Apparatus type: (light, JB, Motor) <b>LEVEL TRANSMITTER</b>	Type of protection: (d, e, i, n, p etc) <b>d</b>
Manufacturer: <b>FRANK W. MORPHY</b>	Gas group: (IIA/B/C) <b>11B</b>
Full model number: <b>L1200DPDT</b>	Temp class: (T1-T6) <b>T6</b>
Serial number:	Certificate number: <b>AUS EX 609</b>
IP Class	Test authority: (BAS, PTB, SAA etc)

Number of cables:

**For each cable entry**

	gland 1	gland 2	others
Gland manufacturer:		<b>JB CROUSSE HINDS</b>	<b>BUNNIS</b>
Model:		<b>DTP</b>	<b>?</b>
Gland type of protection: (d,e)		<b>?</b>	<b>?</b>

**AUS EX 638  
IP-66 T6**

**Inspection**

Circle as checked

	Applicable to protection type:	Circle as checked		
		Internal	External	
<b>A Equipment</b>				
1	Equipment (incl group and temp class) is appropriate for area classification	all	X	<input checked="" type="checkbox"/>
2	Equipment ID or circuit ID is correct	all	X	<input checked="" type="checkbox"/>
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	<input checked="" type="checkbox"/>
4	There are no damage or evidence of unauthorised modifications	all	X	<input checked="" type="checkbox"/>
5	Bolts, cable entries and blanking elements are correct and tight	all	X	<input checked="" type="checkbox"/>
6	Flange facings are clean and undamaged	d	X	
7	Lamp rating, type and position correct	all	X	
8	Electrical connections are tight	all	X	
9	Hermetically sealed devices are undamaged	n	X	
10	Restricted breathing enclosure is satisfactory to enclosure and/or covers	n	X	
11	Motor fans have sufficient clearance	motors only	X	
12	Installation clearly labelled	i	X	<input checked="" type="checkbox"/>
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	<input checked="" type="checkbox"/>
14	Entity calculation/documentation is available	i	X	<input checked="" type="checkbox"/>
<b>B Installation</b>				
1	Type of cable is appropriate, cables are undamaged	all	X	<input checked="" type="checkbox"/>
2	Sealing of ducts and/or conduits is satisfactory	all	X	<input checked="" type="checkbox"/>
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	<input checked="" type="checkbox"/>
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	<input checked="" type="checkbox"/>
12	Ducts, pipes and enclosures are in good condition	p	X	<input checked="" type="checkbox"/>
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	<input checked="" type="checkbox"/>
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the documentation	i	X	
19	The circuit is isolated from earth or earthed at one point only	i	X	
20	Separation is maintained with non-IS circuits	i	X	
21	As applicable, short circuit protection of the power supply is in accordance with the documentation	i	X	

**C Environment**

1	Apparatus adequately protected from corrosion, weather, vibration, other	all	X	<input checked="" type="checkbox"/>
2	No undue accumulation of dust or dirt	all	X	<input checked="" type="checkbox"/>
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes:

List action required

Contractor (write): Inspector <i>D. WILLIAMS</i>	Supervisor	Client (write): Inspector
Date: <i>25/8/11</i>		Date:

Device ID or tag

Action required to make device compliant:

*REFER SAME NOTES AS LSH-21*

*\* NOTE : INSPECTION SHEET COMPILED OFFSITE BY PHOTOS ONLY  
VARIABLES UNFORESSEEN MAY EXIST.*

Reviewed by: *N. GREEN*  
Date: *26/8/11*  
Priority:

Comments:

All action items now completed:   
Job closed:

Device now fully compliant, spreadsheet register has been updated  
Supervisor (write):  
Date:

