APA Group

FYFE
Earth Partners
ENVIRONMENT
DEVELOPMENT
RESOURCES

PALM VALLEY METER STATION
HAZARDOUS AREA DOSSIER



FYFE REFERENCE: 18756-4-HAD-001

APA REFERENCE: HAD DATA REPOSITORY/ADP_0003_PVL

Prepared by:	_____ Arjun Patel Graduate Mechanical Engineer - Fyfe	Date: 20-Sep-2011
Reviewed by:	_____ Tony Bird Principle Process Engineer - Fyfe	Date: 20-Sep-2011
Client Accepted:	_____ Anthony Comerford Pipeline Engineer - APA Group	Date:
Manager:	_____ Henry Dupal Engineering Manager - APA Group Northern Territory	Date:

FYFE EARTH PARTNERS
80 FLINDERS STREET, ADELAIDE 5000
PHONE (08) 8201 9600 - FAX (08) 8201 9650 - EMAIL info@fyfe.com.au

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.

moxi / SKILL+LEARNING

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

Sarah Petrides

Prepared by
Sarah Petrides
Administration Assistant

Approved by
Michael Williams
Certified Trainer and Assessor

National Provider Code 51160

Date of Issue: 31 May 2007

THE INSTITUTION OF ENGINEERS AUSTRALIA

NATIONALLY RECOGNISED TRAINING

Training Accreditation Council WESTERN AUSTRALIA

This statement of attainment is recognised within the Australian Qualifications Framework

Certificate No.: 0737-1-07

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: *C R 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

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

moxi / SKILL + LEARNING

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

Sarah Petrides
Prepared by
Sarah Petrides
Administration Assistant

Approved by
Sam Zacha
Managing Director

National Provider Code 51160

Date of Issue: 5 December 2007

THE INSTITUTION OF ENGINEERS AUSTRALIA

NATIONALLY RECOGNISED TRAINING

Training Accreditation Council WESTERN AUSTRALIA

This statement of attainment is recognised within the Australian Qualifications Framework

Certificate No.: 1089-1-07

Table of Contents

Revision History:

Rev.	Status	Date	Prepared	Reviewed	QA
A	Preliminary issue for client's review	29-Aug-2011	SNT	TCB	
0	Original Issue	20-Sep-2011	AZP	TCB	EZG

1 Site Information

An inspection on the Palm Valley meter station site was performed on 3 August 2011 by Tony Bird, a senior process engineer from Fyfe and Daniel Williams, a sub-contract industrial/commercial electrician from Sitzler.

The Palm Valley meter station is located at KP0000 on the Amadeus Basin to Darwin pipeline. Gas to the Palm Valley meter station comes 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.

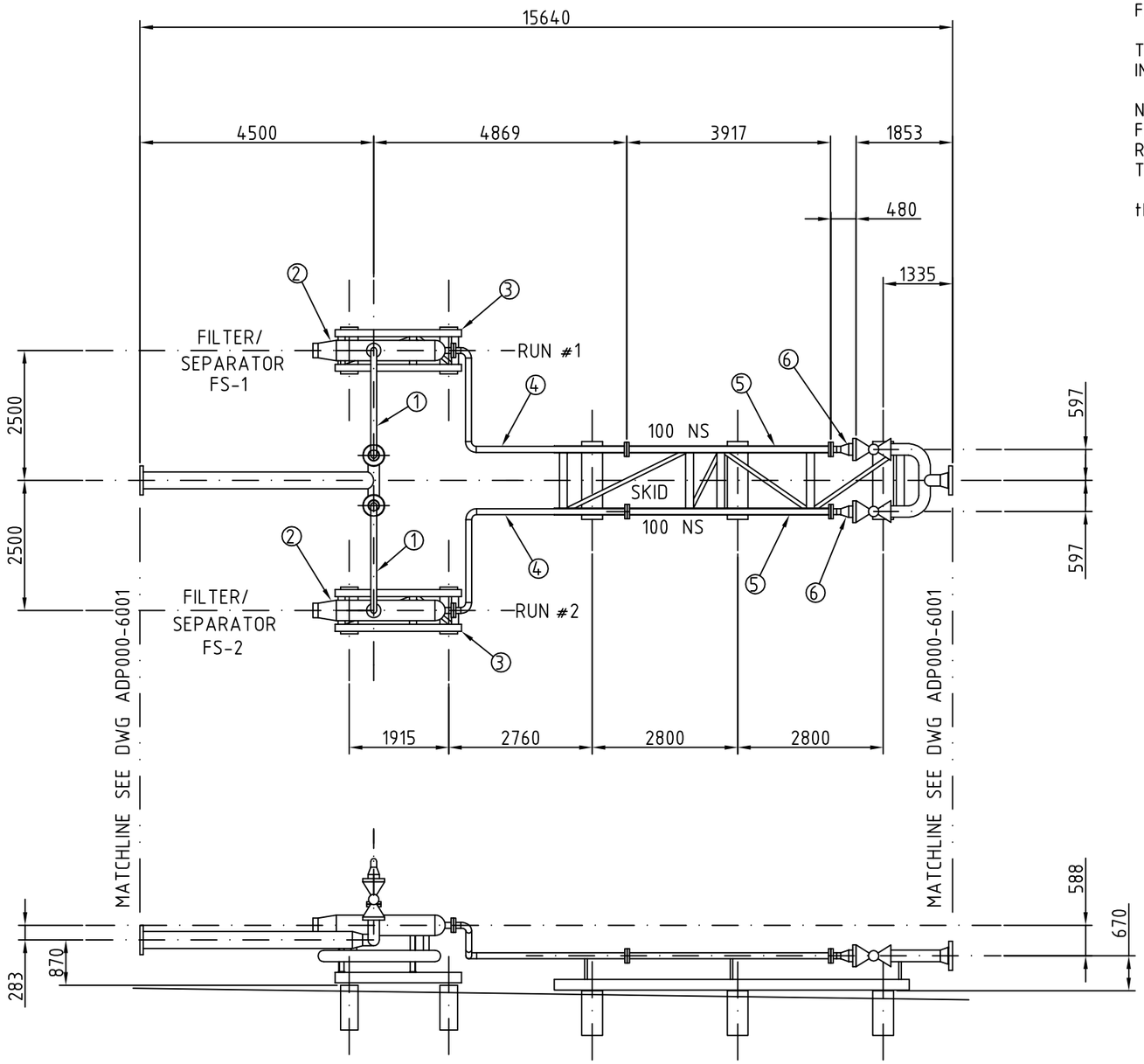
The pipework downstream of each meter run joins to a common line. There is a DN 20 blowdown point and an insertion sample probe installed to provide gas samples for the gas chromatograph and dew point analyser.

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.

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

Drawing Number	Description	Revision
APA Group Arrangement Drawing		
AD 00-2-3000	General Arrangement Exchanged Mereenie at Palm Valley	0
AD 00-2-6000	Palm Valley Station (350 NS) Launching Trap Arrangement	0
AD 00-2-6001	Palm Valley Station Piping Arrangement	0
Fyfe Updated Plot Plan		
AD 00-2-6002	Palm Valley Meter Station Plot Plan	0
P&IDs		
AD 00-2-7001	Palm Valley Meter Station Mainline Valve and Launcher	2
AD 00-2-7002	Palm Valley Meter Station Inlet and Station Limit Valve	0
AD 00-2-7003	Palm Valley Meter Station Metering and Gas Analysis	0



NOTE:-

MEREENIE FILTER/SEPARARORS AND METERS WERE EXCHANGE WITH THE FILTER/SEPARATORS AND METERS AT PALM VALLEY IN DEC '98

THE MERENIE EQUIPMENT INSTALLED AT PALM VALLEY WERE LOCATED IN THE SAME POSITION AS THE EQUIPMENT REMOVED

NEW PIPE SPOOLS WERE INSTALLED BETWEEN THE INLET VALVES AND THE FILTER/SEPARATORS: FILTER/SEPARATORS AND METYER RUNS; AND THE METER RUNS AND OUTLET VALVES' TO ACCOUNT FOR THE DIFFERENT DIMENSIONS OF THE EQUIPMENT.

†HIS DRAWING IS TO BE READ IN CONJUNCTION WITH ADP000-6001 REV3.

6	PIPE SPOOL FABRICATED FOR METER EXCHANGE REF ISO ADM 0003
5	100 NS METER RUN ORIGINALLY AT MEREENIE
4	PIPE SPOOL FABRICATED FOR METER EXCHANGE REF ISO ADM 0004
3	FILTER BASE FABRICATED FOR METER EXCHANGE REF ADM000-3006
2	FILTER SEPARATOR FROM MEREENIE REF ADM000-6004
1	PIPE SPOOL FABRICATED FOR METER EXCHANGE REF ISO ADM 0003

REV	REVISION DESCRIPTION	DRAWN	CHECK	APP'D	DATE
0	NEW DRAWING NUMBER. REF PREVIOUS DRG NO ADP000-3000 REV 2	DCH	BP	HD	10.06.08

REFERENCE DRAWINGS	
ISO ADM 0004	SPOOL #2 PALM VALLEY MODS
ISO ADM 0003	SPOOLS #1 & #3 PALM VALLEY MODS
ADM000-3006	PALM VALLEY BASE FOR FILTER EXCHANGE
ADM000-3005	PALM VALLEY BASE FOR METER EXCHANGE
ADP000-7003	P&I DIAGRAM
ADP000-7002	P&I DIAGRAM
ADP000-6001	PALM VALLEY STATION PIPING ARRANGEMENT

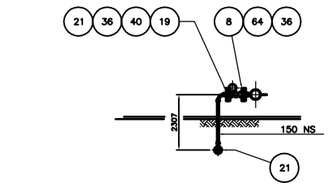
	INITS	SIGN	DATE
DRAWN	GDS		1/99
DESIGN CHECKED			
DRAWING CHECKED			
APP'D			

N.T. GAS Pty. Limited ACN 050 221 415
IN TRUST FOR THE AMADEUS GAS TRUST
16 Georgina Crescent PALMERSTON NT
PO Box 7PALMERSTON NT 0831
Telephone: (08) 8934 8100
Facsimile: (08) 8932 1663

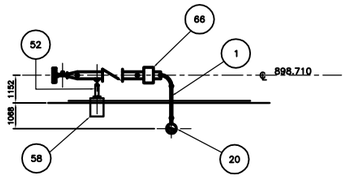
TITLE

GENERAL ARRANGEMENT
EXCHANGED MEREENIE EQUIPMENT
AT PALM VALLEY

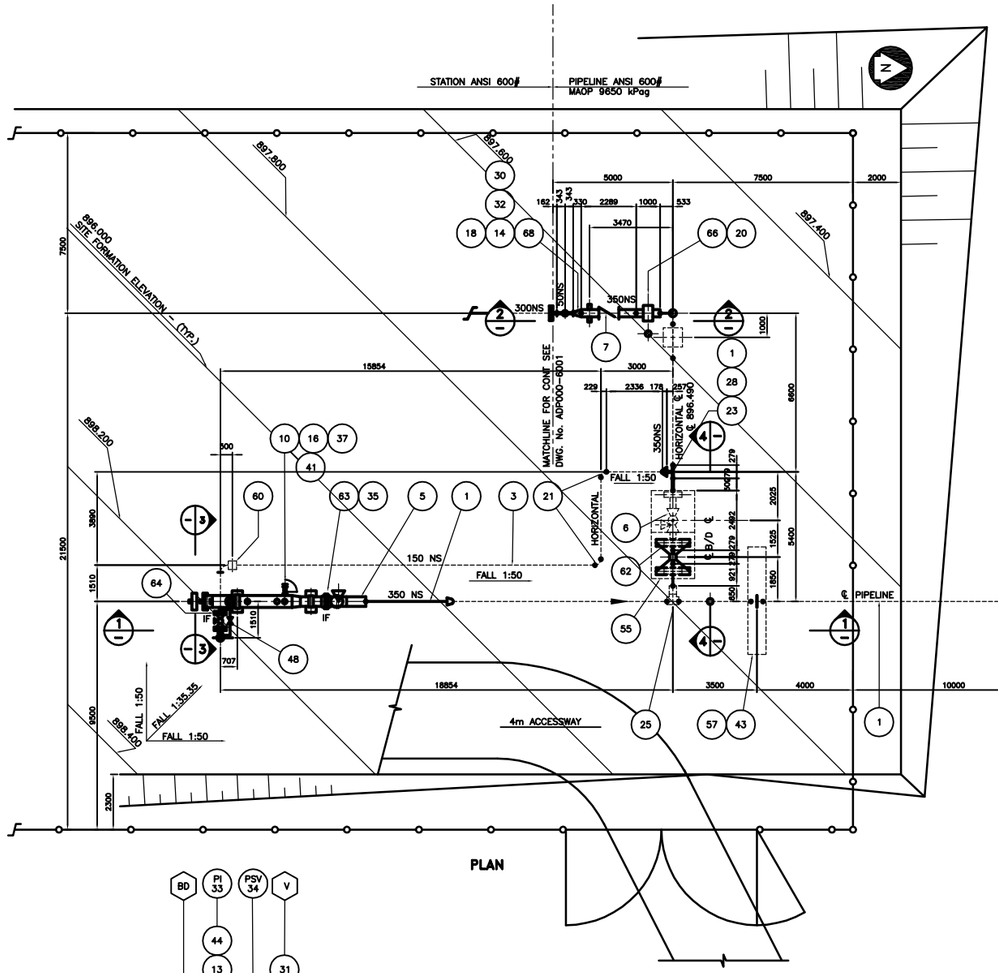
DRG SIZE	SCALE	DRAWING NUMBER	REV
A3	N.T.S.	AD00-2-3000	0

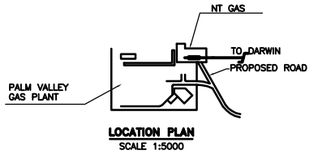


SECTION 3

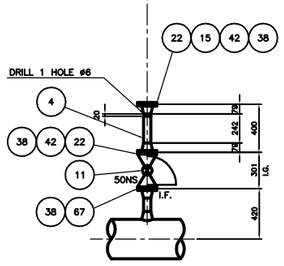


SECTION 2

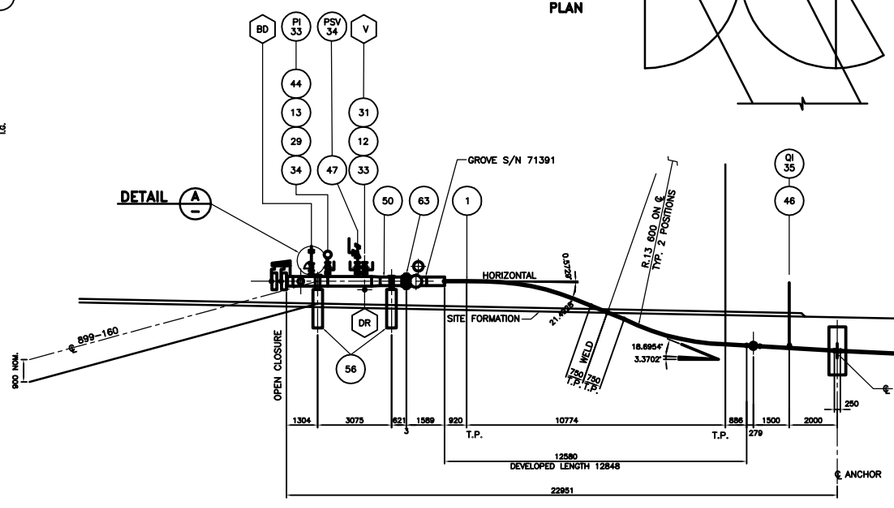




LOCATION PLAN
SCALE 1:5000

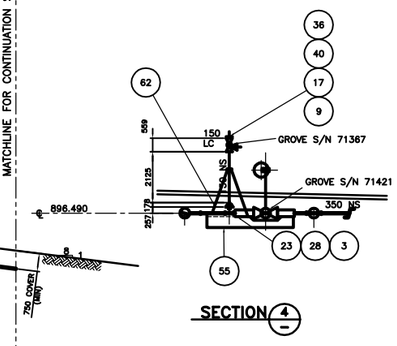


DETAIL A
SCALE 1:20



SECTION 1

MATCHLINE FOR CONTINUATION SEE ALIGNMENT SHEET AD00-2-1100



SECTION 4

APPROVED FOR CONSTRUCTION

BILL OF MATERIAL

ITEM	QTY.	DESCRIPTION	CODE NO
		• INDICATES MATERIAL TO BE SUPPLIED BY PRINCIPAL	
60	1	FOUNDATION ITEM 6 DRG No AD0000–1001	
62	1	PIPE BRACE DRG No AD0000–6139	
• 63	1 SET	INSULATING KIT 350 NS 600# RF	C1010
• 64	1 SET	INSULATING KIT 150 NS 600# RF	C1014
• 66	1	INSULATING JOINT 350 NS 600#	C1004
• 67	1 SET	INSULATING KIT 50 NS 600# RF	C1017
• 68	1	RED. CON. 350x300 NS. XS. MSS SP 75 WPHY – 52	C0679
69			
70			

BILL OF MATERIAL

ITEM	QTY.	DESCRIPTION	CODE NO
		• INDICATES MATERIAL TO BE SUPPLIED BY PRINCIPAL	
• 1	39m	PIPE 350 NS 8.74 WT API 5L X–60	C0006
2			
• 3	26.5m	PIPE 150 NS XS ASTM A106 B	C0064
• 4	0.3m	PIPE 50 NS XS ASTM A106 B	C0067
• 5	1	VALVE BALL 350 NS 600# FE RF/WE FULL BORE C/W PUP 700 LG & WITH GEAR OPERATOR	C0166
• 6	1	VALVE BALL 350 NS 600# WE FULL BORE 2492 O/A LENGTH C/W PUPS & WITH GEAR OPERATOR MOUNTED ON EXTENSION 2100 ABOVE℄ VALVE	C0160
• 7	1	VALVE CHECK 350 NS 600# WE 8.74 WT SWING C/W 700 PUPS	C0401
8	1	VALVE BALL 150 NS. 600# FERF WITH GEAR OPERATOR	C0205
• 9	1	VALVE BALL 150 NS 600# WE XS/FE RF WITH GEAR OPERATOR	C0180
• 10	1	VALVE BALL 80 NS 600# FE RF	C0212
• 11	1	VALVE BALL 50 NS 600# FE RF	C0213
• 12	1	VALVE BALL 25 NS 600# SW/NPT	C0240
• 13	1	VALVE GAUGE 15 NS 600# SCR NPT M/F C.W. BLEED	C0247
• 14	0.7m	PIPE 300 NS 7.92 WT API 5L X–60	C0010
• 15	1	FLGE BLIND 50 NS 600# RF ASTM A105	C0565
• 16	1	FLGE BLIND 80 NS 600# RF ASTM A105	C0564
• 17	1	FLGE BLIND 150 NS 600# RF ASTM A105	C0562
• 18	1	FLGE WN 300 NS 600 RF STD MSS SP 44 F52	C0530
• 19	1	FLGE WN 150 NS 600 #RF XS ASTM A105	C0538
• 20	2	ELBOW 90° LR 350 NS XS MSS SP 75 WPHY–52	C0652
• 21	5	ELBOW 90° LR 150 NS XS ASTM A234 WPB	C0730
• 22	2	FLGE WN 50 NS 600 #RF XS ASTM A 105	C0541
• 23	2	TEE RED 350x250 NS XS MSS SP 75 WPHY–52	C0667
24			
25	1	TEE BARRED 350 NS DRG. No. AD0000–6102	
26			
27			
• 28	2	RED CON 250 x 150 NS XS ASTM A234 WPB	C0816
29	1	COUPLING 15 NS 3000# NPT ASTM A105	
30	1	PLUG HEX. HD.50 NS. SCR NPT. ASTM A105	
31	1	PLUG HEX. HD.25 NS SCR NPT. ASTM A105	
32	1	TOL. 450–300 x 50 NS 3000# NPT ASTM A105	
33	1	NIPPLE 25 NS x 100 SCH 160 PBE ASTM A106 B	
34	1	NIPPLE 15 NS x 75 SCH 160 POE/TOE ASTM A106 B	
35	20	STUDBOLT 1 3/8" UNS x 235 ASTM A193 B7 C/W 2 NUTS ASTM A194 2H	
36	36	STUDBOLT 1" UNC x 170 ASTM A193 B7 C/W 2 NUTS ASTM A194 2H	
37	16	STUDBOLT 3/4" UNC x 125 ASTM A193 B7 C/W 2 NUTS ASTM A194 2H	
38	24	STUDBOLT 5/8" UNC x 110 ASTM A193 B7 C/W 2 NUTS ASTM A194 2H	
40	2	GASKET 150 NS 600# 4.4 THK. METAFLEX SG.	
41	2	GASKET 80 NS 600# 4.4 THK METAFLEX SG	
42	2	GASKET 50 NS 600# 4.4 THK METAFLEX SG	
• 43	1	FLGE ANCHOR 350 NS DRG No AD0000–6101	C0994
44	1	PLUG HEX 15 NS SCR NPT. ASTM A105	
• 45			
• 46	1	PIG SIG EXTENDED 1.8m (350 NS)	C1020
47	1	PIPE ASSY DRG No AD0000–6112	
48	1	PIPE ASSY DRG No AD0000–6157	
49			
50	1	TRAP LAUNCHER 350 NS DRG No AD0000–6134	
51			
52	1	PIPE SUPPORT DRG No AD0000–6114	
53			
54			
55	1	FOUNDATION DRG No AD0000–1004	
56	2	FOUNDATION ITEM 2 DRG No AD0000–1001	
57	1	ANCH BLOCK ITEM 3 DRG No AD0000–1001	
58	1	FOUNDATION ITEM 4 DRG No AD0000–1003	
59			