**INSPECTION CHECK SHEET**  
**Intrinsically Safe Ex i**



TAG/IDENTIFICATION	DESCRIPTION									
Area Classification - Zone 0 1 2 20 21 22 Non Hazardous - Group I IIA IIB IIC - Temp T1 T2 T3 T4 T5 T6										
<b>Record Name Plate Details</b>							Record other nameplate information that may be relevant			
Manufacturer		Vin		Chin						
Serial No.		Lin		Lin						
Model										
Certificate no.		T		IP						
Certifying authority										
<b>Inspection Type Performed (I=Initial, P=Periodic, S=Sample)</b>						<b>I</b>	<b>P</b>	<b>S</b>		
<b>Inspection Grade Performed (D=Detailed, C=Close, V=Visual)</b>						<b>D</b>	<b>C</b>	<b>V</b>	Detailed requires de-energization	
<b>Equipment Y=OK, N=Not Acceptable, N/A=Not Applicable, N/C=Not Checked</b>							<b>Inspect Grade</b>	<b>Remarks</b>		
Equipment is Australian or IEC Certified	Y	N	N/A	N/C	DCV					
EX markings are suitable for the area	Y	N	N/A	N/C	DCV					
Equipment is clearly marked and has appropriate tag/identification details	Y	N	N/A	N/C	DCV					
Enclosure is not damaged and maintains its weatherproofing	Y	N	N/A	N/C	DCV					
Terminations are tight	Y	N	N/A	N/C	DC					
All unused conductors terminated	Y	N	N/A	N/C	DC					
Bolts, bungs, plugs/blank plates installed and tight	Y	N	N/A	N/C	DCV					
Fuses and lamps are correct rating	Y	N	N/A	N/C	DCV					
No unauthorised modifications (Y=OK)	Y	N	N/A	N/C	DCV					
<b>Installation</b>							<b>Grade</b>	<b>Remarks</b>		
Cable type is as per the documentation	Y	N	N/A	N/C	D					
IS Entity and cable parameters are suitable for installation	Y	N	N/A	N/C	D					
The device is securely mounted	Y	N	N/A	N/C	DC					
Cables/conduits in acceptable condition	Y	N	N/A	N/C	D					
Cables/conduit entry correct, complete, and tight	Y	N	N/A	N/C	DCV					
No excessive vibration present that may cause conductors to work loose (Y=OK)	Y	N	N/A	N/C	DCV					
Segregation between IS and non IS circuits at junction boxes	Y	N	N/A	N/C	DCV					
Segregation between IS and non IS circuits in cable ladder and conduit	Y	N	N/A	N/C	DCV					
Earthing and equipotential bonding satisfactory	Y	N	N/A	N/C	D					
Insulation resistance is satisfactory (NB Danger of MEGGER testing HA)	Y	N	N/A	N/C	D					
Cable screens earthed as per documentation (normally one point only)	Y	N	N/A	N/C	D					
<b>Barriers</b>							<b>Grade</b>	<b>Remarks</b>		
Record Safety Barriers manufacturer and model no. (available on device = Y)	Y	N	N/A	N/C	DC					
Equipment is Australian or IEC Certified (Enter certification details in 'Remarks')	Y	N	N/A	N/C	DCV					
Record Safety Barriers certification details (available on device = Y)	Y	N	N/A	N/C	DC					
Safety Barriers are the correct type as per the drawings	Y	N	N/A	N/C	DC					
Safety Barriers are securely connected to the earth bar	Y	N	N/A	N/C	DCV					
Barrier/Isolator terminations are tight	Y	N	N/A	N/C	DCV					
Maximum voltage on the safe side of the barrier/isolator is 240V	Y	N	N/A	N/C	DCV					
IS circuits are all free from external power circuit infiltration	Y	N	N/A	N/C	DCV					
No energy storing devices in excess of the max energy permitted	Y	N	N/A	N/C	DC					
Relays acting as safety barriers are in good condition	Y	N	N/A	N/C	DCV					
Earth continuity from barrier bar to the transformer neutral point is <1ohm	Y	N	N/A	N/C	D		Check one connection at a time			
<b>Environment</b>							<b>Grade</b>	<b>Remarks</b>		
Equipment adequately protected against corrosion, weather, vibration, etc	Y	N	N/A	N/C	DCV					
Dust and dirt on the equipment and cable are within acceptable limit	Y	N	N/A	N/C	DCV					
<b>Special conditions</b>							<b>Grade</b>	<b>Remarks</b>		
Special conditions on certificate are satisfied	Y	N	N/A	N/C	D					
<b>Notes:</b>										
Inspected: _____ Date: _____ Checked: _____ Date: _____										