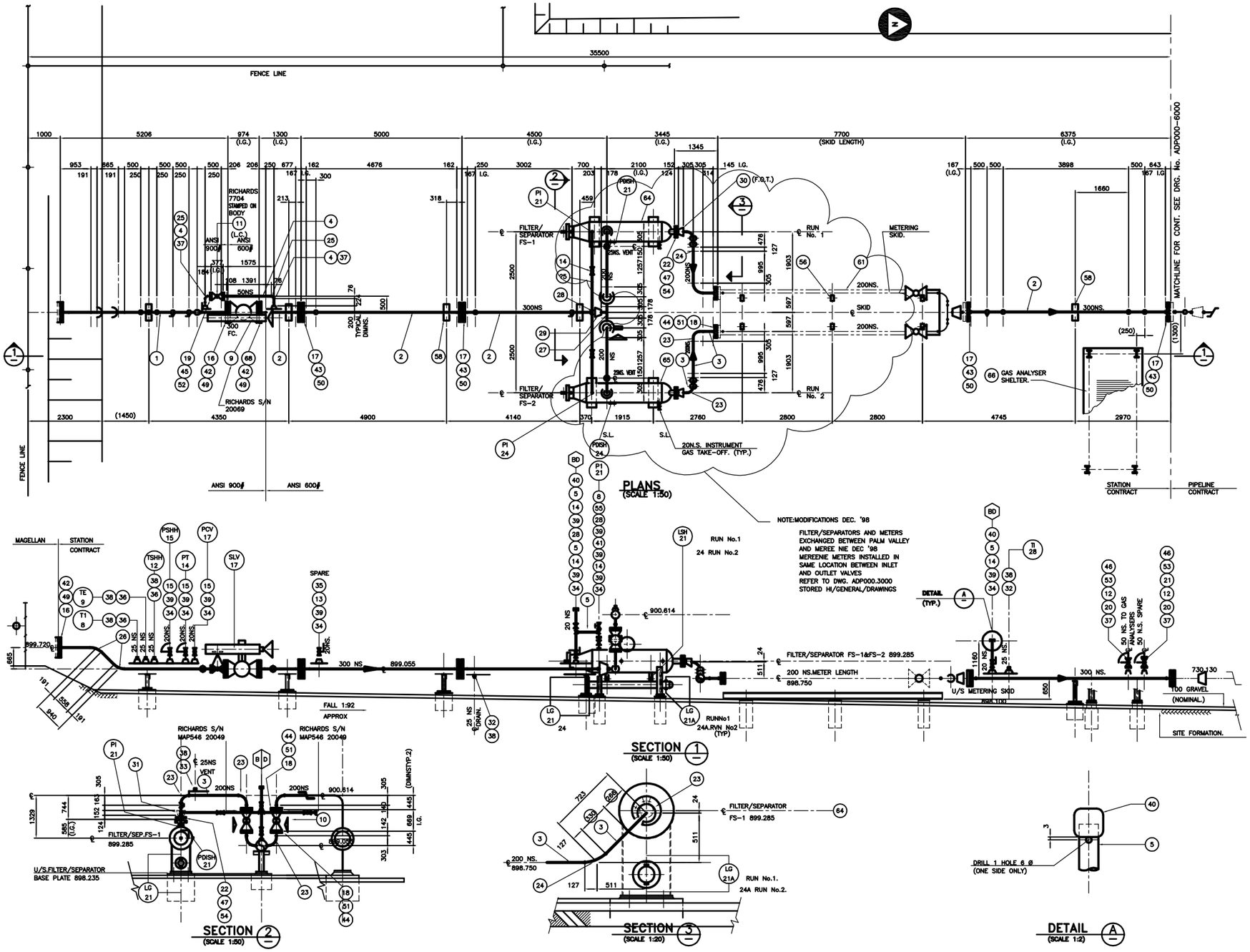
REV.	REVISION DESCRIPTION	DRAWN	CHECK'D	APP'D	DATE	REFERENCE DRAWINGS
0	NEW DWG NO. REF ADP000-6000 REV 8	BP	ML	HD	12/2/10	AD00-2-7001 P & I DIAGRAM

	INITS.	SIGNATURE	DATE
DRAWN			
DESIGN CHECKED			
DRAWING CHECKED			
APPROVED			

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
PALM VALLEY STATION (350 NS)
LAUNCHING TRAP ARRANGEMENT

DRG. SIZE	SCALE	DRAWING NUMBER	REV.
A1	1:100	AD00-2-6000	0



BILL OF MATERIAL			
ITEM	QTY.	DESCRIPTION	CODE NO
		* INDICATES MATERIAL TO BE SUPPLIED BY PRINCIPAL	
* 1	5.0m	PIPE 300NS SCH 160 ASTM A106B	C0069
* 2	16.0m	PIPE 300NS SCH 80 ASTM A106B	C0054
* 3	11.0m	PIPE 200NS SCH 80 ASTM A106B	C0063
* 4	1.9m	PIPE 50NS SCH 80 ASTM A106B	C0067
5	7.0m	PIPE 20NS SCH 80 ASTM A106B	
6			
7			
8	2	VALVE NEEDLE 15NS 300# SCR.	
* 9	1	VALVE BALL 300NS 900# FE.RF.	C0130
		PNEUMATIC OPERATED	
* 10	2	VALVE BALL 200NS 600# FE.RF.	C0204
		GEAR OPERATED	
* 11	1	VALVE GLOBE 50NS 900# FE.RF.	C0128
* 12	2	VALVE BALL 50NS 600# FE.RF. WRENCH	C0213
* 13	1	VALVE BALL 20NS 600# SW/NPT	C0241
* 14	5	VALVE BALL 20NS 600# SW	C0229
* 15	3	VALVE BALL 20NS 1500# SW/NPT	C0138
* 16	2	FLGE WN 300NS 900# RF.SCH160 ASTM A105	C0502
* 17	6	FLGE WN 300NS 600# RF.SCH80 ASTM A105	C0547
* 18	6	FLGE WN 200NS 600# RF.SCH80 ASTM A105	C0537
* 19	2	FLGE WN 50NS 1500# RF.SCH80 ASTM A105	C0508
* 20	2	FLGE WN 50NS 600#RF.SCH80 ASTM A105	C0541
* 21	1	FLGE BLIND 50 NS 600#RF. ASTM A105	C0565
* 22	4	FLGE W.N. 150 NS 600#RF.SCH.80 ASTM A105	C0538
* 23	10	ELBOW 90°L.R.200NS SCH80 ASTM A234 WPB	C0729
* 24	2	ELBOW 45° 200NS SCH80 ASTM A234 WPB	C0737
* 25	2	ELBOW 90° L.R. 50NS SCH80 ASTM A234 WPB	C0733
* 26	2	ELBOW 45° 300 NS SCH 160 ASTM A234 WPB	C0776
* 27	1	TEE EQUAL 200NS SCH80 ASTM A234 WPB	C0754
28	4	TEE EQUAL 20NS SCH 80 3000# SCR	
* 29	1	RED.CON. 300x200NS SCH80 ASTM A234 WPB	C0844
* 30	2	RED.ECC.200x150 NS. SCH80 ASTM A234 WPB	C0798
* 31	2	RED. CON. 200x150 NS SCH.80 ASTM A234 WPB	C0818
32	2	TOL 900–300x25 NS 3000# NPT ASTM A105	
33	2	TOL 250–150x25NS 3000# NPT ASTM A105	
34	6	SOL 300–150x20 NS SCH.80. ASTM A105	
35	1	PLUG HEX.HEAD. 20NS 3000# NPT ASTM A105	
36	3	TOL 900–300x25NS 6000# NPT ASTM A105	
* 37	4	WELDOLET 450–300x50 NS SCH80 ASTM A105	C0771
38	7	PLUG HEX.HD.25NS SCR NPT ASTM A105	
39	13	NIPPLE 20NSx75 SCH160 PBE ASTM A106B	
40	2	CAP 20NS 3000#SCR.NPT ASTM A105	
41	2	BARREL UNION 20NS 3000# SCR	
42	60	STUDBOLT 1 3/8"UNSx255 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
43	80	STUDBOLT 1 1/4"UNSx220 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
44	72	STUDBOLT 1 1/8"UNSx195 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
45	16	STUDBOLT 7/8"UNCx145 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
46	24	STUDBOLT 5/8"UNCx110 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
47	48	STUDBOLT 1"UNCx170 ASTM A193 B7	
		C/W 2 NUTS ASTM A194 2H	
49	3	GASKET 300NS 900#4.4THK METAFLEX SG	
50	4	GASKET 300NS 600#4.4THK METAFLEX SG	
51	6	GASKET 200NS 600#4.4THK METAFLEX SG	
52	2	GASKET 50NS 1500#4.4THK METAFLEX SG	
53	3	GASKET 50NS 600#4.4THK METAFLEX SG	
54	4	GASKET 150NS 600#4.4THK METAFLEX SG	
55	2	REDUCING BUSH 3000# NPT	
56	6	SKID HOLDING DOWN ASSY. DRG.No AD000–1052	
57			
58	5	PIPE SUPPORT DRG.No AD000–6143	
59			
60			
* 61	1	METERING SKID DRG.No ADP000–6002	C1126
62			
63			
* 64	1	FILTER–SEPARATOR FS–1 RUN No1	C1152
* 65	1	FILTER–SEPARATOR FS–2 RUN No2	C1162
66	1	SHELTER DRG No AD0000–2051	
* 67	1	CONTROL BUILDING (3mx12m)	C1146
* 68	1	FLGE WN 300 N.S. 900# R.F. SCH80 ASTM A105	C0510

NOTES

1. ALL ELEVATIONS ARE IN METRES TO AUSTRALIAN HEIGHT DATUM
2. GRID DATUM POINT AND BENCH MARK LEVEL IS FENCE POST IN SOUTH EASTERN CORNER. REFER DWG AD P000–1001

APPROVED FOR CONSTRUCTION

REV.	REVISION DESCRIPTION	DRAWN	CHECK'D	APP'D	DATE	REFERENCE DRAWINGS
						AD00-2-7003 P & I DIAGRAM
0	NEW DWG NO. REF ADP000-6001 REV 6	BP	ML	HD	12/2/10	AD00-2-7002 P & I DIAGRAM

	INITS.	SIGNATURE	DATE
DRAWN			
DESIGN CHECKED			
DRAWING CHECKED			
APPROVED			

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
PALM VALLEY STATION
PIPING ARRANGEMENT

DRG. SIZE	SCALE	DRAWING NUMBER	REV.
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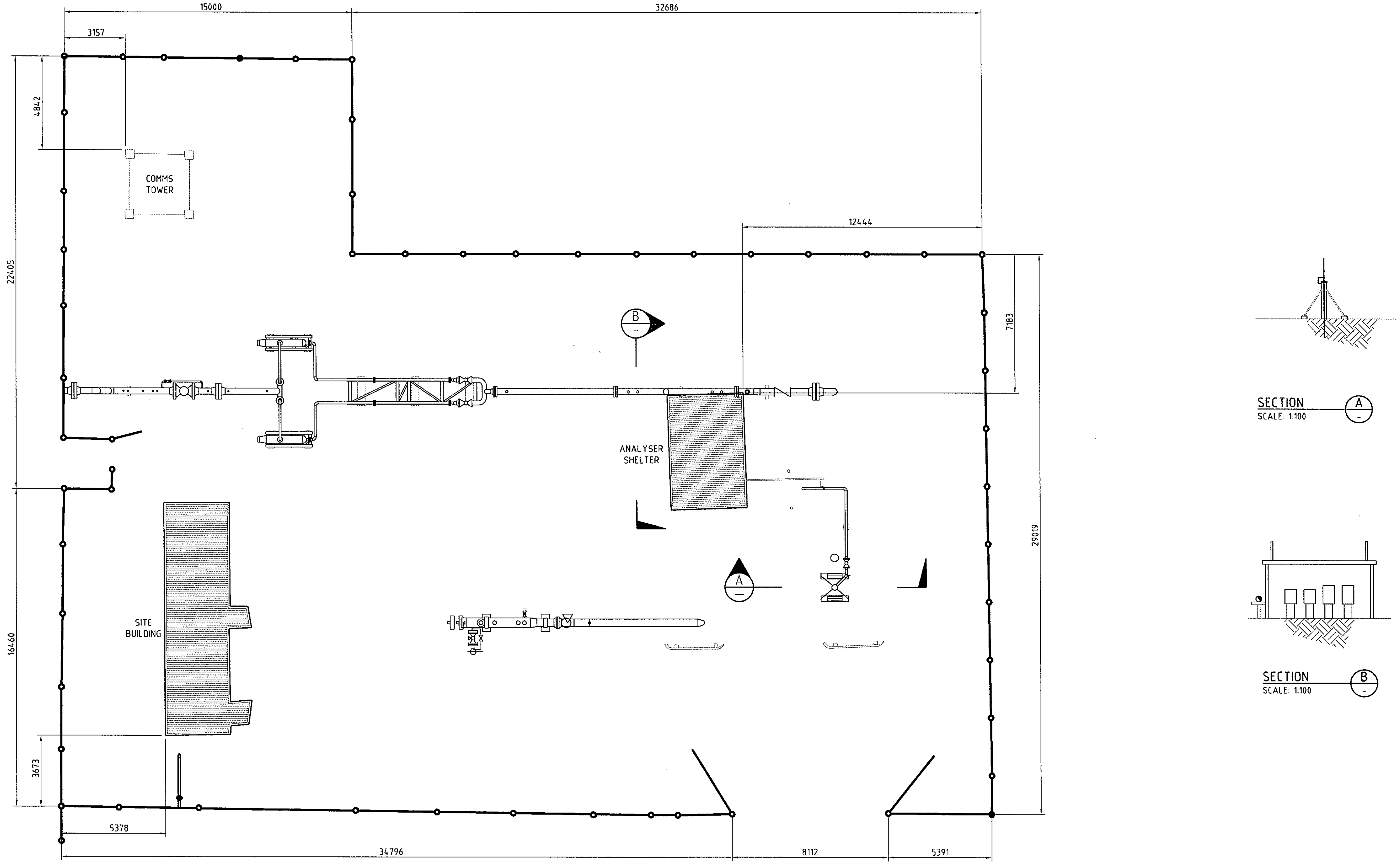


PLAN

SCALE 1:100

0 2.5 5.0 7.5 10
SCALE 1:100 METRES

NOTES
1. LOCATION OF UNDERGROUND SERVICES NOT CONFIRMED AND NOT SHOWN ON THIS DRAWING. REFER TO DRAWING AD00-2-6000 & 6001 ALL FOR PIPING DETAILS.
2. ALL DIMENSIONS ARE BASED ON 3D SCAN DATA. ALL 3D DATA RETAINED BY FYFE

FYFE Earth Partners

APA Group

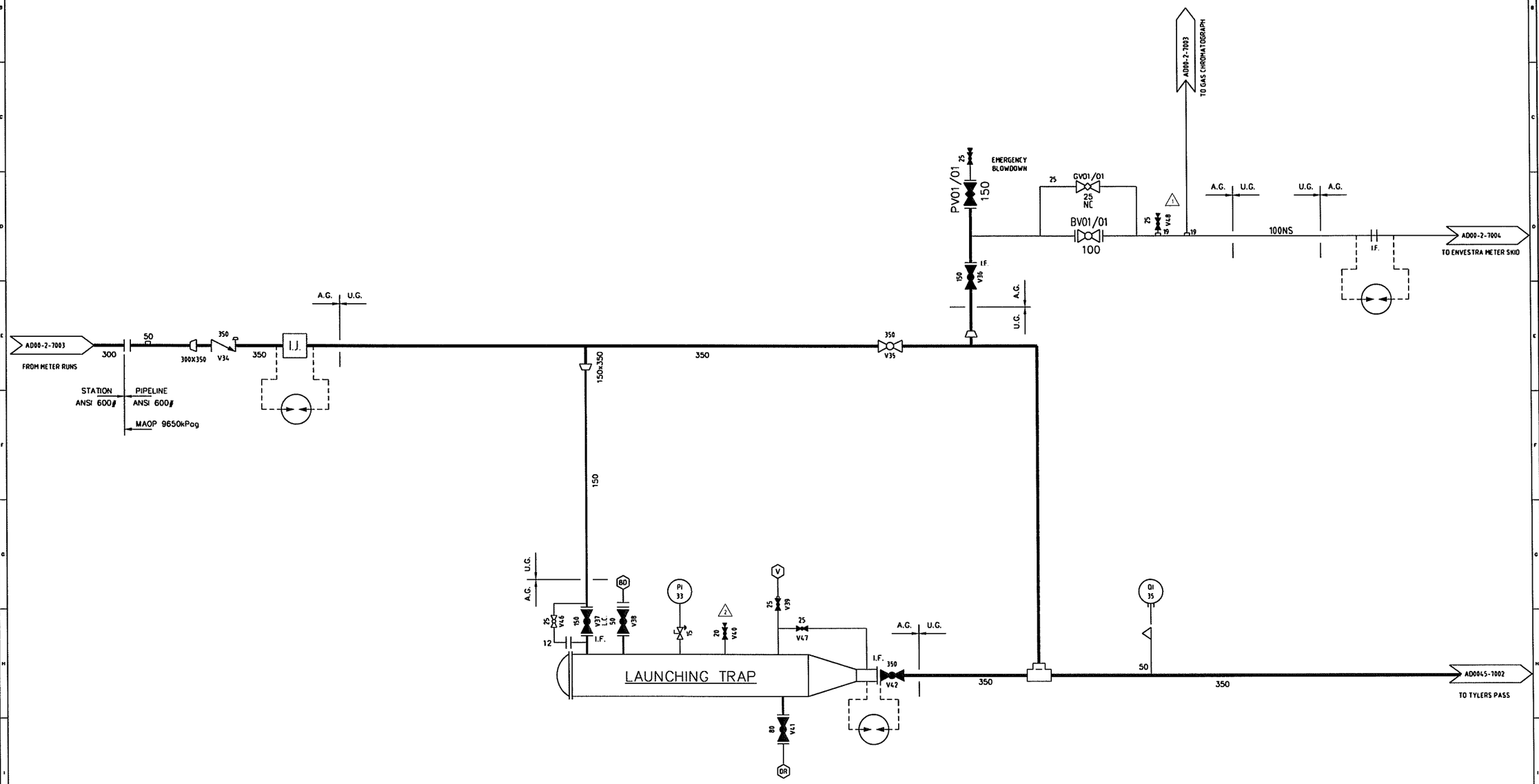
SCALE	AS SHOWN
DRAWN	FYFE
CHECKED	TCB

PROJECT: AMADEUS BASIN TO DARWIN PIPELINE

TITLE: PALM VALLEY STATION (350NS) PLOT PLAN - PALM VALLEY

PALM VALLEY PLOT PLAN

PROJECT NO.	DRAWING NO.	REV
	AD00-2-6002	0



DWG No.	REFERENCE DRAWINGS
AD0045-7002	P & I DIAGRAM TYLERS PASS
AD00-2-7004	P & I DIAGRAM PALM VALLEY INTERCONNECT
AD00-2-7003	P & I DIAGRAM METERING/GAS ANALYSIS
AD00-2-7002	P & I DIAGRAM INLET & SLV

NOTES
1. ALL EQUIPMENT/INSTRUMENT TAG NUMBERS SHALL BE SUFFIXED WITH THE STATION NUMBER eg PI-33-P800

No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APP'D
2	SEP'99	PSV REMOVED	ML	BP		HD		
1	JUN'99	PIPE GE PIPING DETAILS ADDED	ML	MC		MC		
0	OCT'97	NEW DRAWING NUMBER. REFERENCE PREVIOUS DRG NO AD0900-7001 REV B	DCH	BP		HD		

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TEL. (+ 61 2) 9412 9999 FAX. (+ 61 2) 9412 9855

CLIENT: N.T. GAS

TITLE: AMADEUS BASIN TO DARWIN PIPELINE
PALM VALLEY METER STATION
P & I DIAGRAM
MAINLINE VALVE AND LAUNCHER

DRG. SIZE	SCALE	JOB No.	DRAWING No.	REV.
B1	NTS	6850-000	AD00-2-7001	2

SIGNAL SUMMARY

MAGELLAN — N.T.GAS

STATION INLET PRESSURE

N.T.GAS ESD INITIATED

MAGELLAN INITIATED ESD

ESD LOGIC

STATION INLET TEMPERATURE

PRODUCTION FACILITIES — STATION N.T.GAS

CONTROL BUILDING FIRE ALARM

RUN 1
- CORRECTED INSTANTANEOUS FLOW RATE — I/I-22
- CORRECTED INSTANTANEOUS FLOW RATE — I/I-25

RUN 2

- MOISTURE LEVEL — I/I-30
- GROSS HEATING VALUE — I/I-32A
- RELATIVE DENSITY — I/I-32B
- N_2 CONTENT — I/I-32C
- CO_2 CONTENT — I/I-32D

FROM AD P000-7003

- GROSS HEATING VALUE — GCC100
- RELATIVE DENSITY — GCC100
- N_2 CONTENT — GCC100
- CO_2 CONTENT — GCC100

FROM AD P000-7020

EQUIPMENT / WIRING DECOMMISSIONED

FIRE PANEL FP-P000 — CONTROL BUILDING FIRE ALARM

AC DISTRIBUTION BOARD DB-P000 — XAX 44 — AC POWER SUPPLY FAILED

BATTERY CHARGER BC-P000 — XAX 43 — BATTERY CHARGER MALFUNCTION

FROM MAGELLAN PRODUCTION FACILITIES

TAH 9 · SP:35°C · TSH 9 · LI 9 · TI 9 · TI 8 · TE 9 · 25

TI 10 · TE 10 AMBIENT TEMP.

I — ESD — TSHH 12 SETPOINT 68°C · SP:10138kPag · PSHH 15 · PSHH 15A · ESD · ESD · 25

PAH 14 · SP:9895kPag · PSH 14 · LI 14 · PT 14 · PI 13 · 20 VO2

SET 7701kPag · PSV 17 · PCV 11 · SET 9686kPag · PI · PI · 20 VO3

ESD · CLOSE · OPEN · HSO 11 · ZLO 17 · CLOSE · HSC 17 · ZLC 17

SV 17 · CLOSED · ZSC 17 · ZSO 17 · OPEN

SLV 17 · 300 FC · 300

20 VO5 · 24 VO4 · 25 · 300 · AD P000-7003 TO METER RUNS

50 VO6 LC

ANSI 900# — ANSI 600#

RTU/PLC -P000 — COMMUNICATIONS FAILURE

PCC SCADA CONTROL · LOCAL PANEL CONTROL · STATION CONTROL SCADA/LOCAL — HS 5 PANEL CONTROL · ZL 5 STATION CONTROL LOCAL

STATION CONTROL

ESD INITIATED · EMERGENCY SHUTDOWN · ESD RESET · ESD INITIATED — HS 1 · HS 2 · XAX 3

PSHH-15A · PSHH-15 · TSHH-12 — CLOSE SLV-17 · FROM MAGELLAN ESD INITIATED · XAX 4 · N.T. GAS ESD INITIATED TO MAGELLAN

EMERGENCY SHUTDOWN

2S 41 → 2S 41A — CONTROL BUILDING ENTERED

XX 42 → XS 42 · XX 42A → XS 42A — EQUIPMENT / WIRING DECOMMISSIONED — SITE ENTERED MAIN GATES

NOTES

1. ALL EQUIPMENT/INSTRUMENT TAG NUMBERS SHALL BE SUFFIXED WITH THE STATION NUMBER eg IT-9-P000

DWG No.	REFERENCE DRAWINGS
PM P000-7001	P & I DIAGRAM MLV & LAUNCHER
AD P000-7003	P & I DIAGRAM METERING /GAS ANALYSIS
AD P000-7001	SIMPLIFIED P & I DIAGRAM

No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APP'D
0	OCT'97	NEW DRAWING NUMBER. REFERENCE PREVIOUS DRG NO AD0000-7002 REV 9	DCH	BP		H.D.		

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CLIENT: N.T. GAS

TITLE: AMADEUS BASIN TO DARWIN PIPELINE
PALM VALLEY METER STATION
P & I DIAGRAM
INLET & STATION LIMIT VALVE

DRG. SIZE	SCALE	JOB No.	DRAWING No.	REV.
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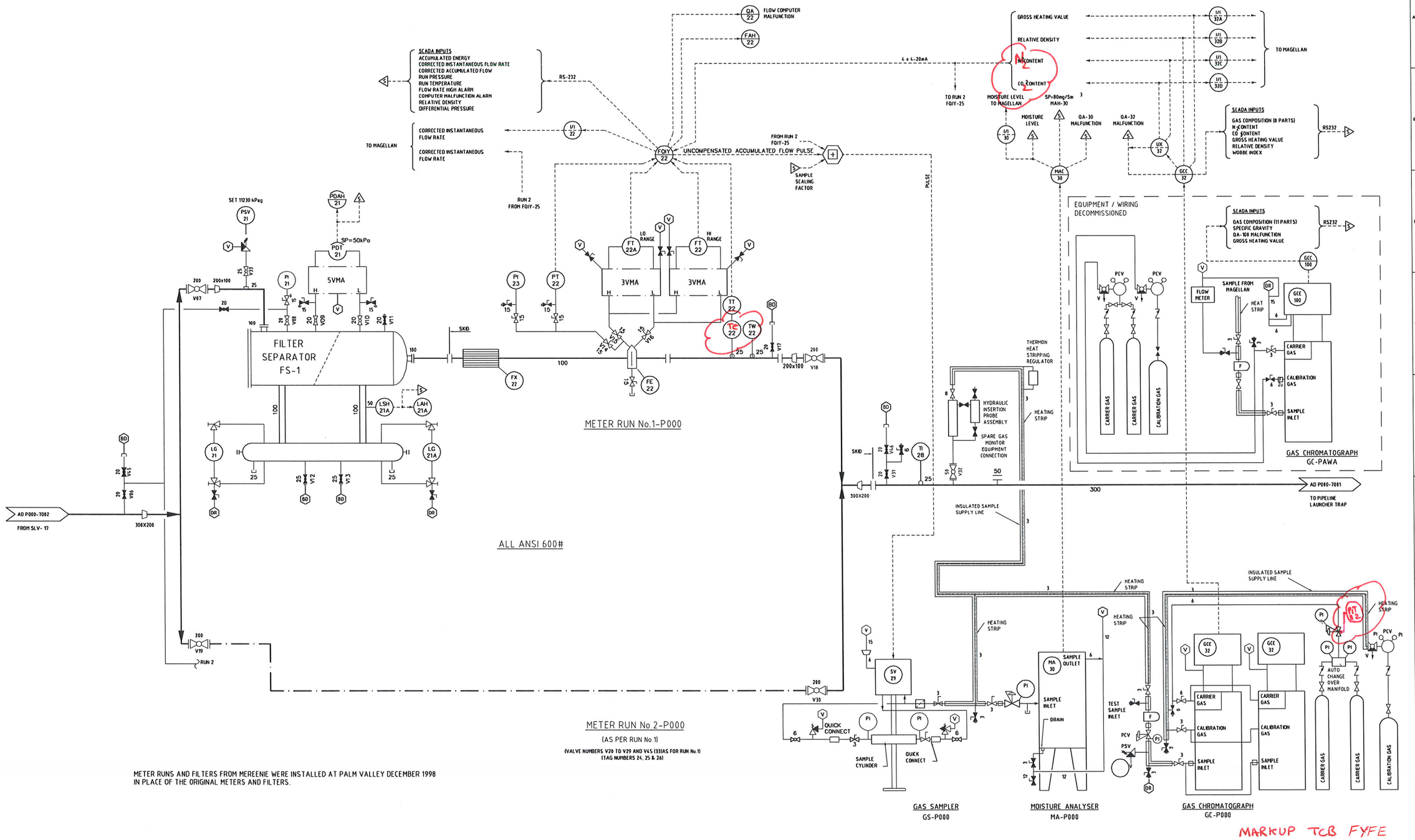

MARKUP TCB FYFE
3 Aug 2011
AS BUILT

PM P000-7801	P & I DIAGRAM MLV & LAUNCHER
AD P000-7802	P & I DIAGRAM INLET & SLV
AD P000-7801	SIMPLIFIED P & I DIAGRAM
DWG No.	REFERENCE DRAWINGS

NOTES
1. ALL EQUIPMENT/INSTRUMENT TAG NUMBERS SHALL BE SUFFIXED WITH THE STATION NUMBER eg PT-22-P000

No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APP'D
0	OCT'07	NEW DRAWING NUMBER. REFERENCE PREVIOUS DRG NO ADP000-7003 REV 12	DCH	BP		H.D.		

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CLIENT: N.T. GAS

TITLE: AMADEUS BASIN TO DARWIN PIPELINE
PALM VALLEY METER STATION
P & I DIAGRAM
METERING AND GAS ANALSIS

DRG. SIZE	SCALE	JOB No.	DRAWING No.	REV.
B1	NTS	6850-000	AD00-2-7003	0

2 Hazardous Area Classification Report

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

APA Group

FYFE Earth Partners
ENVIRONMENT DEVELOPMENT RESOURCES

AMADEUS BASIN TO DARWIN PIPELINE
HAZARDOUS AREA CLASSIFICATION



FYFE REFERENCE: 18756-4-HAD-001

APA REFERENCE: HAD DATA REPOSITORY/ADP_18756_HADC

Prepared by: _____ Date: 24-Nov-2011
Tony Bird
Principal Process Engineer - Fyfe

Reviewed by: _____ Date: 24-Nov-2011
Rowan Kilsby
Manager, Mechanical Engineering - Fyfe

Client Accepted: _____ Date:
Anthony Comerford
Pipeline Engineer – APA Group

Manager: _____ Date:
Henry Dupal
Engineering Manager – APA Group Northern Territory

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TABLE OF CONTENTS

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 to 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 Batchelor mainline valve site is located at KP 1441 between Ban Ban Springs and Darwin City Gate. The Batchelor 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 / Shippping 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_4	87.0
Ethane	C_2H_6	2.6
Propane	C_3H_8	0.8
i-Butane	C_4H_{10}	0.1
n-Butane	C_4H_{10}	0.2
i-Pentane	C_5H_{12}	0.07
n-Pentane	C_5H_{12}	0.05
n-Hexane	C_6H_{14}	0.07
n-Heptane	C_7H_{16}	0.02
n-Octane	C_8H_{18}	0.004
n-Nonane	C_9H_{20}	0.004
Carbon Dioxide	CO_2	0.95
Nitrogen	N_2	8.2
Total		**100**
Specific Gravity (mixture)		**0.62**

Table 3 Gas specification limits

Characteristic	APA Schedule 4 Limits	AS 5654 Limits
HHV	Minimum 33.0 MJ/Sm^3 Maximum 42.0 MJ/Sm^3	-
Wobbe Index	Minimum 44.0 MJ/Sm^3 Maximum 51.0 MJ/Sm^3	Minimum 46.0 MJ/m^3 Maximum 52.0 MJ/^{m3}
Oxygen	Maximum 0.2 mol%	Maximum 0.2 mol%
Hydrogen Sulphide	Maximum 10.0 ppmw	Maximum 5.7 mg/m^3
Total Sulphur	Maximum 50 mg/Sm^3	Maximum 50 mg/^{m3}
Water Content	Maximum 80 mg/Sm^3	Maximum – Dewpoint 0°C at the highest MAOP in the relevant transmission system (in any case, no more than 112.0 mg/m^3)
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_2	Maximum 7.5 mol%	-
Mercury	Maximum 0.2 mg/Sm^3	
Methanol	Maximum 1.0 mg/Sm^3	
Glycols	Maximum 1.0 mg/Sm^3	
Radioactivity	Maximum 8,000 Bq/Sm^3	
Notes		m^3 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 declaimed 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 pining 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

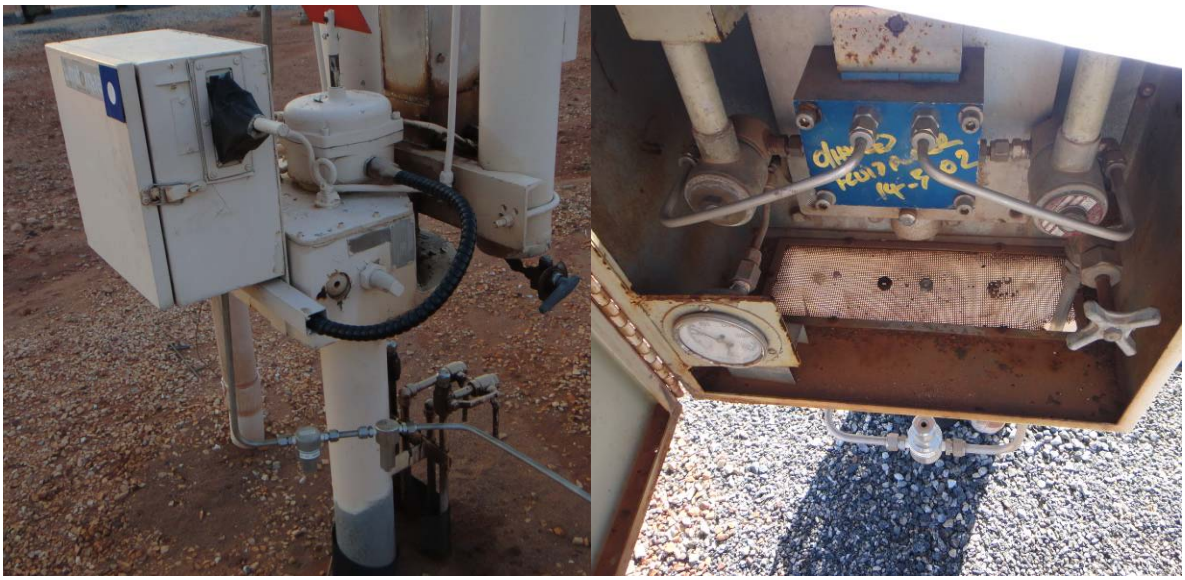
Some of the actuated mainline valves (MLV) installed at the scraper stations as shown in the following photographs include an enclosure containing the solenoids and a hand pump for the valve. The solenoids vent to a location outside of the enclosure, however the tubing connections to the solenoid are 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 arrestor 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 a 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 indentified 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 though 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 shelf. 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 it 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 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^3. 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

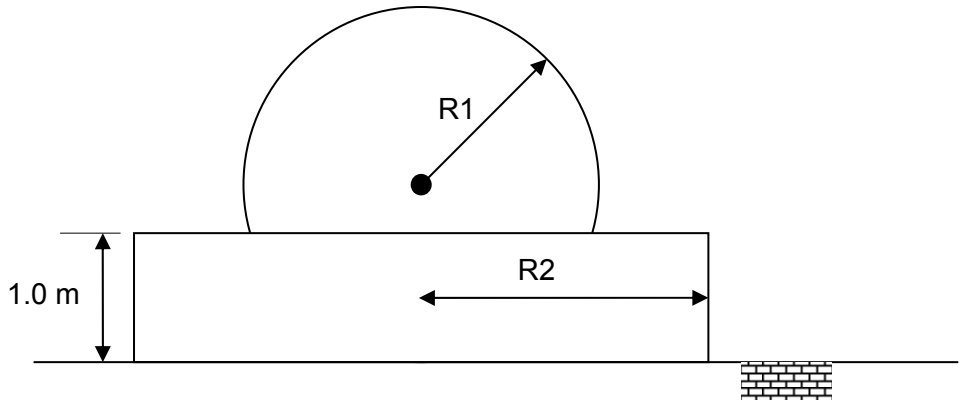
2.7.11 GROUND EFFECT

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.

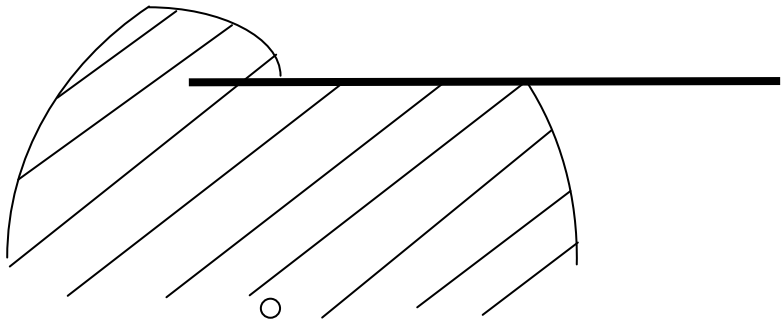
The main process pipework has a hazardous area of radius 2 m, and is located less than 2 m above grade. The direction of release from flanged joints and screwed fittings could be in any direction, therefore ground effects are to be considered. Other hazardous area zones will be sufficiently above grade 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.



Source of release

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	**Revision:**	0					
Flammable material list and characteristics	**Author:**	TCB					
Amadeus Basin to Darwin Pipeline	**Checked:**	RDK					
Surface facilities	**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†	-	2.97†	-21†	1.0†	8.4†	233†	T3†	IIA	AS/NZS 60079.20

* Values obtained for Tetrahydrothiophene

† 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					
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
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 **HOLD – To be confirmed**	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					
		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
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	**Revision:**	0					
List of sources of release	**Author:**	TCB					
Amadeus Basin to Darwin Pipeline	**Checked:**	RDK					
Surface facilities	**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
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 Observations for Improvement (OFI)

OFI No.	Description	Proposed Remedy
AD 00-OFI-1 Temperature element and transmitter AD00-TE/TT-09	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
AD 00-OFI-2 High high temperature switch AD00-TSHH-12	Nil hazard area actions required for simple device with IS circuit however recommend replacing switch due to illegible nameplate.	Review as per description.
AD 00-OFI-3 High high pressure switch AD00-PSHH-15	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	Nil hazardous area certification evident for equipment use in Australia.	Replace switch or obtain conformity assessment.
AD 00-OFI-4 High high pressure switch AD00-PSHH-15A	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.
	Nil hazardous area certification evident for equipment use in Australia.	Replace switch or obtain conformity assessment.
AD 00-OFI-5 Pressure transmitter AD00-PT-14	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
AD 00-OFI-6 Valve limit switches AD00-ZSC-17 AD00-ZSO-17	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.
AD 00-OFI-7 Solenoid valve AD00-SV-17	Insufficient information to determine method of protection however it is envisaged to be flameproof.	Verify as per description.
	Device is old.	Replace device.
	Blanking plugs, adaptors and gland are not Ex rated.	Replace device.

OFI No.	Description	Proposed Remedy
AD 00-OFI-8 High pressure differential switch/ transmitter AD00-PDISH/PDT-21	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
AD 00-OFI-9 High level switch AD00-LSH-21A	Incorrect instrument tag.	Re-label instrument tag from 21A to 21.
	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	Installation may require attention as per manufacturer's instructions with respect to a flameproof-rated conduit seal relating to pressure piling / gas migration through connected junction box.	Review as per description.
	Ex certification of adjacent junction box is applicable to DIP installation and nil reference to flammable gas installation	Review junction box protection rating.
AD 00-OFI-10 Pressure transmitter AD00-PT-22	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
AD 00-OFI-11 Low range flow transmitter AD00-FT-22A	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.
AD 00-OFI-12 High range flow transmitter AD00-FT-22	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.
AD 00-OFI-13 Temperature transmitter AD00-TT/TT-22	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.

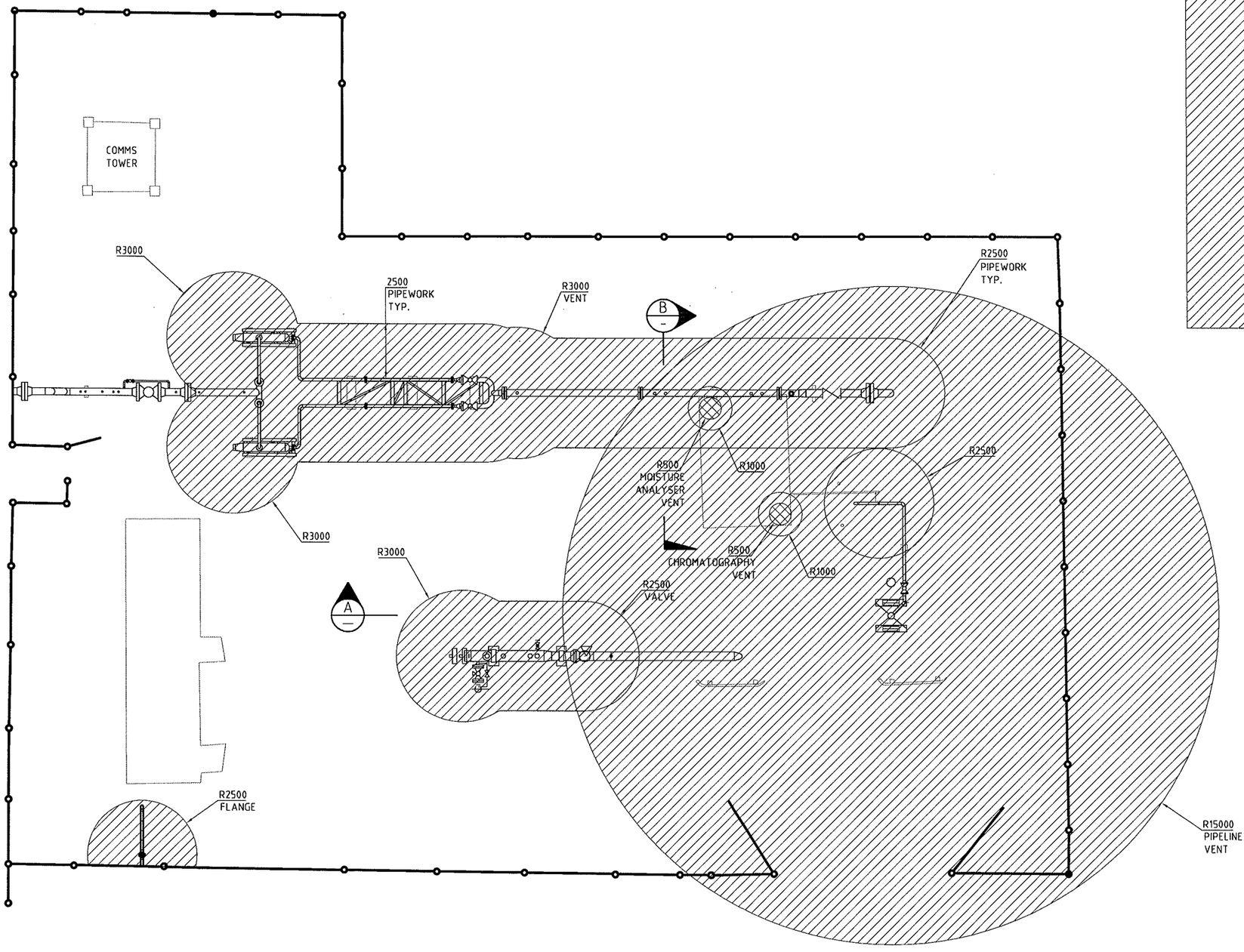
OFI No.	Description	Proposed Remedy
AD 00-OFI-14 High pressure differential switch/ transmitter AD00-PDISH/PDT-24	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
AD 00-OFI-15 High level switch AD00-LSH-24A	Incorrect instrument tag.	Re-label instrument tag from 24A to 24.
	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
	Installation may require attention as per manufacturer's instructions with respect to a flameproof-rated conduit seal relating to pressure piling / gas migration through connected junction box.	Review as per description.
	Ex certification of adjacent junction box is applicable to DIP installation and nil reference to flammable gas installation	Review junction box protection rating.
AD 00-OFI-16 Pressure transmitter AD00-PT-25	Blue sheath to cable or IS labelling required.	Fit cable with blue sheath or IS label.
AD 00-OFI-17 Gas sampler PSV	PSV discharge points downwards	Reroute the discharge to above shelter hut
AD 00-OFI-18 Drains	No spill containment on filter vessel drains	Considering installing orifice to stop possible gas break through. Further investigation required.
AD 00-OFI-19 Fence	Fence does not encapsulate all zone 2 hazardous areas	Extend the fence to cover all zone 2 hazardous areas of the site.