# INSPECTION CHECK SHEET

## Increased Safety Ex e



TAG/IDENTIFICATION	DESCRIPTION										
Area Classification - Zone 0 1 2 Non Hazardous - Group I IIA IIB IIC - Temp T1 T2 T3 T4 T5 T6											
Record Name Plate Details						Record other nameplate information that may be relevant					
Manufacturer		KW		FLC							
Serial No.		Volts		RPM							
Model											
Certificate No.		T		IP							
Certifying authority											
Inspection type performed (I=Initial, P=Periodic, S=Sample)				I	P	S					
Inspection Grade Performed (D=Detailed, C=Close, V=Visual)				D	C	V	Detailed requires de-energization				
Equipment Y=OK, N=Not Acceptable, N/A=Not Applicable, N/C=Not Checked						Inspect Grade	Remarks				
Equipment is Australian or IEC Certified				Y	N	N/A	N/C	DCV			
EX markings are suitable for the area				Y	N	N/A	N/C	DCV			
Equipment is clearly marked and has appropriate tag/identification details				Y	N	N/A	N/C	DCV			
Enclosure is not damaged and maintains its weatherproofing (min IP54)				Y	N	N/A	N/C	DCV			
Enclosure gaskets are in a satisfactory condition				Y	N	N/A	N/C	D			
Bolts, bungs, plugs/blank plates installed and tight				Y	N	N/A	N/C	DCV			
Terminals are sized correctly for the rating				Y	N	N/A	N/C	D			
Conductors > 0.5mm <sup>2</sup> for multistranded and 1mm <sup>2</sup> for single strand				Y	N	N/A	N/C	D			
No chafing parts that may cause local hot spots (motor fans) (Y=OK)				Y	N	N/A	N/C	D			
Guards are correctly fitted				Y	N	N/A	N/C	D			
No unauthorised modifications (Y=OK)				Y	N	N/A	N/C	DCV			
Lamp rating, type and position are correct				Y	N	N/A	N/C	D			
Installation						Grade	Remarks				
Equipment carries correct circuit identification at switchboard and local isolator				Y	N	N/A	N/C	D			
Effective means of isolation of all live conductors (including neutral)				Y	N	N/A	N/C	D			
Installation is in compliance with documentation				Y	N	N/A	N/C	DC			
Cable type is as per the documentation				Y	N	N/A	N/C	D			
The device is securely mounted				Y	N	N/A	N/C	DCV			
Cables/conduits in acceptable condition				Y	N	N/A	N/C	DCV			
Cables/conduit entry correct, complete, and tight (Exd or Exe glands used)				Y	N	N/A	N/C	DCV			
Exd glands have additional weatherproofing				Y	N	N/A	N/C	DCV			
Electrical connections are tight				Y	N	N/A	N/C	D			
Creepage and clearance distance are maintained				Y	N	N/A	N/C	D			
All unused conductors terminated in Exe terminals				Y	N	N/A	N/C	D			
Earthing and equipotential bonding satisfactory				Y	N	N/A	N/C	DCV			
Insulation resistance is satisfactory (NB Danger of MEGGER testing HA)				Y	N	N/A	N/C	D			
Motor parameters (Ia/In and te) and TOLs coordinate (record TOL mfr/model)				Y	N	N/A	N/C	D			
Cable Glands and adaptors						Grade	Remarks				
Cable glands details available, record (available=Y, not recorded=N/C)				Y	N	N/A	N/C	DCV			
Cable glands certificate details available, record (available=Y, not recorded=N/C)				Y	N	N/A	N/C	DCV			
Adaptors and plugs details available, record (available=Y, not recorded=N/C)				Y	N	N/A	N/C	DC			
Glands and adaptors Ex markings are suitable for area				Y	N	N/A	N/C	DCV			
Environment						Grade	Remarks				
Equipment adequately protected against corrosion, weather, vibration, etc				Y	N	N/A	N/C	DCV			
Dust and dirt on the equipment and cable are within acceptable limit				Y	N	N/A	N/C	DCV			
Special conditions						Grade	Remarks				
Special conditions on certificate are satisfied				Y	N	N/A	N/C	D			
Notes:											
Inspected: _____ Date: _____ Checked: _____ Date: _____											