OFI No.	Description	Proposed Remedy
AD 00-OFI-20 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.
AD 00-OFI-21 P&IDs	The P&IDs require modification to include mark-ups identified during the hazardous area inspection.	Update drawings
AD 00-OFI-22 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.
AD 00-OFI-23 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 changeout procedures
AD 00-OFI-24 Light	Hazardous area certification is not available.	Replace the light or obtain certificate of conformity.

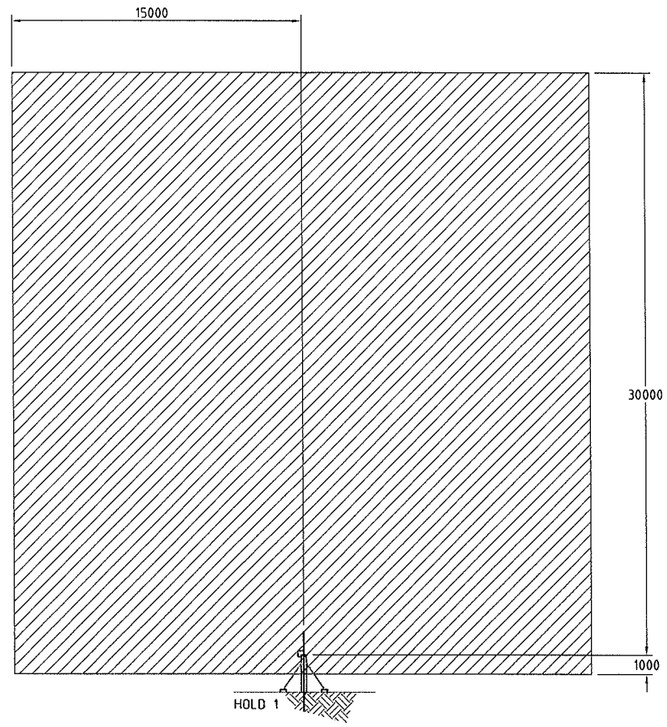
4 Hazardous Area Mapping Drawings

This section contains the hazardous area mapping drawings.

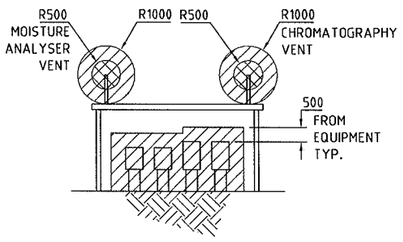
Drawing Number	Description	Revision
AD 00-2-5001	Palm Valley Meter Station Hazardous Area	0



PLAN
SCALE 1:100



SECTION A
SCALE: 1:150



SECTION B
SCALE: 1:100

CLASSIFICATION LEGEND

- ZONE 0
- ZONE 1
- ZONE 2

GAS IIA T1
LIQUIDS IIA T3

0 2.5 5.0 7.5 10
SCALE 1:100 METRES

0 2.5 5.0 7.5 10.0 12.5 15.0
SCALE 1:150 METRES

NOTES:
1. ALL BELOW GRADE PIPING AND EQUIPMENT NOT SHOWN FOR CLARITY OF DRAWINGS

HOLDS:
1. ACTUAL SHAPE AND EXTENT OF HAZARDOUS AREA TO BE CONFIRMED WITH DISPERSION CALCULATIONS

REV	REVISION/DESCRIPTION	DATE	DRN	CKD	APP	REFERENCE DRAWING	DRG NO
0	ORIGINAL ISSUE AS PER TYPE 3D MODEL DATA	19/08/11	ENG	TCG		DRAWING LIST DRAWING	ADDO-2-5001

FYFE Earth Partners
APA Group

SHEET NO	
DEVELOPMENT	
DESIGN	AS SHOWN
DRAWING	ADDO-2-5001
DETAIL	ISO-METRIC
DRAWN	EVFE
CHECKED	MB
DEVELOPMENT AGREED	
APPROVED FOR RELEASE	

PROJECT: AMADEUS BASIN TO DARWIN PIPELINE
TITLE: PALM VALLEY STATION (350NS) HAZARDOUS AREA - PALM VALLEY
PALM VALLEY HAZARDOUS

PROJECT NO.	DRAWING NO.	REV
	ADDO-2-5001	0

5 Hazardous Area Equipment Register and Certificates of Conformity

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

FYFE
Earth Partners
ENVIRONMENT
DEVELOPMENT
RESOURCES

Palm Valley Meter Station
Hazardous Area Equipment Register

Doc No.	**18756-4-70-001**
Rev.	**0**
Date	**23-Sep-11**

APA Group

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.		
MANLINE VALVE AND LAUNCHER P&ID (AD00-2-7001-2)												
Nil												
INLET AND STATION LIMIT VALVE P&ID (AD00-2-7002-0)												
AD00-TE/TT-09	AD00-2-7002-0	Upstream of station limit valve AD00-SLV-17	Temperature element / transmitter				AD00-2-5001	2	IIA	T1		
AD00-TE/TT-10	AD00-2-7002-0	Upstream of station limit valve AD00-SLV-17	Ambient temperature element / transmitter				AD00-2-5001	NH			N/A	N/A
AD00-TSHH-12	AD00-2-7002-0	Upstream of station limit valve AD00-SLV-17	Temperature switch	ASHCROFT	T20T030301BX	82286	AD00-2-5001	2	IIA	T1	Unreadable	Unreadable
AD00-PSHH-15	AD00-2-7002-0	Upstream of station limit valve AD00-SLV-17	High high pressure switch	Schneider Square D	9012 GCW-2 C		AD00-2-5001	2	IIA	T1	CL II DIV 2 Gr F & G, CL III	CSA 117, UL 755A
AD00-PSHH-15A	AD00-2-7002-0	Upstream of station limit valve AD00-SLV-17	High high pressure switch	Schneider Square D	9012 QCW-2 C		AD00-2-5001	2	IIA	T1	CL II DIV 2 Gr F & G, CL III	CSA 117, UL 755A
AD00-PT-14	AD00-2-7002-0	Upstream of station limit valve AD00-SLV-17	Pressure transmitter	ROSEMOUNT	3051/3001	81448256	AD00-2-5001	2	IIA	T1	Ex ia, IIC T5, Ex d, n, ia, IIC T4	AUSEx 1249X
AD00-ZSC-17	AD00-2-7002-0	Station limit valve AD00-SLV-17	Valve limit switch (closed)	RICHARDS	3R-321-AFC (?)	20069	AD00-2-5001	2	IIA	T1		
AD00-ZSO-17	AD00-2-7002-0	Station limit valve AD00-SLV-17	Valve limit switch (open)	RICHARDS	3R-321-AFC (?)	20069	AD00-2-5001	2	IIA	T1		
AD00-SV-17	AD00-2-7002-0	Station limit valve AD00-SLV-17	Solenoid valve	PAB	10117	CPIZOM	AD00-2-5001	2	IIA	T1	CLASS 1, DIV 1 IIIA T6	SAA-FLP693, DIP45
ESD	AD00-2-7002-0		Emergency shutdown				AD00-2-5001	NH			N/A	
AD00-HS-1	AD00-2-7002-0		Hand switch				AD00-2-5001	NH			N/A	
AD00-HS-2	AD00-2-7002-0		Hand switch				AD00-2-5001	NH			N/A	
RTU/PLC-P000	AD00-2-7002-0		Remote telemetry unit				AD00-2-5001	NH			N/A	
AD00-ZS-41/41A	AD00-2-7002-0		Control Building Entrance				AD00-2-5001	NH			N/A	
AD00-XX/XS-42	AD00-2-7002-0		Site entrance main gates				AD00-2-5001	NH			N/A	
AD00-XX/XS42A	AD00-2-7002-0		Site entrance main gates				AD00-2-5001	NH			N/A	
METERING AND GAS ANALYSIS P&ID (AD00-2-7003-0)												
AD00-PDT-21 / PDISH-21	AD00-2-7002-0	Filter separator AD00-FS-1	Pressure differential transmitter	ROSEMOUNT	3501PD3A22A1BM5K7	R50872671	AD00-2-5001	2	IIA	T3	Ex d, n, ia, IIC T5	AUSEx 1249X
AD00-LSH-21A	AD00-2-7003-0	Filter separator AD00-FS-1	High level switch	FRANK W. MURPHY	L2100 PDT		AD00-2-5001	2	IIA	T3	Ex d IIB T6 (installed as Ex ia)	AUSEx 609
AD00-PT-22	AD00-2-7003-0	Meter run No. 1-P000	Pressure transmitter	ROSEMOUNT	3051PG52A22A1AM517	0925440	AD00-2-5001	2	IIA	T1	Ex ia IIC T5	AUSEx 1249X
AD00-FT-22A	AD00-2-7003-0	Meter run No. 1-P000	Low range flow transmitter	ROSEMOUNT	3051PD2A22A1BM517	0858993	AD00-2-5001	2	IIA	T1	Ex ia IIC T5	AUSEx 1249X
AD00-FT-22	AD00-2-7003-0	Meter run No. 1-P000	High range flow transmitter	ROSEMOUNT	3051PD2A22A1AM517	0925430	AD00-2-5001	2	IIA	T1	Ex ia IIC T5	AUSEx 1249X
AD00-TE/TT-22	AD00-2-7003-0	Meter run No. 1-P000	Temperature transmitter	ROSEMOUNT	3144PD2A117M5F5	01170776	AD00-2-5001	2	IIA	T1	Ex ia IIC T5	AUSEx 02.3794X
AD00-PDT-24 / PDISH-24	AD00-2-7003-0	Filter separator AD00-FS-2	High pressure differential switch	ROSEMOUNT	3051/3001	R50872669	AD00-2-5001	2	IIA	T3	Ex d, n, ia, IIC T4	AUSEx 1249X
AD00-LSH-24A	AD00-2-7003-0	Filter separator AD00-FS-2	High level switch				AD00-2-5001	2	IIA	T3	Ex d IIB T6 (installed as Ex ia)	AUSEx 1249X
AD00-PT-25	AD00-2-7003-0	Meter run No. 2-P000	Pressure transmitter	ROSEMOUNT	3051PG5A221AM517	0587031	AD00-2-5001	2	IIA	T1	Ex ia IIC T5	AUSEx 1249X
AD00-FT-25A	AD00-2-7003-0	Meter run No. 2-P000	Low range flow transmitter	ROSEMOUNT	3051PD2A22A1AM517	0582024	AD00-2-5001	2	IIA	T1	Ex ia IIC T5	AUSEx 1249X
AD00-FT-25	AD00-2-7003-0	Meter run No. 2-P000	High range flow transmitter	ROSEMOUNT	3051PD2A22A1AM517	0587025	AD00-2-5001	2	IIA	T1	Ex ia IIC T5	AUSEx 1249X
AD00-TE/TT-25	AD00-2-7003-0	Meter run No. 2-P000	Temperature transmitter	ROSEMOUNT	3144P-D2A117B4MST1F5	02004371	AD00-2-5001	2	IIA	T1	Ex ia IIC T5	IECEx BAS 07.0002X
AD00-SV-29	AD00-2-7003-0	Gas sampler AD00-GS-P000 or 1495	Solenoid valve	LUCIFER	821003	8503	AD00-2-5001	1	IIA	T1	Ex m, e, IIC T5	AUSEx 321-1
AD00-JB-29	AD00-2-7003-0	Gas sampler AD00-GS-P000 or 1495	Junction box				AD00-2-5001	2	IIA	T1		
AD00-MA-30	AD00-2-7003-0	Moisture analyser AD00-MA-P000	Moisture analyser	AMETEK	3050 OLY	305A 836	AD00-2-5001	2	IIA	T1	Ex d IIC T6	ATEX 6007 X
AD00-GCC-32	AD00-2-7003-0	Gas chromatograph GC-P000	Gas chromatograph controller				AD00-2-5001	2	IIA	T1	Ex d IIB T6	ISSeP 93C.103.1123
AD00-GCE-32	AD00-2-7003-0	Gas chromatograph GC-P000	Gas chromatograph element				AD00-2-5002	2	IIA	T1	Ex d IIB T4	INIEX 86.103.566
PT-32	AD00-2-7003-0	Chromatography shelter	Carrier Gas Pressure Transmitter	ROSEMOUNT	3051TG4A2B21BB4K7M5T1	01662770	AD00-2-5001	2	IIA	T1	Ex ia, IIC T5, Ex ia, n, d, IIB T5	AUSEx 1249X
LIGHT	-	Chromatography shelter	Light	BURN BRITE	FLP 2-- 240 MK2		AD00-2-5001	2	IIA	T1	Ex d, I, IIA, IIB T4	SAA 602
MOISTURE ANALYSER SOLENOID	-	Chromatography shelter	Junction Box	CROUSE HINDS	0105235 TYPE EAB		AD00-2-5001	2	IIA	T1	IA Group ABCD & IIA Group EFG	
MOISTURE ANALYSER SOLENOID	-	Chromatography shelter	Solenoid	GO	HPR2 ELECTRIC		AD00-2-5001	2	IIA	T1	Ex d IIC T3	KEMA Ex 96D 1862
HEAT TRACE	AD00-2-7003-0	Chromatography shelter	Junction Box	WEIDMULLER / KLIPPON	K4	571	AD00-2-5001	2	IIA	T1	Ex e IIC T6	AUSEx 614X
HEAT TRACE	AD00-2-7003-0	Chromatography shelter	Junction Box	GOVAN	EP1S11		AD00-2-5001	2	IIA	T1	Ex e IIC T6	2441X
LIGHTING	-	Chromatography shelter	Junction Box	CLIPSAL / STAHL	FJB0A / 203		AD00-2-5001	2	IIA	T1	Ex d IIB T6	AUSEx 2085
	-	Chromatography shelter	Light Switch	GOVAN			AD00-2-5001	2	IIA	T1	Ex d IIB T6	FLP 771 DIP 63
	-	Chromatography shelter	Junction Box	GOVAN	604 FCS		AD00-2-5001	2	IIA	T1	Ex d IIB T6	238 FLP771
SWITCH 240	-	Chromatography shelter	Switch	WILCO	GASES		AD00-2-5001	2	IIA	T1	IA Group 1 2 3	
MA-001	-	Chromatography shelter	240 Isolation Switch	WILCO	FS 110 - CI		AD00-2-5001	2	IIA	T1	Ex d I / IIB T6	AUSEx 1039

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RESOURCES

Palm Valley Meter Station
Hazardous Area Equipment Register

Doc No.	**18756-4-70-001**
Rev.	**0**
Date	**23-Sep-11**

APA Group

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.		

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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**
AD00-TE/TT-09	Certification and Ex protection details are not available
AD00-TSHH-12	Tag is Unreadable
AD00-PSHH-15	Certification is not Australian
AD00-PSHH-15A	Certification is not Australian
AD00-ZSC-17	Certification and Ex protection details are not available
AD00-ZSO-17	Certification and Ex protection details are not available
AD00-JB-29	Certification and Ex protection details are not available
AD00-MA-30	Certification is not Australian
AD00-GCC-32	Insopection sheet is not available. Refer AD 00-OFI-25
AD00-GCE-32	Insopection sheet is not available. Refer AD 00-OFI-25
LIGHT	Certificate of conformity is not available. Refer AD00-Light (Section 12)
MOISTURE ANALYSER SOLENOID	Certification details are not available
MOISTURE ANALYSER SOLENOID	Certification is not Australian. Refer AD 00-OFI-26

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_{amb} = 70 °C) / T5 IP66 (for non-Fieldbus)
Ex ia IIC T4 (T_{amb} = 60 °C) / T5 IP66 (for Foundation Fieldbus/Profibus)
Ex n IIC T4(T_{amb} = 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.: 4-7053856I-001 Rev: 0 Date: 31/7/03
ORDER NUMBERS
Customer: 626973
Emerson: 7053856I

Issued by:

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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

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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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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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

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:

1. 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:

1. 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.

2. 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**
Ui	30 V
Ii	300 mA
Pi	1.3 W
Ci	0 µF
Li	0 µH

(b) Low Power Transmitter Configuration		
Entity Parameters	**Without transient protected T1 option**	**With transient protected T1 option**
Ui	30 V	30 V
Ii	200 mA	200 mA
Pi	0.9 W	0.9 W
Ci	0.042 µF	0.042 µF
Li	10 µH	0.75 mH

(c) Analog/HART Transmitter Configuration		
Entity Parameters	**Without transient protected T1 option**	**With transient protected T1 option**
Ui	30 V	30 V
Ii	200 mA	160 mA
Pi	0.9 W	0.9 W
Ci	0.01 µF	0.01 µF
Li	10 µH	1.05 mH

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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 Po ≤ (Uo x Io) / 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^2 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.

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

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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

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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

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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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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

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

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

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 ± 1/32
ANGLES ± 2°

DO NOT SCALE PRINT

CONTRACT NO.

DR. Mike Dobe 12/30/91

CHK'D

APP'D. GLEN MONZO 5/8/92

APP'D. GOVT.

ROSEMOUNT® MEASUREMENT
FISHER-ROSEMOUNT

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

TITLE SAA I.S. INDEX FOR 3051 & 3001

SIZE A | FSCM NO | DWG NO. 03031-1026

SCALE N/A | WT. | SHEET 1 OF 4

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

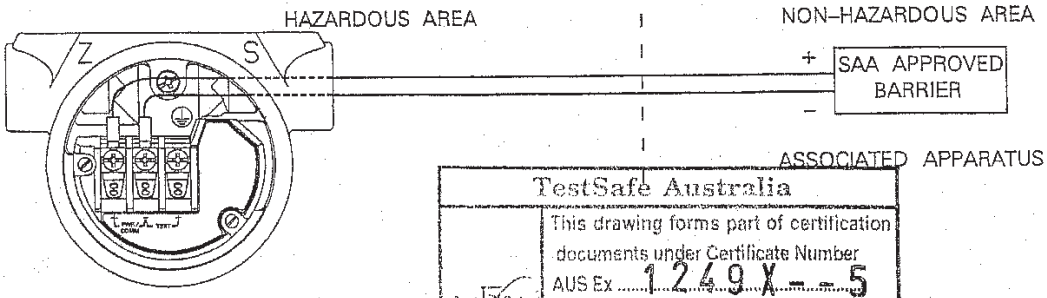
3051C	3051H	3001C	3001S
3051L	3051T	3001CL	
3051P	3051CA	3001CH	

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

APPARATUS PARAMETER	BARRIER PARAMETER
Vmax = 30V	Voc IS LESS THAN OR EQUAL TO 30V
Imax = 200mA	Isc IS LESS THAN OR EQUAL TO 200mA
Pmax = 0.9W	$\frac{Voc * Isc}{4}$ IS LESS THAN OR EQUAL TO 0.9W
Ci = 0.01μF	Ca IS GREATER THAN 0.01 MICROFARADS
Li = 10μH	La IS GREATER THAN 10 MICROHENRIES
FOR T1 OPTION ONLY	
Imax = 160mA	Isc IS LESS THAN OR EQUAL TO 160mA
Li = 1.05mH	La 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.