## Hazardous Area Check Sheet Flameproof Ex d



TAG/IDENTIFICATION	DESCRIPTION										
<b>Area Classification - Zone 0 1 2 Non Hazardous - Group I IIA IIB IIC - Temp T1 T2 T3 T4 T5 T6</b>											
<b>Record Name Plate Details</b>						Record other nameplate information that may be relevant					
Manufacturer		KW		FLC							
Serial No.		Volts		RPM							
Model											
Certificate No.		T		IP							
Certifying authority											
<b>Inspection Type Performed (I=Initial, P=Periodic, S=Sample)</b>				I	P	S					
<b>Inspection Grade Performed (D=Detailed, C=Close, V=Visual)</b>				D	C	V	Detailed requires de-energization				
<b>Equipment Y=OK, N=Not Acceptable, N/A=Not Applicable, N/C=Not Checked</b>						<b>Inspect Grade</b>	<b>Remarks</b>				
Equipment is Australian or IEC Certified						Y	N	N/A	N/C	DCV	
EX markings are suitable for the area						Y	N	N/A	N/C	DCV	
Equipment is clearly marked and has appropriate tag/identification details						Y	N	N/A	N/C	DCV	
Enclosure is not damaged and maintains its flameproof characteristics						Y	N	N/A	N/C	DCV	
Locking sealing, fastening devices are of type certified by manufacturer						Y	N	N/A	N/C	DCV	
Locking sealing, fastening devices operate correctly and are tight						Y	N	N/A	N/C	DC	
Bolts, bungs, plugs/blank plates installed and tight						Y	N	N/A	N/C	DCV	
Sealing gaskets and components in acceptable condition						Y	N	N/A	N/C	DCV	
Flange faces are clean and undamaged						Y	N	N/A	N/C	D	
Flange gap dimensions are less than _____ mm						Y	N	N/A	N/C	DC	
No unauthorised modifications (Y= OK)						Y	N	N/A	N/C	DCV	
Equipment is clear of obstructions (minimum dimensions 40mm)						Y	N	N/A	N/C	DCV	
No chafing parts that may cause local hot spots (motor fans) (Y=OK)						Y	N	N/A	N/C	D	
Guards are correctly fitted						Y	N	N/A	N/C	D	
Lamp rating, type and position are correct						Y	N	N/A	N/C	D	
<b>Installation</b>						<b>Grade</b>		<b>Remarks</b>			
Equipment carries correct circuit identification at switchboard and local isolator						Y	N	N/A	N/C	D	
Effective means of isolation of all live conductors (including neutral)						Y	N	N/A	N/C	D	
Cable type is as per the documentation						Y	N	N/A	N/C	D	
The device is securely mounted						Y	N	N/A	N/C	DCV	
Cables/conduits in acceptable condition						Y	N	N/A	N/C	DCV	
Cables/conduit entry correct, complete, and tight with sufficient threads						Y	N	N/A	N/C	DCV	
Sealing of conduits, ducts or other connections is satisfactory						Y	N	N/A	N/C	D	
Integrity of conduit system and mixed system interface satisfactory						Y	N	N/A	N/C	D	
Earthing and equipotential bonding satisfactory						Y	N	N/A	N/C	DCV	
Insulation resistance is satisfactory (NB Danger of MEGGER testing HA)						Y	N	N/A	N/C	D	
Protection devices (Limit sws, phase rot, TOLs) operate correctly						Y	N	N/A	N/C	D	
<b>Cable Glands and adaptors</b>						<b>Grade</b>		<b>Remarks</b>			
Cable glands details available, record (available=Y, not recorded=N/C)						Y	N	N/A	N/C	DCV	
Cable glands certificate details available, record (available=Y, not recorded=N/C)						Y	N	N/A	N/C	DCV	
Adaptors and plugs details available, record (available=Y, not recorded=N/C)						Y	N	N/A	N/C	D	
Adaptors and plugs have sufficient engaged threads						Y	N	N/A	N/C	DCV	
Glands and adaptors Ex markings are suitable for area						Y	N	N/A	N/C	DCV	
<b>Environment</b>						<b>Grade</b>		<b>Remarks</b>			
Equipment adequately protected against corrosion, weather, vibration, etc						Y	N	N/A	N/C	DCV	
Dust and dirt on the equipment and cable are within acceptable limit						Y	N	N/A	N/C	DCV	
<b>Special conditions</b>						<b>Grade</b>		<b>Remarks</b>			
Special conditions on certificate are satisfied						Y	N	N/A	N/C	D	
<b>Notes:</b>											
Inspected: _____ Date: _____ Checked: _____ Date: _____											

## **11 Overhaul, Repair, Modification and Replacement Records**

This Section contains the sample repair and examination report(s).

Documentation in relation to this section is to be maintained by APA Group.





# REPAIR AND EXAMINATION REPORT FOR INCREASED SAFETY ENCLOSURES (EX 'e')



## General

Tag no.:	Site:
P&ID:	Area Classification:

## Equipment Details

Equipment type:	Gas group (IIA/B/C):
Manufacturer:	Temp class (T1-T6):
Model no.:	Certificate no.:
Serial no.:	Test authority:

## Competent Operator

Name:	Identification no:
Company:	Company Registration:

## Enclosure Condition

Old repair label no.:		
External surface cleaned for inspection - Yes / No		
Covers and fasteners:	Base of enclosure:	
Threaded holes:	External corrosion:	
Surface coating:	Gland entries and glands:	
General external condition:		
Enclosure dismantled:	Degree of protection: IP	
Internal Condition - Dust/Liquids:	Corrosion:	Heat:
Missing parts:		
Cables and terminations:	Terminal blocks:	
Earth terminals:	Insulation:	
Windows and seals:	Actuators and seals:	
Ex 'de' parts:	Meters:	
Lamps:	Transformers:	
Switches:	Others:	
Relays:	Interlocks:	
Luminaire:	Lamp power (W):	
Transparent part:	Lampholders:	
Ballasts:	Capacitors:	Batteries:

## Action

Repair
.....
Remarks:.....
.....

I,.....confirm that the above equipment, repaired/overhaul/modified (strike out whichever is not applicable) as above, complies/does not comply with the relevant requirements of AS/NZS 3800 (including markings as required by Appendix D) and AS.....and that this Report has been recorded in the logbook of the service facility.

Sign:.....

Date:...../...../.....