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

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

CAD Maintained, (MICROSTATION)

DR. Mike Dobe	SIZE A	FSCM NO	DWG NO. 03031-1026
ISSUED	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

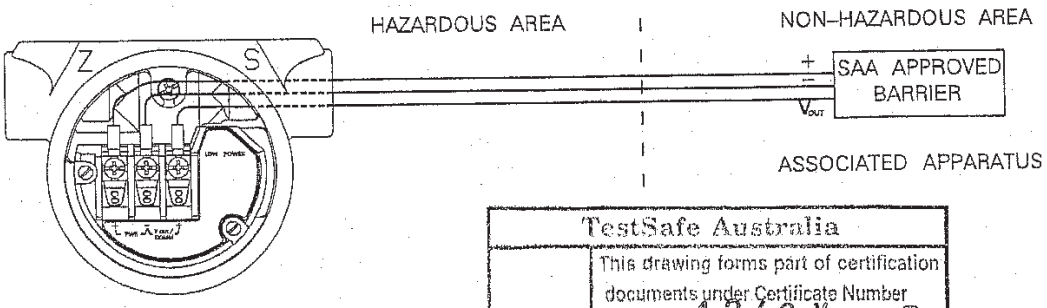
3051C	3051T
3051L	3051CA
3051P	
3051H	

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

APPARATUS PARAMETER	BARRIER PARAMETER
Vmax = 30V	Voc IS LESS THAN OR EQUAL TO 30V
Imax = 200mA	Isc IS LESS THAN OR EQUAL TO 200mA
Pmax = 0.9W	$\frac{Voc * Isc}{4}$ IS LESS THAN OR EQUAL TO 0.9W
Ci = 0.042μF	Ca IS GREATER THAN 0.042 MICROFARADS
Li = 10μH	La IS GREATER THAN 10 MICROHENRIES
FOR T1 OPTION ONLY	
Li = 0.75mH	La 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.



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

CAD Maintained (MICROSTATION)

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

DR. Mike Dobe	SIZE A	FSCM NO	DWG NO. 03031-1026	
ISSUED	SCALE N/A	WT. ———	SHEET 3 OF 4	

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

OUTPUT CODE F /W (FIELDBUS, 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

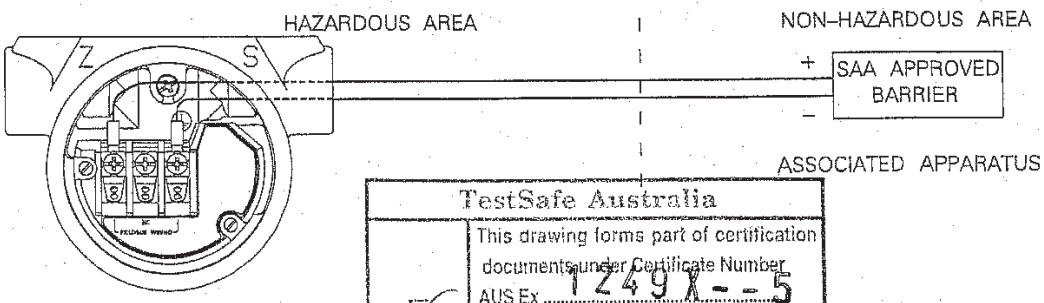
3051C	3051H	3001C	3001S
3051L	3051T	3001CL	
3051P	3051CA	3001CH	

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

APPARATUS PARAMETER	BARRIER PARAMETER
Vmax = 30V Imax = 300mA Pmax = 1.3W Ci = 0 μF Li = 0μH	Voc IS LESS THAN OR EQUAL TO 30V Isc IS LESS THAN OR EQUAL TO 300mA $\frac{Voc * Isc}{4}$ IS LESS THAN OR EQUAL TO 1.3W Ca IS GREATER THAN 0 MICROFARADS La 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.



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

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

CAD Maintained, (MICROSTATION)

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

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. EL,P 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

To recognize changes in the components and catalogue numbers of the following instruments

(a) Switch Enclosure Cat. No. FNS51
(b) Pilot Light System Cat. No. FNL11
(c) Push-button Station Cat. No. FNP1L

as detailed in Schedule

Drawing Nos.

From 79 - 007 - AD - 002 Issue A
to 79 - 023 - AD - 002 Issue A
inclusive

Hazardous Location

N/A

Type of Protection

N/A

Certificate Holder

Safe Appliance and Equipment Co. Pty. Ltd.,
26-28 Kent Road
MASCOT, NSW, 2020.

Manufacturer

Metalcraft Engineering Co.
26-28 Kent Road
MASCOT, NSW, 2020.

Test Report No(s)

N/A

Australian Standard(s)

N/A

SAA File Reference

EL/29: 79068/M90

Effective Date

1980-02-20

Date of Issue

1980-07-03

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

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.
FNP 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.

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

SCHEDULE 1 (Continued) Continuation of Certificate No. FLP 693 -

New Cat. No.	Short Desctiption	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 15810302 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 C17 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 C17 series and external modification.
FNP 1SG.1 (1M) FNP 1SG.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 11SG.1(1M) FNP 11SG.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.R. Gray

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

Continuation of Certificate No. FLP 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.

Description of Equipment

'Murphy' Liquid Level Switches, Series L-1100 and L-1200

Drawing No(s) 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

Certification Conditions

Remarks

Hazardous Location

Class I Zone 1

Type of Protection

Ex d IIB T6

Certificate Holder

Murphek Pty Ltd
215 Parramatta Road
AUBURN NSW 2144

Manufacturer

Frank W Murphy Manufacturer Inc
3131 South Sheridan
Tulsa
OKLAHOMA 74145 USA

Test Report No(s)

SCC TR NO: 60015

Australian Standard(s)

AS 2480-1981

SAA File Reference

P/3: 84122/M121

Effective Date

1985-09-05

Date of Issue

1985-09-06

Director—Administration & Approvals
Standards Association of Australia

EPEE
Explosion Protection Electrical Equipment

EPEE Certificate: Ex 609

SAI Global Assurance Services

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

NOTES

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:

Test Safe AUSTRALIA

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

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures (Doc Q 1344) 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

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:

Test Safe
AUSTRALIA

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

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^2 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

Issued by:

Test Safe AUSTRALIA

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

STANDARDS AUSTRALIA

Conditions of Certification continued: Addendum to Certificate No. Ex 02.3794X

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 µF	
Maximum Internal Inductance L_i	20 µH	
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 µF
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:

Test Safe AUSTRALIA

919 Londonderry Road Londonderry NSW 2753

Phone: (02) 4724 4900 *Fax: (02) 4724 4999*

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:

Test Safe AUSTRALIA

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

STANDARDS 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

Certificate No.: IECEx BAS 07.0002X issue No.:2

Status: **Current**

Certificate history:
Issue No. 2 (2010-8-12)
Issue No. 1 (2009-9-23)
Issue No. 0 (2007-2-20)

Date of Issue: **2010-08-12** Page 1 of 4

Applicant: **Rosemount Incorporated**
8200 Market Boulevard
Chanhassan
Minnesota 55317
United States of America

Electrical Apparatus: **Model 3144P HART Temperature Transmitter**
Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking: **IECEx BAS 07.0002X**
Ex ia IIC T6 (-60°C ≤ Ta ≤ +50°C)
Ex ia IIC T5 (-60°C ≤ Ta ≤ +70°C)

Approved for issue on behalf of the IECEx Certification Body: R S Sinclair

Position: Managing Director

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:

Baseefa
Rockhead Business Park
Staden Lane
Buxton
Derbyshire
SK17 9RZ
United Kingdom

Baseefa

IECEx Certificate of Conformity

Certificate No.: IECEx BAS 07.0002X

Date of Issue: **2010-08-12** Issue No.: **2**

Page 2 of 4

Manufacturer: **Rosemount Incorporated**
8200 Market Boulevard
Chanhassan
Minnesota 55317
United States of America

Manufacturing location(s):

This equipment may be manufactured at any of the locations listed in QAR GB/BAS/QAR06.0072/02.

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 Edition: 4.0	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-11 : 1999 Edition: 4	Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety 1'
IEC 60079-11 : 2006	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

Edition: 5

*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/BAS/ExTR07.0003/00 GB/BAS/ExTR10.0187/00

Quality Assessment Report:

GB/BAS/QAR06.0072/02

IECEx Certificate of Conformity

Certificate No.: IECEx BAS 07.0002X

Date of Issue: **2010-08-12** Issue No.: **2**

Page 3 of 4

Schedule

EQUIPMENT:
Equipment and systems covered by this certificate are as follows:

The Model 3144P HART Temperature Transmitter is designed to convert the input from up to two temperature sensors into a 4 to 20mA signal for measurement purposes.

The apparatus comprises an encapsulated main printed circuit board (PCB), a feed-through filter, terminal facilities and an optional liquid crystal display (LCD), all housed in an aluminium or stainless steel enclosure.

The external connections are made using screw terminals via one of two tapped holes in the terminal compartment of the enclosure. The loop connections, marked '+' and '-' may also be used for serial communications.

See annex for electrical and load parameters.

CONDITIONS OF CERTIFICATION: YES as shown below:

1. When fitted with the transient terminal options, the apparatus is not capable of withstanding the 500V electrical strength test as defined in Clause 6.4.12 of IEC 60079-11: 1999. This must be taken into account during installation.

IECEx Certificate of Conformity

Certificate No.: IECEx BAS 07.0002X

Date of Issue: **2010-08-12** Issue No.: **2**

Page 4 of 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Variation 2.1

To confirm the Model 3144P HART Temperature Transmitter has been reviewed against the requirements of IEC 60079-11: 2006 Edition 5 in respect of the differences from IEC 60079-11: 1999 Edition 4 and none of the differences affect the equipment.

IEC 60079-11: 2006 Edition 5 has been added to the Standards List on Page 2 of the certificate.
The Applicant and Manufacturer address has been amended.

ExTR: **GB/BAS/ExTR10.0187/00** File Reference: **10/0642**

Annexe: IECEx BAS 07.0002X Annex.pdf

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No:	AUS Ex 321	**Issue 0:** **Issue 5:**	Original Issue 20/4/1982 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:

WorkCover NEW SOUTH WALES

Londonderry Occupational Safety Centre

919 Londonderry Road LONDONDERRY NSW 2753

Phone: (02) 4724 4900 *Fax: (02) 4724 4999*

QUALITY SYSTEM REGISTERED AS3902.ISO9002

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. I Tinle
Signed for and on behalf of issuing authority

Coordinator, Approvals & Certification
Position

17/9/1998
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:

WorkCover New South Wales

Londonderry Occupational Safety Centre

919 Londonderry Road LONDONDERRY NSW 2753

Phone: (02) 4724 4900 *Fax: (02) 4724 4999*

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 Volta 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:

WorkCover NEW SOUTH WALES

Londonderry Occupational Safety Centre

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

QUALITY SYSTEM CERTIFIED AS3902.ISO9002

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:

WorkCover NEW SOUTH WALES

Londonderry Occupational Safety Centre

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

QUALITY SYSTEM CERTIFIED AS3902.1SQ3002

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: Australstd 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-321-1

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.

Description of Modification

'Lucifer' Explosion Proof Coil/Housing Assemblies

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.

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.

Hazardous Location

Class I Zone 1

Type of Protection

Refer Schedule 2

Certificate Holder

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

Manufacturer

Sperry Vickers
Automation and Pneumatics
Lucifer Division
P.O. Box 465
Geneva Switzerland

Test Report No(s)

SCC TR No: 58892

Australian Standard(s)

AS 2431-1981
AS 1593-1982

SAA File Reference

P/3:83193/M115

Effective Date

1984 04 10

Date of Issue

1984 04 11

Director—Administration & Approvals
Standards Association of Australia

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

SCHEDULE 1 Description of Modification (Continued)

'Lucifer' Explosion-Proof Coil/Housing Assemblies

Assembly Type	Voltage V	Frequency Hz	Power 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

Director—Administration & Approvals
Standards Association of Australia

Incorporated by Royal Charter

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

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

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

Director—Administration & Approvals
Standards Association of Australia

L C I E

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 :

Ex II 2 G
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 refered 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 :

Ex II 2 G
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

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**

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

LCIE 01 ATEX 6007 X

(A1) **SCHEDULE**

(A2) **EC TYPE EXAMINATION CERTIFICATE**

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 : ...
Ex 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 3e 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 : ...
Ex 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 3rd edition of the European Standard EN 50014 (1997), to the second edition of the European Standard EN 50018 (1994) and EN 50019 (1994).

LCIE

Fontenay-aux-Roses, le 30 OCT. 2001

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

N/Réf. : MLi/SFe/ ENV 9449

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-e

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

AVENANT 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

(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.

(A4) DOCUMENTS DESCRIPTIFS :

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

(A5) CONDITIONS SPÉCIALES POUR UNE UTILISATION SÛRE :

Inchangées.

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

Inchangées.

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

VARIATION LCIE 01 ATEX 6007 X/01

(A2) NAME OF EQUIPMENT OR PROTECTIVE SYSTEM :

Moisture analyzer
Type : 3050 OLV
Manufactured by : AMETEK

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

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

Marking :
Unchanged.

(A4) DESCRIPTIVE DOCUMENTS :

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

(A5) SPECIAL CONDITIONS FOR SAFE USE :

Unchanged.

(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

13-c

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

LCIE

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

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

AVENANT 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

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

- Correction de l'épaisseur d'un couvercle.

Marquage :
Inchangé.

(A4) DOCUMENTS DESCRIPTIFS :

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

(A5) CONDITIONS SPECIALES POUR UNE UTILISATION SURE :

Inchangées.

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

Inchangées.

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

VARIATION LCIE 01 ATEX 6007 X/02

(A2) DESIGNATION OF EQUIPMENT OR PROTECTIVE SYSTEM :

Moisture analyzer
Type : 3050 OLV
Construit par : AMETEK

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

- Correction of a lid thickness.

Marking :
Unchanged.

(A4) DESCRIPTIVE DOCUMENTS :

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

(A5) SPECIAL CONDITIONS FOR SAFE USE :

Unchanged.

(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

Par délégation
Michel BRÉNON
Directeur adjoint
à la Certification

Timbre sec / Dry seal

13-c

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

DANIEL

Daniel Europe Ltd
Lochlands Industrial Estate
Larbert, Stirlingshire
Scotland FK5 3NS
Tel: +44 (0)1324 556111
Fax: +44 (0)1324 562290
http://www.daniel.co.uk

EC DECLARATION OF CONFORMITY

Name of Manufacturer	:	DANIEL EUROPE LTD
Address of Manufacturer	:	LOCHLANDS INDUSTRIAL ESTATE LARBERT, STIRLINGSHIRE FK5 3NS

We declare under our sole responsibility that the undernoted product as described in the attached technical documentation is in conformity with the protection requirements of the Electro Magnetic Compatibility Directive 98/336/EEC), and is manufactured in accordance with the applicable European standards.

Product	:	GAS CHROMATOGRAPH CONTROLLER
Model	:	DANIEL 2350 (NEMA 4X)
Applicable European Standards	:	EN 50081 Part 2 : 1994 Generic Emissions Standard, Part 2.1 - Industrial Environment EN 50082 Part 2 : 1994 Generic Immunity Standard, Part 2 - Industrial Environment
Name of authorised responsible person	:	JOHN P. PHEE
Position	:	CERTIFICATION ENGINEER
Signature	:	
Place and Date of Issue	:	LARBERT 14/12/97

Institut Scientifique de Service Public

. Etablissement de Recherche et Développement
. Centre de transposition industrielle
. Laboratoires d'essais, d'expertises et d'analyses

80339 PH/gm - 682/ E 0764

Colfontaine, le 22 FEV. 1994

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate

LARBERT STIRLINGSHIRE
SCOTLAND FK 5 3 NS
G.B.

Messieurs,

En réponse à votre lettre du 10.03.93 référence ISSePDL.APP, nous avons l'honneur de vous adresser, en annexe, **le certificat de conformité ISSeP 93C.103.1123.**

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

A. RENAUD,
Directeur du siège de Colfontaine.

Siège social et siège de Liège : rue du Chéra, 200 - B-4000 Liège 1 (Belgique)
tél.: 041/52.71.50 téléfax : 041/52.46.65 C.C.P.: 000-2009770-27

Siège de Colfontaine : rue Grande, 60 - B-7340 Pâturages (Belgique) tél.: 065/67.23.43 - 67.31.49
téléfax : 065/66.09.53 Banque : 091-0015384-05

Institut Scientifique de Service Public

Division de Colfontaine
Rue Grande, 60 - B-7340 PÂTURAGES
Tél.: ++ 32 (0)65/67 23 43
Fax : ++ 32 (0)65/66 09 53

(1) **CERTIFICAT DE CONFORMITE**

(2) **ISSeP 93C.103.1123**

(3) Le présent certificat est délivré pour le matériel électrique :

"DanLoad 6000 Batch Loading Controller"

(4) Construit par : **DANIEL FLOW PRODUCTS, INC.**
9753 Pine Lake Dr.
Houston, TX 77055
U.S.A.

et soumis à la certification par :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

(5) Ce matériel électrique, ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de ce certificat et dans les documents descriptifs cités dans cette annexe.

CODE : EEx d II B T6

ISSeP
Institut Scientifique de Service Public

CERTIFICAT ISSeP 93C.103.1123 du 16.11.1993

(6) ISSeP, organisme agréé conformément à l'article 14 de la Directive du Conseil des Communautés Européennes 76/117/CEE du 18-12-1975,

- certifie que ce matériel électrique est conforme aux Normes Européennes Harmonisées :

EN 50014 1977 + amendements 1 à 5 (NBN C23-001 + add. 1 à 4)
EN 50018 1977 + amendements 1 à 3 (NBN C23-103 + add. 1 et 2)

et qu'il a subi avec succès les vérifications et épreuves de type prescrites par ces normes,

- certifie avoir établi un procès-verbal confidentiel de ces vérifications et épreuves.

(7) Le marquage du matériel électrique doit comporter le code suivant :

EEx d II B T6

(8) Par le marquage du matériel livré, le fournisseur atteste, sous sa propre responsabilité que ce matériel est conforme aux documents descriptifs cités dans l'annexe et qu'il a subi avec succès les vérifications et épreuves individuelles prescrites dans les Normes Européennes Harmonisées mentionnées en (6) et rappelées dans l'annexe.

(9) Ce matériel électrique est autorisé à porter la marque distinctive communautaire définie dans l'annexe II de la Directive 79/196/CEE du 06-02-1979.

Cette marque figure sur la première page du présent certificat.

COLFONTAINE, le 16.11.1993

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CERTIFICAT ISSeP 93C.103.1123 du 16.11.1993

ANNEXE

1. IDENTIFICATION ET DESCRIPTION DU MATERIEL

1.1. Identification

"DanLoad 6000 Batch Loading Controller"

1.2. Description

Boîtier en alliage léger avec couvercle équipé d'un voyant en verre.
Le couvercle s'assemble au moyen de vis en acier inox A2.
Deux hauteurs de boîtiers sont prévues.

1.3. Raccordement de l'appareil

Le raccordement de l'appareil se fait par des entrées de câbles d'un type antidéflagrant agréé ou par des conduits métalliques filetés; dans ce cas un coupe-feu avec masse de remplissage d'un type agréé sera placé à l'entrée de l'appareil.
Les trous taraudés non utilisés seront obturés par des bouchons d'un type agréé.
Ces accessoires sont à visser avec au moins 5 filets en prise et sur une longueur de filets en prise de 8 mm au moins.
Ces accessoires ne font pas partie du présent certificat et seront adaptés aux conditions d'emploi.

2. DOCUMENTS DESCRIPTIFS

2.1. Le procès-verbal de vérifications et épreuves ISSeP 93.d.1123.
2.2. La déclaration du constructeur du 24.03.93.
2.3. Les plans n°
DE-15512 du 08.04.93 page 1/4 rev. A
DE-15512 du 12.02.92 page 2/4 rev. A
DE-15512 du 16.10.92 page 3/4 rev. A
DE-15512 du 06.08.92 page 4/4 rev. A
DE-12522 du 28.10.93 page 1/5 rev. P1
DE-12522 du 28.10.93 page 2/5 rev. P1
DE-12522 du 28.10.93 page 3/5 rev. P1
DE-12522 du 28.10.93 page 4/5 rev. P1
DE-12522 du 28.10.93 page 5/5 rev. P1

BE-12514 du 09.09.93 page 1/1 rev. P2
BE-12517 du 27.08.93 page 1/1 rev. P2
DE-12518 du 12.02.92 page 1/1 rev. P1
DE-12519 du 25.05.93 page 1/1 rev. P1
DE-12520 du 12.02.92 page 1/1 rev. P1

2.4. Le descriptif du 10.11.93

3. MARQUAGE

Le nom du constructeur ou sa marque commerciale déposée.
La désignation du type donnée par le constructeur.
Le code : EEx d II B T6.
Le numéro de fabrication.
Le sigle ISSeP suivi du numéro du présent certificat.
Le marquage normalement prévu par les normes de construction du matériel électrique.
L'avertissement :

"NE PAS OUVRIR LORSQU'UN MELANGE EXPLOSIF EST PRESENT"

4. VERIFICATIONS ET EPREUVES INDIVIDUELLES

Le constructeur doit effectuer les vérifications et épreuves individuelles nécessaires pour garantir que le matériel électrique produit est conforme à la spécification soumise à la station d'essais avec le prototype ou échantillon (article 23 - EN 50014).
En outre chaque enveloppe antidéflagrante devra avoir subi avec succès l'épreuve individuelle sous la pression statique ou dynamique de 12 bar minimum (article 15 - EN 50018).

Institut Scientifique de Service Public

Division de Colfontaine
Rue Grande, 60 - B-7340 PÂTURAGES
Tél.: ++ 32 (0)65/67 23 43
Fax : ++ 32 (0)65/66 09 53

Original : FRENCH

(1) **CERTIFICATE OF CONFORMITY**

(2) **ISSeP 93C.103.1123**

(3) This certificate is issued for the electrical apparatus :

"DanLoad 6000 Batch Loading Controller"

(4) Manufactured by : **DANIEL FLOW PRODUCTS, INC.**
9753 Pine Lake Dr.
Houston, TX 77055
U.S.A.

and submitted for certification by :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

(5) This electrical apparatus, and any acceptable variation thereto, is specified in the Schedule to this Certificate and in the documents therein referred to.