# REPAIR AND EXAMINATION REPORT FOR ELECTRICAL EQUIPMENT INSTALLED WITHIN FLAMEPROOF ENCLOSURE (EX'd')



## General

Tag no.:	Site:
P&ID:	Area Classification:

## Equipment Details

Equipment type:	Gas group (IIA/B/C):
Manufacturer:	Temp class (T1-T6):
Model no.:	Certificate no.:
Serial no.:	Test authority:

## Operator

Name:	Identification no.:
Company:	Company registration:

## Equipment Condition Checklist

Item	Description of check	No work	Repaired	Replaced
(a)	Isolator mechanism and switch operation			
(b)	Earthing device and operation			
(c)	All auxiliary mechanisms, trip bars, latching arrangements, etc.			
(d)	All locking devices, function and operation			
(e)	All parts for mechanical condition			
(f)	All insulation checked – no heat, cracks, etc.			
(g)	Phase barriers fitted correctly and functional			
(h)	Oil levels and/or gas pressure			
(i)	Gas pressure-sensing devices			
(j)	All wiring and terminations			
(k)	Earth continuity; phase/earth fault lock units			
(l)	Overcurrent, overload and earth-fault devices			
(m)	Earth-fault trip devices			
(n)	Timing devices			
(o)	Temperature-sensing devices			
(p)	Transformer connections, bolts, tapes, bracing, insulators and fittings, etc.			
(q)	Installation			
(r)	Machine cables and glands			

Details of repair or modification (attach extra pages if required):

Results of insulation resistance tests on transformers:

Transformers ratio:..... Capacity:..... Serial no.:.....

Manufacturer:..... Type of cooling:.....

Tested with:..... V (megohmmeter)

Primary winding to secondary winding:..... MΩ

Primary winding to earth:..... MΩ

Secondary winding to earth:..... MΩ

Earth continuity of earth screen to core:.....

Continued....

# REPAIR AND EXAMINATION REPORT FOR ELECTRICAL EQUIPMENT INSTALLED WITHIN FLAMEPROOF ENCLOSURE (EX'd')



Assembled unit tested for insulation resistance with: V megohmmeter, and power frequency tested on the following circuits:

Circuit description	Insulation resistance MΩ	Test voltage kV	Test frequency Hz	Result

Certification no(s).....

Remarks:.....  
 .....  
 .....  
 .....  
 .....

I,.....confirm that the above equipment, repaired/overhaul/modified (strike out whichever is not applicable) as above, complies/does not comply with the relevant requirements of AS/NZS 3800 (including markings as required by Appendix D) and AS.....and that this Report has been recorded in the logbook of the service facility.

Sign:.....

Date:...../...../.....

# REPAIR AND EXAMINATION REPORT FOR FLAMEPROOF ENCLOSURE (EX'd')



### General

Tag no.:	Site:
P&ID:	Area Classification:

### Equipment Details

Equipment type:	Gas group (IIA/B/C):
Manufacturer:	Temp class (T1-T6):
Model no.:	Certificate no.:
Serial no.:	Test authority:

### Operator

Name:	Identification no.:
Company:	Company registration:

### Equipment Condition Checklist

Item	Description of check	Remarks
(a)	Check of external and internal damage	
(b)	Dimensional check	
(c)	Corrosion on flamepaths	
(d)	Result of static pressure test	
(e)	Check of flanged joint surfaces	
(f)	Check of all threaded holes	
(g)	Check of all windows and lenses	
(h)	Check of breathers	
(i)	Check of all bolt holes, studs, screws,	
(j)	Check of all gland entries and fixing	
(k)	Check of all cables glands	
(l)	Check of all handhole and inspection	
(m)	Check of all mechanical interlocks	
(n)	Check of all flamepath gaps	

### Main control panel

1. Max. out of plane of box flanges:.....
2. Max. out of plane of cover:.....
3. Max. flameproof gap when bolted up:.....
4. Max. diametral clearance of spindles:.....
5. Max. diametral clearance of gland to gland apertures:.....
6. Static pressure test – pressure:.....
7. Water jacket – pressure test:.....Capacity:.....

Certification drawing no(s):.....

Remarks:.....  
.....  
.....

I,.....confirm that the above equipment, repaired/overhaul/modified (strike out whichever is not applicable) as above, complies/does not comply with the relevant requirements of AS/NZS 3800 (including markings as required by Appendix D) and AS.....and that this Report has been recorded in the logbook of the service facility.

Sign:.....

Date:...../...../.....

## 12 Schedule of Equipment and Conditions Requiring Compliance Status Attention

Tag	P&ID No.	Location	Reason for non-compliance
MT 0000-PT-14	MT 0000-7002	Station limit valve MT 0000-SLV-17	Insufficient information of IS certification on nameplate.
MT 0000-SV-17	MT 0000-7002	Station limit valve MT 0000-SLV-17	Insufficient information to determine method of protection. Cable junction box appears to have only DIP certification.
MT 0000-PDISH/PDT -21	MT 0000-7003	Filter separator MT 0000-FS-1	Insufficient information of IS certification on nameplate. Blue sheath to cable or IS labelling required.
MT 0000-LSH-21 MT 0000-LSH-21A	MT 0000-7003	Filter separator MT 0000-FS-1	Installation may require attention as per manufacturer's instructions with respect to an Ex d rated conduit seal relating to pressure piling with connected junction box. Ex certification for junction box is applicable to DIP installation and nil reference to flammable gas installation. Loop drawing indicates IS circuit however nil evidence of IS barriers is found.
MT 0000-PDISH/PDT -24	MT 0000-7003	Filter separator MT 0000-FS-2	Insufficient information of IS certification shown on device.
MT 0000-LSH-24 MT 0000-LSH-24A	MT 0000-7003	Filter separator MT 0000-FS-2	Installation may require attention as per manufacturer's instructions with respect to an Ex d rated conduit seal relating to pressure piling with connected junction box. Loop drawing indicates IS circuit however nil evidence of IS barriers is found.

Tag	P&ID No.	Location	Reason for non-compliance
MT 0000-SV-29 MT 0000-JB-29	MT 0000-7003	Gas sampler MT 0000-GS- M0000 or 1495	Ex m would not normally be applied to wiring installations hence consider Ex e. Insufficient information on Clipsal elbow connector to suggest Ex rating. Equipotential bonding connection is required.
Heating strip junction box (up high) MT 0000-JB	MT 0000-7003	Gas sampler MT 0000-GS- M0000 or 1495	Two uncertified blank plugs.
Thermon junction box MT 0000-JB	MT 0000-7003	Gas sampler MT 0000-GS- M0000 or 1495	Unknown certification due to illegible tags on adaptors.
Gas chromatograph junction box: Upstream (front) Upstream (back) Downstream (front) Downstream (back)	MT 0000-7003	Gas chromatograph MT 0000-GC- M000	Not certified to Australian standards.
Heating strip junction box MT 0000-JB	MT 0000-7003	Gas chromatograph MT 0000-GC- M000	Uncertified blank plugs
MT 0000-JB-32	MT 0000-7003	Gas chromatograph MT 0000-GC- M000	Not certified to Australian standards.
MT 0000-SV-32	MT 0000-7003	Gas chromatograph MT 0000-GC- M000	Not certified to Australian standards.
MT 0000-MA-M00	MT 0000-7003	Moisture analyser MT 0000-MA- P000	Nil hazardous area certification evident for equipment use in Australia.
MT 0000-JB-30	MT 0000-7003	Moisture analyser MT 0000-MA- P000	Not certified to Australian standards.



Tag	P&ID No.	Location	Reason for non-compliance
MT 0000-SV-30	MT 0000-7003	Moisture analyser MT 0000-MA- P000	Not certified to Australian standards.
MT 0000-LT			Uncertified blank plugs.
Govan light switch MT 0000-ZL			Hazardous area certification on switch is illegible.
MT 0000-PS			Nil hazardous area certification evident for equipment use in Australia. Switch is directly connected to a junction box of unknown certification.
Wilco light switch MT 0000- ZL			Certification detail is unavailable.