CODE : EEx d II B T6 sheet 1/4

Institut Scientifique de Service Public

CERTIFICATE ISSeP 93C.103.1123 of 16.11.1993

(6) ISSeP being an Approved Certification Body in accordance with Article 14 of the Council Directive 76/117/EEC of 18-12-1975

- confirms that the apparatus has been found to comply with the Harmonised Standards :
  EN 50014 1977 + amendments 1 to 5 (NBN C23-001 + add. 1 to 4)
  EN 50018 1977 + amendments 1 to 3 (NBN C23-103 + add. 1 and 2)

and has successfully met the examination and test requirements prescribed by these standards and which are recorded in a confidential Test Report.

(7) The apparatus marking shall include the code :

EEx d II B T6

(8) The supplier of the electrical apparatus referred to in this certificate has the responsibility to ensure that the apparatus conforms to the specifications laid down in the schedule 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 Council Directive 79/196/EEC of 06-02-1979. A facsimile of this mark is printed on sheet 1 of this certificate.

COLFONTAINE, 16.11.1993

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CERTIFICATE ISSeP 93C.103.1123 of 16.11.1993

SCHEDULE

1. IDENTIFICATION AND DESCRIPTION OF THE APPARATUS

1.1. Identification

"DanLoad 6000 Batch Loading Controller"

1.2. Description

Box in light alloy with cover fitted with a glass window.
The cover is assembled by means of A2 stainless steel screws.
Two enclosures highs are foreseen.

1.3. Connection of the apparatus

The connection of the apparatus is made by cable entries of a certified flameproof model or by threaded metal conduits; in this case a stopping box with compound filling of a certified flameproof model, shall be placed at the entry of the apparatus.
The unused threaded holes shall be shut by certified threaded plugs.
These accessories shall be screwed with at least 5 threads engaged and on a length of engaged threads of 8 mm at least.
These accessories are not included in the present certificate and shall be suited with the conditions of use.

2. DESCRIPTIVE DOCUMENTS

2.1. The test report ISSeP 93.d.1123.
2.2. The declaration by the manufacturer of 24.03.93.
2.3. The drawings n°

DE-15512 of 08.04.93 sheet 1/4 rev. A
DE-15512 of 12.02.92 sheet 2/4 rev. A
DE-15512 of 16.10.92 sheet 3/4 rev. A
DE-15512 of 06.08.92 sheet 4/4 rev. A
DE-12522 of 28.10.93 sheet 1/5 rev. P1
DE-12522 of 28.10.93 sheet 2/5 rev. P1
DE-12522 of 28.10.93 sheet 3/5 rev. P1
DE-12522 of 28.10.93 sheet 4/5 rev. P1
DE-12522 of 28.10.93 sheet 5/5 rev. P1

BE-12514 of 09.09.93 sheet 1/1 rev. P2
BE-12517 of 27.08.93 sheet 1/1 rev. P2
DE-12518 of 12.02.92 sheet 1/1 rev. P1
DE-12519 of 25.05.93 sheet 1/1 rev. P1
DE-12520 of 12.02.92 sheet 1/1 rev. P1

2.4. The description of 10.11.93

3. MARKING

The name of the manufacturer or his registered trade mark.
The manufacturer's type identification.
The code : EEx d II B T6.
The serial number.
The indication ISSeP followed by the reference to the present certificate.
The marking normally required by the Standard of construction of the electrical apparatus.
The warning :
"DO NOT OPEN WHILE EXPLOSIVE MIXTURE IS PRESENT"

4. ROUTINE VERIFICATIONS AND TESTS

The manufacturer shall make the routine verifications and tests necessary to ensure that the electrical apparatus produced complies with the specification submitted to the testing station together with the prototype or sample (item 23 - EN 50014). Furthermore each enclosure shall be submitted to the routine test at the static or dynamic pressure of 12 bar minimum (item 15-EN 50018).

AVENANT N° 2 AU CERTIFICAT DE CONFORMITE

ISSeP 93C.103.1123

Le présent avenant est délivré pour le matériel électrique :

"DanLoad 6000 Batch Loading Controller".

Construit par : **DANIEL FLOW PRODUCTS, INC.**
9753 Pine Lake Dr.
Houston, TX 77055
U.S.A.

et soumis à la certification par :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

Ce matériel électrique ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de cet avenant et dans les documents descriptifs cités dans cette annexe.

COLFONTAINE, le 14.01.1997

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II B T6 feuille 1/2

Institut Scientifique de Service Public

. Etablissement de Recherche et Développement
. Centre de Projets Industriels
. Laboratoires d'Essais, d'Expertises et d'Analyses

Colfontaine, le 22 MAI 1997

83317 PHou/gm - E1458

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate
Larbert Stirlingshire
Scotland FK 5 3 NS
U.K.

Messieurs,

En réponse à votre lettre du 02.11.95 référence ISSePDL.V.100, nous avons l'honneur de vous adresser, en annexe, **l'avenant n° 2 au certificat de conformité ISSeP 93C.103.1123.**

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

A. RENAUD,
Directeur du siège de Colfontaine.

Siège social et siège de Liège: rue du Chéra, 200 - B-4000 Liège 1 (Belgique)
tél.: 041/52.71.50 téléfax: 041/52.46.65 Banque: 611-0010290-78
Siège de Colfontaine: rue Grande, 60 - B-7340 Pâturages (Belgique)

AVENANT N° 2 DU 14.01.1997 AU CERTIFICAT DE CONFORMITE
ISSeP 93C.103.1123
du 16.11.1993

ANNEXE

Matériel :

"DanLoad 6000 Batch Loading Controller".

Objet de la modification :

- la puissance dissipée par les composants électriques placés dans l'enveloppe est légèrement augmentée dans le cas du boîtier grand modèle;
- le corps du boîtier grand modèle et le couvercle sont fabriqués en alliage léger 361-T6;
- l'usinage du boîtier est légèrement modifié;
- la dispense d'épreuve individuelle de surpression est accordée lorsque les boîtiers sont fabriqués en alliage léger 361-T6.

Documents descriptifs :

- Le procès-verbal de vérifications et épreuves ISSeP 93.d.1123/2.
- Les plans n°
  DE-15512 rev. D du 6/96 (4 pages)
  DE-12518 du 12.02.92 rev. D
  DE-12519 du 25.05.93 rev. B
  DE-12520 du 12.02.92 rev. D.

Marquage : Inchangé.

Epreuve individuelle :

La dispense d'épreuve individuelle de surpression est accordée lorsque les boîtiers sont fabriqués en alliage léger 361-T6.

Original : FRENCH

VARIATION N° 2 TO THE CERTIFICATE OF CONFORMITY

ISSeP 93C.103.1123

This variation to the certificate is issued for the electrical material :

"DanLoad 6000 Batch Loading Controller".

Manufactured by : **DANIEL FLOW PRODUCTS, INC.**
9753 Pine Lake Dr.
Houston, TX 77055
U.S.A.

and submitted for certification by :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

This electrical material, and any acceptable variations thereto, are specified in the schedule to this variation and in the documents therein referred to.

COLFONTAINE, 14.01.1997

Le Directeur du siège de Colfontaine,

P. HOUGARDY.

A. RENAUD.

CODE : EEx d II B T6

VARIATION N° 2 OF 14.01.1997 TO THE CERTIFICATE OF CONFORMITY
ISSeP 93C.103.1123
of 16.11.1993

SCHEDULE

Apparatus :

"DanLoad 6000 Batch Loading Controller".

Subject of the variation :

- the output dissipated by the electrical components in the case of the big model box is slightly increased;
- the body of the big model box and the cover are made in light alloy 361-T6;
- the machining of the box is slightly modified;
- the routine overpressure test is conceded for boxes made in light alloy 361-T6.

Descriptive documents :

- The test report ISSeP 93.d.1123/2.
- The drawings n°
  DE-15512 rev. D of 6/96 (4 sheets)
  DE-12518 of 12.02.92 rev. D
  DE-12519 of 25.05.93 rev. B
  DE-12520 of 12.02.92 rev. D.

Marking : Unchanged.

Routine test :

The routine overpressure test is conceded for boxes made in light alloy 361-T6.

Institut Scientifique de Service Public

. Etablissement de Recherche et de Développement
. Centre de Projets Industriels
. Laboratoires d'Essais, d'Expertises et d'Analyses

Colfontaine, le 26 JAN. 1998

83968 PHou/gm - E 1878

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate
Larbert Stirlingshire
Scotland FK 5 3 NS
G.B.

Att. Mr John Phee

Messieurs,

En réponse à votre lettre du 01.08.97 référence PO 25937, nous avons l'honneur de vous adresser, en annexe, **l'avenant n° 3 au certificat de conformité ISSeP 93C.103.1123.**

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

A. RENAUD,
Directeur du siège de Colfontaine.

Siège social et siège de Liège : rue du Chéra, 200 - B-4000 Liège 1 (Belgique)
tél. : 04/ 252 71 50 téléfax : 04/252 46 65 Banque : 611-0010290-78
Siège de Colfontaine : rue Grande, 60 - B-7340 Pâturages (Belgique)
tél. : 065/ 61 08 11 téléfax : 065/ 61 08 08 Banque : 611-0010430-24

ISeP

Institut Scientifique de Service Public

AVENANT N° 3 AU CERTIFICAT DE CONFORMITE

ISSeP 93C.103.1123

Le présent avenant est délivré pour le matériel électrique :

"2350 ELECTRONIC CHROMATOGRAPH CONTROLLER".

Construit par : **DANIEL FLOW PRODUCTS, INC.**
9753 Pine Lake Dr.
Houston, TX 77055
U.S.A.

et soumis à la certification par :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

Ce matériel électrique ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de cet avenant et dans les documents descriptifs cités dans cette annexe.

COLFONTAINE, le 17.12.1997

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II B T6 feuille 1/2

AVENANT N° 3 DU 17.12.1997 AU CERTIFICAT DE CONFORMITE
ISSeP 93C.103.1123
du 16.11.1993

ANNEXE

Matériel :

"2350 Electronic Chromatograph Controller".

Objet de la modification :

Introduction d'un nouveau modèle portant la dénomination "2350 ELECTRONIC CHROMATOGRAPH CONTROLLER". L'enveloppe antidéflagrante e t la même que l'enveloppe certifiée par l'avenant n° 2.
Les circuits électroniques placés dans l'enveloppe antidéflagrante sont modifiés; une pile est utilisée.

Documents descriptifs :

- Le procès-verbal de vérifications et épreuves ISSeP 93.d.1123/3.
- Les plans n°
  DE-12518 rev. E du 12.96
  DE-12520 rev. D du 06.96
  DE-19709 rev. A du 03.11.97 (4 pages)
- La télécopie du 24.11.97 de Mr John P. PHEE.

Marquage : Inchangé.

Epreuve individuelle :

La dispense d'épreuve individuelle de surpression est accordée lorsque les boîtiers sont fabriqués en alliage léger 361-T6.

Original : FRENCH

VARIATION N° 3 TO THE CERTIFICATE OF CONFORMITY

ISSeP 93C.103.1123

This variation to the certificate is issued for the electrical material :

"2350 ELECTRONIC CHROMATOGRAPH CONTROLLER".

Manufactured by : **DANIEL FLOW PRODUCTS, INC.**
9753 Pine Lake Dr.
Houston, TX 77055
U.S.A.

and submitted for certification by :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

This electrical material, and any acceptable variations thereto, are specified in the schedule to this variation and in the documents therein referred to.

COLFONTAINE, 17.12.1997

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II B T6 Sheet 1/2

VARIATION N° 3 OF 17.12.1997 TO THE CERTIFICATE OF CONFORMITY
ISSeP 93C.103.1123
of 16.11.1993

SCHEDULE

Apparatus :

"2350 Electronic Chromatrograph Controller".

Subject of the variation :

Introduction of a new model having the denomination "2350 ELECTRONI CHROMATOGRAPH CONTROLLER". The flameproof house is the same than th house certified by the variation n° 2.
The electronic circuits fitted in the flameproof house are modified; a primary cell is utilized.

Descriptive documents :

- The test report ISSeP 93.d.1123/3.
- The drawings n°
  DE-12518 rev. E of 12.96
  DE-12520 rev. D of 06.96
  DE-19709 rev. A of 03.11.97 (4 sheets)
- The fax of 24.11.97 from Mr John P. PHEE.

Marking : Unchanged.

Routine test :

The routine overpressure test is conceded for boxes made in light alloy 361-T6.

Institut Scientifique de Service Public

. Etablissement de Recherche et Développement
. Centre de transposition industrielle
. Laboratoires d'essais, d'expertises et d'analyses

Colfontaine, le 19 MAI 1998

82795 PHou/gm - E 1477

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK 5 3 N3
U.K.

Messieurs,

En réponse à votre lettre du 23.11.95 référence ISSePDL.APP, nous avons l'honneur de vous adresser, en annexe, **l'avenant n° 1 au certificat de conformité ISSeP 93C.103.1123.**

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

A. RENAUD,
Directeur du siège de Colfontaine.

Siège social et siège de Liège: rue du Chéra, 200 - B-4000 Liège 1 (Belgique)
tél.: 041/52.71.50 téléfax: 041/52.46.65 Banque: 611-0010290-78
Siège de Colfontaine: rue Grande, 60 - B-7340 Pâturages (Belgique)
tél.: 065/61.08.11 téléfax: 065/61.08.08 Banque: 611-0010430-24

AVENANT N° 1 AU CERTIFICAT DE CONFORMITE

ISSeP 93C.103.1123

Le présent avenant est délivré pour le matériel électrique :

"DanLoad 6000 Batch Loading Controller".

Construit par : **DANIEL FLOW PRODUCTS, INC.**
9753 Pine Lake Dr.
Houston, TX 77055
U.S.A.

et soumis à la certification par :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

Ce matériel électrique ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de cet avenant et dans les documents descriptifs cités dans cette annexe.

COLFONTAINE, le 10.05.1996

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II B T6 feuille 1/2

AVENANT N° 1 DU 10.05.1996 AU CERTIFICAT DE CONFORMITE
ISSeP 93C.103.1123
du 16.11.1993

ANNEXE

Matériel : "DanLoad 6000 Batch Loading Controller".

Objet de la modification :

Les plans mentionnés ci-dessous sont revisés; l'enveloppe antidéflagrante est inchangée; uniquement le matériel inclus dans l'enveloppe est modifié.

Documents descriptifs :

- Le procès-verbal de vérifications et épreuves ISSeP 93.d.1123/1.
- Les plans n°
  DE-15512 du 08.04.93 page 1/4 rev. B
  DE-15512 du 12.02.92 page 2/4 rev. B
  DE-15512 du 16.10.92 page 3/4 rev. B
  DE-15512 du 06.08.92 page 4/4 rev. B

Marquage : Inchangé

Original : FRENCH

VARIATION N° 1 TO THE CERTIFICATE OF CONFORMITY

ISSeP 93C.103.1123

This variation to the certificate is issued for the electrical material :

"DanLoad 6000 Batch Loading Controller".

Manufactured by : **DANIEL FLOW PRODUCTS, INC.**
9753 Pine Lake Dr.
Houston, TX 77055
U.S.A.

and submitted for certification by :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

This electrical material, and any acceptable variations thereto, are specified in the schedule to this variation and in the documents therein referred to.

COLFONTAINE, 10.05.1996

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II B T6 Sheet 1/2

VARIATION N° 1 OF 10.05.1996 TO THE CERTIFICATE OF CONFORMITY
ISSeP 93C.103.1123
of 16.11.1993

SCHEDULE

Apparatus : "DanLoad 6000 Batch Loading Controller".

Subject of the variation :

The drawings mentioned here below are revised, the flameproof house is unchanged; only the materiel included in the house is modified.

Descriptive documents :

- The test report ISSeP 93.d.1123/1.
- The drawings n°
  DE-15512 of 08.04.93 sheet 1/4 rev. B
  DE-15512 of 12.02.92 sheet 2/4 rev. B
  DE-15512 of 16.10.92 sheet 3/4 rev. B
  DE-15512 of 06.08.92 sheet 4/4 rev. B

Marking : Unchanged.

Institut Scientifique de Service Public

. Etablissement de Recherche et de Développement
. Centre de Projets Industriels
. Laboratoires d'Essais, d'Expertises et d'Analyses

83690 PHou/na

Colfontaine, le 28.07.1997.

DANIEL INDUSTRIES LIMITED
Lochlands Industrial Estate
Larbert Stirlingshire
SCOTLAND FK5 3NS
U.K.

Dear Sirs,

Referring to the letter of the 17.07.97 ref. Mr. JOHN PHEE regarding the issuing of the last variation to the certicate ISSeP 93C.103.1123, we confirm you that the internal value of the radius of the back cover is typically 0.63 inches. This value was checked on the samples presented by DANIEL INDUSTRIES LIMITED.

Yours faithfully,

P. HOUGARDY.

A. RENAUD,
Directeur du siège de Colfontaine.

Siège social et siège de Liège : rue du Chéra, 200 - B-4000 Liège 1 (Belgique)
tél. : 04/ 252 71 50 téléfax : 04/252 46 65 Banque : 611-0010290-78
Siège de Colfontaine : rue Grande, 60 - B-7340 Pâturages (Belgique)
tél. : 065/ 61 08 11 téléfax : 065/ 61 08 08 Banque : 611-0010430-24

DANIEL

Daniel Europe Ltd
Lochlands Industrial Estate
Larbert, Stirlingshire
Scotland FK5 3NS
Tel: +44 (0)1324 556111
Fax: +44 (0)1324 562290
http://www.daniel.co.uk

EC DECLARATION OF CONFORMITY

Name of Manufacturer	:	DANIEL EUROPE LTD
Address of Manufacturer	:	LOCHLANDS INDUSTRIAL ESTATE LARBERT, STIRLINGSHIRE FK5 3NS

We declare under our sole responsibility that the undernoted product as described in the attached technical documentation is in conformity with the protection requirements of the Electro Magnetic Compatibility Directive 89/336/EEC), and is manufactured in accordance with the applicable European standards.

Product	:	DANIEL CHROMATOGRAPH ANALYSER
Model	:	MODEL 500
Applicable European Standards	:	EN 50081 Part 2 : 1994 Generic Emissions Standard, Part 2.1 - Industrial Environment EN 50082 Part 2 : 1994 Generic Immunity Standard, Part 2 - Industrial Environment
Name of authorised responsible person	:	BOB LUMSDEN
Position	:	SECTION LEADER / PRODUCT ENGINEERING
Signature	:	
Place and Date of Issue	:	LARBERT 25 JULY 1997

DANIEL

Applicable European Standards	:	IEC 801-4 : 1988 Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment. Part 4 : Electrical Fast Transient/Burst Requirements.
	:	IEC 801-6 : 1992 ENV 50141 : 1994, 1000-4-6 Electromagnetic Compatibility for Electrical and Electronic Equipment. Part 6 : Immunity to Conducted Disturbances induced by Radio Frequency Fields.
	:	BS EN 61000-4-8 : 1994 IEC 1000-4-8 : 1993 Electromagnetic Compatibility (EMC) Part 8 : Power Frequency Magnetic Field Immunity Test
	:	EN 55011 : 1991 Limits and Methods of Measurement of Radio Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment.
Name of authorised responsible person	:	BOB LUMSDEN
Position	:	SECTION LEADER / PRODUCT ENGINEERING
Signature	:	
Place and Date of Issue	:	LARBERT 25 JULY 1997

INSTITUT NATIONAL DES INDUSTRIES EXTRACTIVES

NATIONAAL INSTITUUT VOOR DE EXTRACTIEBEDRIJVEN

INIEX
Division de Colfontaine

NIEB
Afdeling Colfontaine

Rue Grande, 60 - B 7260 COLFONTAINE
TEL. 065 - 66.23.43 - 66.31.49

(1) # CERTIFICAT DE CONFORMITÉ

(2) INIEX 86.103.566

(3) Le présent certificat est délivré pour le matériel électrique :

Chromatographe modèle 500

(4) Construit par :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland
FK5 3NS
U.K.

et soumis à la certification par :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland
FK5 3 NS
U.K.

(5) Ce matériel électrique, ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de ce certificat et dans les documents descriptifs cités dans cette annexe.

CODE : EEx d II C T4

CERTIFICAT INIEX 86.103.566 du 28.11.1986

(6) INIEX, organisme agréé conformément à l'article 14 de la Directive du Conseil des Communautés Européennes 76/117/CEE du 1975-12-18,

— certifie que ce matériel électrique est conforme aux Normes Européennes Harmonisées :

EN 50014 - 1977 (NBN C23-001, 1ère Ed. Sept. 1979)

EN 50018 - 1977 (NBN C23-103, 3ème Ed. Sept. 1979)

et qu'il a subi avec succès les vérifications et épreuves de types prescrites par ces normes,

— certifie avoir établi un procès-verbal confidentiel de ces vérifications et épreuves.

(7) Le marquage du matériel électrique doit comporter le code suivant :

EEx d II C T4

(8) Par le marquage du matériel livré, le fournisseur atteste, sous sa propre responsabilité que ce matériel est conforme aux documents descriptifs cités dans l'annexe et qu'il a subi avec succès les vérifications et épreuves individuelles prescrites dans les Normes Européennes Harmonisées mentionnées en (6) et rappelées dans l'annexe.

(9) Ce matériel électrique est autorisé à porter la marque distinctive communautaire définie dans l'annexe II de la Directive 79/196/CEE du 1979-02-06.

Cette marque figure sur la première page du présent certificat.

COLFONTAINE, le 28.11.1986

Le Directeur de la division de Colfontaine.

P. HOUGARDY. J. BRACKE. E. POSSEMIERS.

CERTIFICAT INIEX 86.103.566 du 28.11.1986

ANNEXE

1. Identification et raccordement du matériel.

1.1. Identification

Chromatographe modèle 500

1.2. Raccordement de l'appareil.

Le raccordement de l'appareil se fait par des entrées de câbles d'un type antidéflagrant agréé EEx d II C
Ces accessoires sont à visser avec au moins 5 filets en prise et sur une longueur de filets en prise de 8 mm au moins. Ces accessoires ne font pas partie du présent certificat et seront adaptés aux conditions d'emploi.

2. Documents descriptifs.

2.1. Le procès-verbal de vérifications et épreuves INIEX 85.d.566

2.2. La notice descriptive de 6 pages du 3.10.1985 révision 2 du 10.11.1986, indiquant les variantes admises.

2.3. Les plans n°

DUK 3253/003/1 ISSUE 6 du 10.11.1986 (feuille n° 1)
DUK 3253/003/1 ISSUE 5 du 10.11.1986 (feuille n° 2)
DUK 3253/007/2 ISSUE 3 du 19.09.1986
DUK 3253/009/2 ISSUE 3 du 19.09.1986
DUK 3253/015/3 ISSUE 3 du 04.11.1986
DUK 3253/020/1 ISSUE 5 du 11.11.1986
DUK 3253/021/1 ISSUE 4 du 11.11.1986
DUK 3253/022/1 ISSUE 5 du 11.11.1986

CERTIFICAT INIEX 86.103.566 du 28.11.1986

ANNEXE

DUK 3253/023/1 ISSUE 3 du 23.09.1986
DUK 3253/030/1 ISSUE 4 du 11.11.1986
DUK 3253/067/1 ISSUE 0 du 17.09.1986
DUK 3253/068/2 ISSUE 1 du 11.11.1986

3. Marquage.

- le nom du constructeur ou sa marque commerciale déposée
- la désignation du type donné par le constructeur
- le code EEx d II C T4
- le numéro de fabrication
- le signe INIEX suivi du numéro présent certificat
- le marquage normalement prévu par les normes de construction du matériel électrique
- les avertissements
  "NE PAS OUVRIR SOUS TENSION"
  "ATTENDRE 4 MINUTES AVANT L'OUVERTURE DE L'APPAREIL"
- la température ambiante : 55° C max.

4. Epreuve individuelle.

Cet appareil n'est pas soumis à l'épreuve individuelle du surpression.

Institut National des Industries Extractives

DIVISION DE COLFONTAINE

INIEX · NIEB

AFDELING COLFONTAINE

Nationaal Instituut voor de Extractiebedrijven

Original : French.

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1) C E R T I F I C A T E O F C O N F O R M I T Y

I N I E X 86.103.566

3) This certificate is issued for the electrical apparatus :

Model 500 chromatograph

4) Manufactured by :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland

FK 5 3NS

U.K.

and submitted for certification by :

DANIEL INDUSTRIES Ltd

Lochlands Industrial Estate Larbert
Stirlingshire Scotland

FK 5 3NS U.K.

) This electrical apparatus, and any acceptable variation thereto, is specified in the Schedule to this Certificate and in the documents therein referred to.

Be : EEx d II C T4 Sheet 1/4

Document can only be reproduced in its wholeness.

Institut National des Industries Extractives

Nationaal Instituut voor de Extractiebedrijven

C E R T I F I C A T E I N I E X

86.103.566 of 28.11.1986

(6) INIEX being an Approved Certification Body in accordance with Article 14 of the Council Directive 76/117/CEE of 1975-12-18 - confirms that the apparatus has been found to comply with the harmonised Standards :

EN 50014-1977 (NBN C23-001 ISSUE 1 sept. 1979)
EN 50018-1977 (NBN C23-103 ISSUE 3 sept. 1979)

and has successfully met the examination and test requirements prescribed by these standards and which are recorded in a confidential Test Report

7) The apparatus marking shall include the code :

EEx d II C T4

8) The supplier 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 Schedule 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 Directive 79/196/CEE of 1979-02-06. A fac-simile of this mark is printed on sheet 1 of the original certificate

Colfontaine, 28.11.1986

Pour la division de Colfontaine,

P. HOUGARDY J. BRACKE. E. POSSEMIERS

C E R T I F I C A T I N I E X 86.103.566 of 28.11.1986

SCHEDULE

1. Identification and connection of the apparatus.

1.1. Identification

Model 500 chromotograph

1.2. Connection of the apparatus

The connection of the apparatus is made by cable entries of a certified flameproof model EEx d II C
The unused threaded holes will be shutted by certified threaded plugs. These accessories will be screwed with at least 5 threads engaged and on a length of engaged threads of 8 mm at least. These accessories are not included in the present certificate and shall be suited with the conditions of use.

2. Descriptive documents.

2.1. The test report INIEX 86.d.566

2.2. The description (6 sheets) of 3.10.1985 revision 2 of 10.11.1986 showing the allowed variations.

2.3. The drawings

DUK 3253/003/1 ISSUE 6 of 10.11.1986 (sheet 1)
DUK 3253/003/1 ISSUE 5 of 10.11.1986 (sheet 2)
DUK 3253/007/2 ISSUE 3 of 19.09.1986
DUK 3253/009/2 ISSUE 3 of 19.09.1986
DUK 3253/015/3 ISSUE 3 of 04.11.1986
DUK 3253/020/1 ISSUE 5 of 11.11.1986
DUK 3253/021/1 ISSUE 4 of 11.11.1986

CODE : EEx d II C T4

DUK 3253/022/1 ISSUE 5 of 11.11.1986
DUK 3253/023/1 ISSUE 3 of 23.09.1986
DUK 3253/030/1 ISSUE 4 of 11.11.1986
DUK 3253/067/1 ISSUE 0 of 17.09.1986
DUK 3253/068/2 ISSUE 1 of 11.11.1986

3. Marking.

- The name of the manufacturer or his registered trade mark
- The manufacturer's type identification
- The code EExd II C T4
- The manufacturing number
- The indication INIEX followed by the reference to the present certificate
- The marking normally required by the standards of construction of the electrical apparatus
- The warnings
  "DO NOT OPEN WHILE ENERGISED"
  "WAIT 4 MINUTES BEFORE THE OPENING OF THE APPARATUS"
- The ambient temperature : 55° C max.

4. Routine test.

This apparatus is not submitted to the routine test.

Institut National des Industries Extractives

Nationaal Instituut voor de Extractiebedrijven

Original : FRENCH

VARIATION TO THE CERTIFICATE OF CONFORMITY

INIEX 86.103.566/1

Issued to DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland
FK 5 3 NS
U.K.

For Model 500 chromatograph

Subject of the variation
Optional use of solenoïd valves type EF 200 made by Helitech
and certified EEx d II C T6 by the certificate BASEEFA n° Ex 86 B1426 X
instead of solenoid valves made by ASCO n° NBFBB342B1 or NBFT XB 32057.

Descriptive documents
- The test report 86.d.566/1
- The drawings n°
  DUK 3253/010/1 Issue 2 of 08/12/1987 (2 sheets)
  DUK 3253/011/1 Issue 2 of 09/12/1987 (2 sheets)
- The certificate of conformity BASEEFA n° Ex 86 B1426 X of 03/02/1987

Marking : Unchanged

COLFONTAINE, 27/04/1988

Le Directeur de la division de Colfontaine.

P. HOUGARDY. J. BRACKE. F. POSSEMIERS.

CODE : EEx d II C T4

Institut National des Industries Extractives

Nationaal Instituut voor de Extractiebedrijven

C.C.avt.AN
Original : FRENCH

VARIATION TO THE CERTIFICATE OF CONFORMITY

INIEX 86.103.566/2.

Issued to DANIEL INDUSTRIES Ltd.
Lochlands Industrial Estate Larbert
Stirlingshire Scotland
FK 5 3NS

U.K.

For
Model 500 chromatograph.

Subject of the variation
One of the boxes making up the chromatograph may have the holes foreseen for the connection of the box as indicated on the drawing n°DUK 3253/020/1 issue 6.

Descriptive documents
The test report INIEX 86.d.566/2.
The drawing n° DUK 3253/020/1 issue 6 of 09/02/89.

Marking Unchanged.

COLFONTAINE, le 28/04/1989.

Le Directeur de la division de Colfontaine.

P. HOUGARDY.

Par délégation,
J. BOXHO,
Chef de section de recherches.

CODE : EExd II C T4

Sheet 1/1

Institut National des Industries Extractives

Nationaal Instituut voor de Extractiebedrijven

C.C.avt.AN
Original : FRENCH

VARIATION TO THE CERTIFICATE OF CONFORMITY

INIEX 86.103.566/3

Issued to DANIEL INDUSTRIES Ltd.
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

For Model 500 Chromatograph

Subject of the variation
See schedule.

Descriptive documents
The test report INIEX 86.d.566/3.
The drawings n°
DUK 3253/010/1 (sheets 1 et 2) Issue 3 of 02/02/89.
DUK 3253/020/1 (Sheet 1) Issue 7 of 27/02/89.
DUK 3253/022/1 (Sheet 1) Issue 6 of 27/02/89.

Marking Unchanged

COLFONTAINE, le 03/05/1989.

Le Directeur de la division de Colfontaine.

P. HOUGARDY.

Par délégation,
J. BOXHO,
Chef de section de recherches.

CODE : EEx d II C T4

VARIATION TO THE CERTIFICATE OF CONFORMITY
INIEX 86.103.566/3
of 03.05.1989.

SCHEDULE

The modifications made are :

1. The removal of one connecting cable and its cable glands between the "PRE-AMP/TEMPERATURE CONTROL/INTERFACE MODULE" housing and the "VALVE DRIVE/POWER SUPPLY/INTERFACE MODULE" housing.
   The flameproof houses are now built with one M32 threaded hole. The existing houses (with two M32 threaded holes) shall have a threaded hole shutted with a certified threaded plug fitted in accordance with the table 5 of EN50018.

2. The contents of the houses is changed slightly in order to give a better access to the terminals.

3. The assembly drawings have been rationalised in order to have only two drawings instead of four.
   However this doesn't bring modifications to the already certified material.

4. The mechanical part of the chromatograph may be changed in conditions that the flameproof parts are unchanged and that light alloy having more than 6 % Mg are not used.

Original : FRENCH

VARIATION N° 4 TO THE CERTIFICATE OF CONFORMITY

INIEX 86.103.566

This variation to the certificate is issued for the electrical material : Model 500 Chromatograph

Manufactured by : DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

and submitted for certification by :
DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

This electrical material, and any acceptable variations thereto, are specified in the schedule to this variation and in the documents therein referred to.

COLFONTAINE, 22.03.1991

Le Directeur de la division de Colfontaine,

P. HOUGARDY.

A. RENAUD,
Responsable du siège de Colfontaine.

CODE : EEx d II C T4

VARIATION N° 4 OF 22.03.1991 TO THE CERTIFICATE OF CONFORMITY
INIEX 86.103.566
of 28.11.1986

SCHEDULE

Apparatus : Model 500 Chromatograph

Subject of the variation :
- Optional use of the boxes types GUB 1 and GUB 4 made by J.C.E. certified by INIEX 89B.103.774 U
- Optional use of the solenoïds type JVA-115-055 made by ASCO certified by BAS Ex 821347X/2
- Optional use of the cables entries made by HAWKE certified by BAS Ex 85B1258U
- Correction of an erroneous dimension of the drawing DUK 3253/030/1 Sh 1 of 1

Descriptive documents :
The test report INIEX 86.d.566/4.
The drawings n°
DUK 3253/010/1 (sheets 1-2) issue 7 of 07.11.1990
DUK 3253/020/1 (sheet 1) issue 8 of 10.10.1990
DUK 3253/021/1 (sheet 1) issue 5 of 10.10.1990
DUK 3253/022/1 (sheet 1) issue 7 of 10.10.1990
DUK 3253/023/1 (sheet 1) issue 6 of 22.11.1990
DUK 3253/030/1 (sheet 1) issue 5 of 06.11.1990
The letter ref GC 566 variation 6 of 08.03.1991
The fax ref 5626 of 26.02.1991
The fax ref 5664 of 27.02.1991

Marking : Unchanged

Particular prescriptions :
The conditions indicated by the certificates BASEEFA BAS N° Ex 821347X and variations 1 and 2 - BAS N° Ex 85B1258U and variation 1 - BAS N° Ex 841234U are applicable.

Original : FRENCH

VARIATION N° 5 TO THE CERTIFICATE OF CONFORMITY

INIEX 86.103.566

This variation to the certificate is issued for the electrical material :

Model 500 Chromatograph.

Manufactured by : **DANIEL INDUSTRIES Ltd**
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

and submitted for certification by :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

This electrical material, and any acceptable variations thereto, are specified in the schedule to this variation and in the documents therein referred to.

COLFONTAINE, 05.08.1994

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II C T4

VARIATION N° 5 OF 05.08.1994 TO THE CERTIFICATE OF CONFORMITY INIEX 86.103.566 of 28.11.1986

SCHEDULE

Apparatus : Model 500 Chromatograph.

Subject of the variation :

Optional use of cable entries type ECMA made by LEGRAND ATX certified by LCIE 88.B6041X.

Descriptive documents :

The test report INIEX 86.d.566/5.
The fax ref. 1991 of 27.07.1994.

Marking : Unchanged.

Particular prescriptions : Unchanged - see variation 4.

Original : FRENCH

VARIATION N° 6 TO THE CERTIFICATE OF CONFORMITY

INERIS 96.100.566

This variation to the certificate is issued for the electrical material :

Model 500 Chromatograph.

Manufactured by : DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

and submitted for certification by :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

This electrical material, and any acceptable variations thereto, are specified in the schedule to this variation and in the documents therein referred to.

COLFONTAINE. 30.07.1996

Le Directeur du siège de Colfontaine.

D. HOUGARDY.

A. RENAUD.

CODE : EEx d II C T4

VARIATION N° 6 OF 30.07.1996 TO THE CERTIFICATE OF CONFORMITY
IMIEX 86.103.566
OF 28.11.1986

SCHEDULE

Apparatus : Model 500 Chromatograph.

Subject of the variation :

The breathers of the box GUB 1 are changed.

Descriptive documents :

The test report ISSeP 86.d.566/6.
The drawing n° DUK 3253/023/1 rev. 8 of 23.04.96.

Particular prescriptions :

Added to the existing conditions :

- the relative pressure existing in the breathers filled with an explosive gas shall be 50 mbar maximum,
- the pressure existing in the box shall be the atmospheric pressure.

CODE : EEx d II C T4

Institut National des Industries Extractives

Nationaal Instituut voor de Extractiebedrijven

AVENANT AU CERTIFICAT DE CONFORMITE

INIEX 86.103.566/1

Délivré à : DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland
FK 5 3 NS
U.K.

Pour : Chromatographe modèle 500

Objet de la modification :
Utilisation optionnelle de vannes, commandées par solénoïde, de fabrication Helitech, type EF 200 series 4 agréées EEx d II C T6 par le certificat BASEEFA n° Ex 86 B1426X au lieu de vannes, commandées par solénoïde, de fabrication ASCO n° NBFBB342B1 ou NBFT XB 32057.

Documents descriptifs :
- Le procès-verbal de vérifications et épreuves 86.d.566/1
- Les plans n°
  DUK 3253/010/1 Issue 2 du 08/12/1987 (2 sheets)
  DUK 3253/011/1 Issue 2 du 09/12/1987 (2 sheets)
- Le certificat de conformité BASEEFA n° Ex 86 B1426 X du 03/02/1987

Marquage : Inchangé

COLFONTAINE, 27/04/1988

Le Directeur de la division de Colfontaine.

P. HOUGARDY. J. BRACKE. F. POSSEMIERS.

CODE : EEx d II C T4 feuille 1/1

Institut National des Industries Extractives
Nationaal Instituut voor de Extractiebedrijven

C.C.avt

AVENANT AU CERTIFICAT DE CONFORMITE

INIEX 86.103.566/2.

Délivré à : DANIEL INDUSTRIES Ltd.
Lochlands Industrial Estate Larbert
Stirlingshire Scotland

FK 5 3NS
U.K.

Pour :

Chromatographe modèle 500.

Objet de la modification :

Un des boîtiers constituant le chromatographe peut avoir des trous prévus pour le raccordement du boîtier comme indiqué au plan n° DUK 3253/020/1 issue 6.

Documents descriptifs :

Le procès-verbal de vérifications et épreuves INIEX 86.d.566/2.
Le plan n° DUK 3253/020/1 issue 6 du 09/02/1989.

Marquage : Inchangé.

COLFONTAINE, le 28/04/1989.

Le Directeur de la division de Colfontaine.

R. HOUGARDY.

Par délégation,
J. BOXHO,
Chef de section de recherches.

CODE : EExd II C T4

feuille 1/1

Institut National des Industries Extractives
Nationaal Instituut voor de Extractiebedrijven

C.C.avt

AVENANT AU CERTIFICAT DE CONFORMITE

INIEX 86.103.566/3

Délivré à : DANIEL INDUSTRIES Ltd.
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

Pour : Chromatographe modèle 500.

Objet de la modification :

Voir annexe.

Documents descriptifs :
Le procès-verbal de vérifications et épreuves INIEX 86.d.566/3.
Les plans n°
DUK 3253/010/1(sheets 1 et 2) Issue 3 du 02/02/89.
DUK 3253/020/1 (sheet 1) Issue 7 du 27/02/89.
DUK 3253/022/1 (sheet 1) Issue 6 du 27/02/89.

Marquage : Inchangé.

COLFONTAINE, le 03/05/1989.

Le Directeur de la division de Colfontaine.

P. MOUGARDY.

Par délégation,
J. BOXHO,
Chef de section de recherches.

CODE : EEx d II C T4

AVENANT AU CERTIFICAT DE CONFORMITE
INIEX 86.103.566/3
du 03.05.1989.

ANNEXE

Les modifications apportées sont :

1. La suppression d'un câble de raccordement et de ses entrées de câble entre le compartiment "PRE-AMP/TEMPERATURE CONTROL/INTERFALE MODULE" et le compartiment "VALVE DRIVE/POWER SUPPLY/INTERFACE MODULE". Les enveloppes antidéflagrantes sont maintenant construites avec un seul trou taraudé M32. Les enveloppes existantes (avec deux trous taraudés M32) auront un trou taraudé obturé par un bouchon d'un type agréé, placé en conformité avec les prescriptions du tableau 5 de EN 50018.
2. Le contenu des enveloppes est modifié légèrement dans le but de procurer un meilleur accès aux borniers de raccordement.
3. Les plans d'ensemble ont été rationnalisés de façon à avoir uniquement deux plans au lieu de quatre. Toutefois, ceci n'introduit pas de modification vis-à-vis du matériel agréé.
4. La partie mécanique du chromatographe peut être modifiée pour autant que les parties antidéflagrantes ne soient pas modifiées et que des alliages légers ayant plus de 6 % de Mg ne soient pas utilisés.

AVENANT N° 4 AU CERTIFICAT DE CONFORMITE

INIEX 86.103.566

Le présent avenant est délivré pour le matériel électrique :
Chromatographe modèle 500.

Construit par : DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

et soumis à la certification par :
DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

Ce matériel électrique ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de cet avenant et dans les documents descriptifs cités dans cette annexe.

COLFONTAINE, le 22.03.1991

Le Directeur de la division de Colfontaine,

P. HOUGARDY.

A. RENAUD,
Responsable du siège de Colfontaine.

CODE : EEx d II C T4

AVENANT N° 4 DU 22.03.1991 AU CERTIFICAT DE CONFORMITE
INIEX 86.103.566
du 28.11.1986

ANNEXE

Matériel : Chromatographe modèle 500

Objet de la modification :
- Utilisation optionnelle des boîtiers types GUB1 et GUB4 de fabrication J.C.E. agréés par INIEX 89B.103.774 U
- Utilisation optionnelle des solénoïdes type JVA-115-055 de fabrication ASCO agréés par BAS Ex 821347X/2
- Utilisation optionnelle des entrées de câbles de fabrication HAWKE agréées par BAS Ex 85B1258U
- Correction du plan DUK 3253/030/1 SH 1 of 1 en ce qui concerne une cotation erronée

Documents descriptifs :
Le procès-verbal de vérifications et épreuves INIEX 86.d.566/4.
Les plans n°
DUK 3253/010/1 (feuilles 1-2) issue 7 du 07.11.1990
DUK 3253/020/1 (feuille 1) issue 8 du 10.10.1990
DUK 3253/021/1 (feuille 1) issue 5 du 10.10.1990
DUK 3253/022/1 (feuille 1) issue 7 du 10.10.1990
DUK 3253/023/1 (feuille 1) issue 6 du 22.11.1990
DUK 3253/030/1 (feuille 1) issue 5 du 06.11.1990
La lettre réf GC 566 variation 6 du 08.03.1991
Le fax réf 5626 du 26.02.1991
Le fax réf 5664 du 27.02.1991

Marquage : Inchangé

Conditions additionnelles :
Les conditions énoncées par les certificats BASEEFA BAS N° Ex 821347 X et avenants 1 et 2, BAS N° Ex 85B1258U et avenant 1, BAS N° Ex 841234U sont d'application.

AVENANT N° 5 AU CERTIFICAT DE CONFORMITE

INIEX 86.103.566

Le présent avenant est délivré pour le matériel électrique :

Chromatographe modèle 500.

Construit par : **DANIEL INDUSTRIES Ltd**
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

et soumis à la certification par :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

Ce matériel électrique ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de cet avenant et dans les documents descriptifs cités dans cette annexe.

COLFONTAINE, le 05.08.1994

Le Directeur du siège de Colfontaine,

P. HOUGARDY.

A. RENAUD.

CODE : EEx d II C T4 feuille 1/2

AVENANT N° 5 DU 05.08.1994 AU CERTIFICAT DE CONFORMITE
INIEX 86.103.566
du 28.11.1986

ANNEXE

Matériel : Chromatographe modèle 500.

Objet de la modification :

Utilisation optionnelle des entrées de câbles ECMA de fabrication LEGRAND ATX certifiées par LCIE 88.B6041X.

Documents descriptifs :

Le procès-verbal de vérifications et épreuves INIEX 86.d.566/5.
Le fax réf. 1991 du 27.07.1994.

Marquage : Inchangé.

Conditions additionnelles : Inchangées voir avenant n° 4.

X 28.02.97

. R & D
. Transposition industrielle
. Essais, expertises et analyses

Institut Scientifique de Service Public

ISSeP - Division de Colfontaine ✆ : 065/61 08 11 ✉ rue Grande, 60 - B-7340 Pâturages (Belgique)

FAX MESSAGE

FROM	TO
FIRM: ISSeP	FIRM:DANIEL INDUSTRIES
NAME:HOUGARDY	NAME:MR G. JONES
REF. :E	REF. :
FAX : + 32 65 61 08 08	FAX :00 44 1324564340

Subject: variations to INIEX 86.103.566 & ISSeP 93C.103.1123
Number of pages (including this one):3

27.02.97

Dear Sirs ,

Referring to your fax of the 26.02.97,we inform you as follows:
-INIEX 86.103.566: the variation was sent shortly (see annexed copy);
-ISSeP 93C.103.1123: the invoice is also regarding the pressure exemption for the boxes made in the new alloy
- new apparatus:the Standard applicable are still the first issue of 1977;the new edition are not yet applicable;I can not receive you the 10/3 ,not the Wednesday ,not the Thurday in the afternoon;please inform us of the expected date and the type of protection concerned.

Regards

INSTITUT NATIONAL DES INDUSTRIES EXTRACTIVES
Division de Pâturages

INIEX · NIEB
LE BON METIER DES HOUILLEURS XVIII

NATIONAAL INSTITUUT VOOR DE EXTRACTIEBEDRIJVEN
Afdeling Pâturages

7260 COLFONTAINE (Belgique)
60, rue Grande - Tél. (065) 672343 673149

N.R./69588/PH/M2688

26 JAN. 1987

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland
FK5 3NS
U.K.

Messieurs,

En réponse à votre lettre du 3.10.1985, réf. 6J/MMH, nous avons l'honneur de vous adresser, en annexe, le certificat de conformité INIEX 86.103.566.

Nous vous prions d'agréer, Messieurs, l'assurance de nos sentiments distingués.

Pour la division de Colfontaine,

F. POSSEMIERS.

Le Directeur,

G. VIATOUR.

L.DANa

72314/PH/gm-2900/MM 3148

Colfontaine, le 25 MAI 1988

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate
Larbert Stirlingshire
Scotland FK 5 3 NS

U.K.

Messieurs,

En réponse à votre lettre du 02/10/87 réf. GJ/EEO, nous avons l'honneur de vous adresser, en annexe, l'avenant au certificat de conformité INIEX **86.103.566/1.**

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

Pour la division de Colfontaine,

F. POSSEMIERS

Le Directeur,

G. VIATOUR.

Siège social :
rue du Chéra, 200
B-4000 Liège (Belgique)
Tél. 041/52.71.50
Telex 41128 INIEX B
Téléfax 041/52.46.65
C.C.P. 000-2009770-27

Division de Colfontaine :
rue Grande, 60
B- 7260 Colfontaine (Belgique)
Tél. 065/67.23.43
67.31.49
Téléfax: 065/66.09.53
Banque: 091-0015884-05

INIEX

73843 PH/na- MM 3486

Colfontaine, le 14 JUIN 1989

DANIEL INDUSTRIES Ltd.
Lochlands Industrial Estate
Larbert
Stirlingshire Scotland

FK 5 3NS
U.K.

Messieurs,

En réponse à votre lettre du 09/02/89 réf. Mr. GRAHAM JONES, nous avons l'honneur de vous adresser, en annexe, l'avenant n° 2 au certificat de conformité INIEX 86.103.566 pour l'appareil : Chromatographe modèle 500.

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

Pour la division de Colfontaine,

J. BOXHO,
Chef de section de recherches.

Siège social :
rue du Chéra 200
B-4000 Liège (Belgique)
Tél. 041/52.11.80
Télex 41128 INIEX B
Téléfax 041/52.46.65
C.C.P. 000-2009770-27

Division de Colfontaine :
rue Grande, 60
B- 7260 Colfontaine (Belgique)
Tél. : 065/67.23.43
67.31.49
Téléfax 065/66.09.53
Banque 091-0015884-05

R&D INIEX HIER

73844 PH/na- MM 3487

Colfontaine, le 14 JUIN 1989

DANIEL INDUSTRIES Ltd.
Lochlands Industrial Estate
Larbert.
Stirlingshire Scotland

FK 5 3NS
U.K.

Messieurs,

En réponse à votre lettre du 06/03/89 réf. Mr GRAHAM JONES, nous avons l'honneur de vous adresser, en annexe, l'avenant n° 3 du certificat de conformité INIEX 86.103.566 pour l'appareil : Chromatographe modèle 500.

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

Pour la division de Colfontaine,

J. BOXHO,
Chef de section de recherches.

Siège social :
rue du Chéra, 200
B-4000 Liège (Belgique)
Tél. 041/52.71.60
Télex. 41128 INIEX B
Téléfax: 041/52.46.65
C.C.P. 000-2009770-27

Division de Colfontaine :
rue Grande, 60
B- 7260 Colfontaine (Belgique)
Tél. 065/67.23.43
67.31.49
Téléfax: 065/66.09.53
Banque: 091-0015884-05

INIEX
ISSeP
Institut Scientifique de Service Public

- R&D et Démonstration
- Centre de transposition industrielle et de transfert technologique
- Laboratoire d'essais, d'expertises et d'analyses

76672/PH/gm-MM 3871

Colfontaine, le 03 JUIL. 1991

ANCIENNEMENT
INIEX - NIEB

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate

LARBERT STIRLINGSHIRE
SCOTLAND FK 5 3 NS
G.B.

Messieurs,

En réponse à votre lettre du 18.10.90, référence Mr GRAHAM JONES, nous avons l'honneur de vous adresser, en annexe, l'avenant n° 4 au certificat de conformité INIEX 86.103.566.

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

A. RENAUD,
Responsable du siège de Colfontaine.

Siège social et division de Liège: rue du Chéra, 200 - B-4000 Liège 1 (Belgique) tél.: 041/52.71.50
téléfax: 041/52.46.65 télex: 41128 INIEX B C.C.P. 000-2009770-27
Division de Colfontaine: rue Grande, 60 - B-7340 Pâturages (Belgique) tél.: 065/67.23.43 - 67.31.49
téléfax: 065/66.09.53 banque: 091-0015884-05

Institut Scientifique de Service Public

. Etablissement de Recherche et Développement
. Centre de transposition industrielle
. Laboratoires d'essais, d'expertises et d'analyses

81194 PH/gm - E 1052

Colfontaine, le 12 AOUT 1994

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate

LARBERT STIRLINGSHIRE
SCOTLAND FK 5 3 NS
G.B.

Att. Mr GRAHAM JONES

Messieurs,

En réponse à votre lettre du 08.02.94 référence ISSeP GCV.200, nous avons l'honneur de vous adresser, en annexe, **l'avenant n° 5 au certificat de conformité INIEX 86.103.566.**

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

A. RENAUD,
Directeur du siège de Colfontaine.

Siège social et siège de Liège: rue du Chéra, 200 - B-4000 Liège 1 (Belgique)
tél.: 041/52.71.50 téléfax: 041/52.46.65 Banque: 611-0010290-78
Siège de Colfontaine: rue Grande, 60 - B-7340 Pâturages (Belgique)
tél.: 065/61.08.11 téléfax: 065/61.08.08 Banque: 611-0010430-84

Institut Scientifique de Service Public

. Etablissement de Recherche et Développement
. Centre de Projets Industriels
. Laboratoires d'Essais, d'Expertises et d'Analyses

82960 PHOU/mc - E1494

Colfontaine, le 10 FEV. 1997

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate

LARBERT STIRLINGSHIRE
SCOTLAND FK 5 3 NS
G.B.

Messieurs,

En réponse à votre lettre du 22.12.1995 référence ISSeP Pgc5.APP, nous avons l'honneur de vous adresser, en annexe, **l'avenant n° 6 au certificat de conformité INIEX 86.103.566.**

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

A. RENAUD,
Directeur du siège de Colfontaine.

Siège social et siège de Liège: rue du Chéra, 200 - B-4000 Liège 1 (Belgique)
tél.: 041/52.71.50 téléfax: 041/52.46.65 Banque: 611-0010290-78
Siège de Colfontaine: rue Grande, 60 - B-7340 Pâturages (Belgique)
tél.: 065/61.08.11 téléfax: 065/61.08.08 Banque: 611-0010430-24

AVENANT N° 6 AU CERTIFICAT DE CONFORMITE

INIEX 86.103.566

Le présent avenant est délivré pour le matériel électrique :

Chromatographe modèle 500.

Construit par : **DANIEL INDUSTRIES Ltd**
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

et soumis à la certification par :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

Ce matériel électrique ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de cet avenant et dans les documents descriptifs cités dans cette annexe.

COLFONTAINE, le 30.07.1996

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II C T4 feuille 1/2

AVENANT N° 6 DU 30.07.1996 AU CERTIFICAT DE CONFORMITE
INIEX 86.103.566
du 28.11.1986

ANNEXE

Matériel : Chromatographe modèle 500.

Objet de la modification :

Les respirateurs du boîtier GUB 1 sont modifiés.

Documents descriptifs :

Le procès-verbal de vérifications et épreuves ISSeP 86.d.566/6.
Le plan n° DUK 3253/023/1 rev. 8 du 23.04.96.

Conditions additionnelles :

Ajoutées aux conditions existantes :

- la pression relative qui existe dans les respirateurs remplis d'un gaz explosif sera de 50 mbar maximum,
- la pression qui existe dans le boîtier sera la pression atmosphérique.

VARIATION N° 6 OF 30.07.1996 TO THE CERTIFICATE OF CONFORMITY
INIEX 86.103.566
of 28.11.1986

SCHEDULE

Apparatus : Model 500 Chromatograph.

Subject of the variation :

The breathers of the box GUB 1 are changed.

Descriptive documents :

The test report ISSeP 86.d.566/6.
The drawing n° DUK 3253/023/1 rev. 8 of 23.04.96.

Particular prescriptions :

Added to the existing conditions :

- the relative pressure existing in the breathers filled with an explosive gas shall be 50 mbar maximum,
- the pressure existing in the box shall be the atmospheric pressure.

Institut Scientifique de Service Public

. Etablissement de Recherche et de Développement
. Centre de Projets Industriels
. Laboratoires d'Essais, d'Expertises et d'Analyses

83539 PHOU/cb

Colfontaine, le 21.05.1997

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate
Larbert
Stirlingshire Scotland FK5
3NS
U.K.

To the attention of M. JOHN PHEE

Dear Sir,

Referring to you fax of the 13.05.97 you'll find annexed a new original of the variation 6 to the certificate INIEX 86.103.566.

Yours faithfully.

P. HOUGARDY

A. RENAUD,
Directeur du siège de Colfontaine.

Siège social et siège de Liège : rue du Chéra, 200 - B-4000 Liège 1 (Belgique)
tél. : 04/ 252 71 50 téléfax : 04/252 46 65 Banque : 611-0010290-78
Siège de Colfontaine : rue Grande, 60 - B-7340 Pâturages (Belgique)
tél. : 065/ 61 08 11 téléfax : 065/ 61 08 08 Banque : 611-0010430-24

AVENANT N° 6 AU CERTIFICAT DE CONFORMITE

INIEX 86.103.566

Le présent avenant est délivré pour le matériel électrique :

Chromatographe modèle 500.

Construit par : **DANIEL INDUSTRIES Ltd**
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

et soumis à la certification par :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

Ce matériel électrique ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de cet avenant et dans les documents descriptifs cités dans cette annexe.

COLFONTAINE, le 30.07.1996

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II C T4 feuille 1/2

AVENANT N° 6 DU 30.07.1996 AU CERTIFICAT DE CONFORMITE INIEX 86.103.566 du 28.11.1986

ANNEXE

Matériel : Chromatographe modèle 500.

Objet de la modification :

Les respirateurs du boîtier GUB 1 sont modifiés.

Documents descriptifs :

Le procès-verbal de vérifications et épreuves ISSeP 86.d.566/6.
Le plan n° DUK 3253/023/1 rev. 8 du 23.04.96.

Conditions additionnelles :

Ajoutées aux conditions existantes :

- la pression relative qui existe dans les respirateurs remplis d'un gaz explosif sera de 50 mbar maximum,
- la pression qui existe dans le boîtier sera la pression atmosphérique.

Original : FRENCH

VARIATION N° 6 TO THE CERTIFICATE OF CONFORMITY

INIEX 86.103.566

This variation to the certificate is issued for the electrical material :

Model 500 Chromatograph.

Manufactured by : **DANIEL INDUSTRIES Ltd**
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

and submitted for certification by :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

This electrical material, and any acceptable variations thereto, are specified in the schedule to this variation and in the documents therein referred to.

COLFONTAINE, 30.07.1996

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II C T4

VARIATION N° 6 OF 30.07.1996 TO THE CERTIFICATE OF CONFORMITY
INIEX 86.103.566
of 28.11.1986

SCHEDULE

Apparatus : Model 500 Chromatograph.

Subject of the variation :

The breathers of the box GUB 1 are changed.

Descriptive documents :

The test report ISSeP 86.d.566/6.
The drawing n° DUK 3253/023/1 rev. 8 of 23.04.96.

Particular prescriptions :

Added to the existing conditions :

- the relative pressure existing in the breathers filled with an explosive gas shall be 50 mbar maximum,
- the pressure existing in the box shall be the atmospheric pressure.

Original : FRENCH

VARIATION N° 6 TO THE CERTIFICATE OF CONFORMITY

INIEX 86.103.566

This variation to the certificate is issued for the electrical material :

Model 500 Chromatograph.

Manufactured by : **DANIEL INDUSTRIES Ltd**
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

and submitted for certification by :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

This electrical material, and any acceptable variations thereto, are specified in the schedule to this variation and in the documents therein referred to.

COLFONTAINE, 30.07.1996

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II C T4

Institut Scientifique de Service Public

. Etablissement de Recherche et de Développement
. Centre de Projets Industriels
. Laboratoires d'Essais, d'Expertises et d'Analyses

Colfontaine, le 23 SEP. 1997

83741 PHou/gm - E 1854

DANIEL EUROPE Ltd
Lochlands Industrial Estate
Larbert Stirlingshire
Scotland FK 5 3 NS
U.K.

Messieurs,

En réponse à votre lettre du 10.07.97 référence Mr John P. PHEE, nous avons l'honneur de vous adresser, en annexe, **l'avenant n° 7 au certificat de conformité INIEX 86.103.566.**

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

A. RENAUD,
Directeur du siège de Colfontaine.

Siège social et siège de Liège : rue du Chéra, 200 - B-4000 Liège 1 (Belgique)
tél. : 04/ 252 71 50 téléfax : 04/252 46 65 Banque : 611-0010290-78
Siège de Colfontaine : rue Grande, 60 - B-7340 Pâturages (Belgique)
tél. : 065/ 61 08 11 téléfax : 065/ 61 08 08 Banque : 611-0010430-24

AVENANT N° 7 AU CERTIFICAT DE CONFORMITE

INIEX 86.103.566

Le présent avenant est délivré pour le matériel électrique :

Chromatographe modèle 500.

Construit par : **DANIEL INDUSTRIES Ltd**
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

et soumis à la certification par :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

Ce matériel électrique ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de cet avenant et dans les documents descriptifs cités dans cette annexe.

COLFONTAINE, le 21.08.1997

Le Directeur du siège de Colfontaine,

P. HOUGARDY.

A. RENAUD.

CODE : EEx d II C T4

AVENANT N° 7 DU 21.08.1997 AU CERTIFICAT DE CONFORMITE
INIEX 86.103.566
du 28.11.1986

ANNEXE

Matériel : Chromatographe modèle 500.

Objet de la modification :

Utilisation optionnelle d'électrovannes certifiées par DEMKO N° 95D.115701.

Documents descriptifs :

Le procès-verbal de vérifications et épreuves ISSeP 86.d.566/7.
Le plan n° DUK 3253/010/1 rev. 8 du 23.06.97.

Marquage :

Le marquage spécifique aux électrovannes certifiées par DEMKO N° 95D.115701 reste d'application.

Conditions additionnelles : inchangées.

Original : FRENCH

VARIATION N° 7 TO THE CERTIFICATE OF CONFORMITY

INIEX 86.103.566

This variation to the certificate is issued for the electrical material :

Model 500 Chromatograph.

Manufactured by : **DANIEL INDUSTRIES Ltd**
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

and submitted for certification by :

DANIEL INDUSTRIES Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

This electrical material, and any acceptable variations thereto, are specified in the schedule to this variation and in the documents therein referred to.

COLFONTAINE, 21.08.1997

Le Directeur du siège de Colfontaine,

P. HOUGARDY.

A. RENAUD.

CODE : EEx d II C T4

VARIATION N° 7 OF 21.08.1997 TO THE CERTIFICATE OF CONFORMITY INIEX 86.103.566 of 28.11.1986

SCHEDULE

Apparatus : Model 500 Chromatograph.

Subject of the variation :

Optional use of solenoid operators certified by DEMKO N° 95D.115701.

Descriptive documents :

The test report ISSeP 86.d.566/7.
The drawing n° DUK 3253/010/1 rev. 8 of 23.06.97.

Marking :

The specific marking of the solenoid operators certified by DEMKO N° 95D.115701 remains applicable.

Particular prescriptions : unchanged.

Institut Scientifique de Service Public

. Etablissement de Recherche et de Développement
. Centre de Projets Industriels
. Laboratoires d'Essais, d'Expertises et d'Analyses

84070 PH/cb E 1965

Colfontaine, le 19 MAI 1998

DANIEL EUROPE Ltd
Lochlands Industrial Estate
Larbert Stirlingshire
Scotland FK 5 3 NS
G.B.

Messieurs,

En réponse à votre lettre du 22.01.98 référence John P. PHEE, nous avons l'honneur de vous adresser, en annexe, **l'avenant n°8 au certificat de conformité INIEX 86.103.566**

Nous vous prions d'agréer, Messieurs, nos sincères salutations.

A. RENAUD,
Directeur du siège de Colfontaine.

Siège social et siège de Liège : rue du Chéra, 200 - B-4000 Liège 1 (Belgique)
tél. : 04/ 252 71 50 téléfax : 04/252 46 65 Banque : 611-0010290-78
Siège de Colfontaine : rue Grande, 60 - B-7340 Pâturages (Belgique)
tél. : 065/ 61 08 11 téléfax : 065/ 61 08 08 Banque : 611-0010430-24

Institut Scientifique de Service Public

AVENANT N° 8 AU CERTIFICAT DE CONFORMITE

INIEX 86.103.566

Le présent avenant est délivré pour le matériel électrique :

Chromatographe modèle 500.

Construit par : **DANIEL EUROPE Ltd**
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

et soumis à la certification par :

DANIEL EUROPE Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

Ce matériel électrique ainsi que ses variantes éventuelles acceptées, sont décrits dans l'annexe de cet avenant et dans les documents descriptifs cités dans cette annexe.

COLFONTAINE, le 27.02.1998

Le Directeur du siège de Colfontaine,

P. HOUGARDY.

A. RENAUD.

CODE : EEx d II C T4

Institut Scientifique de Service Public

AVENANT N° 8 DU 27.02.1998 AU CERTIFICAT DE CONFORMITE
INIEX 86.103.566
du 28.11.1986

ANNEXE

Matériel : Chromatographe modèle 500.

Objet de la modification :

Utilisation optionnelle d'entrées de câbles certifiées par BASEEFA Ex 96D 1508 U et Ex 94C 1337 U.

Documents descriptifs :

Le procès-verbal de vérifications et épreuves ISSeP 86.d.566/8.
Le plan n° DUK 3253/010/1 édition. 9 du 21.01.98.
La lettre réf Mr JOHN P. PHEE du 23.02.98

Conditions additionnelles : inchangées.

Institut Scientifique de Service Public

Original : FRENCH

VARIATION N° 8 TO THE CERTIFICATE OF CONFORMITY

INIEX 86.103.566

This variation to the certificate is issued for the electrical material :

Model 500 Chromatograph.

Manufactured by : **DANIEL EUROPE Ltd**
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

and submitted for certification by :

DANIEL EUROPE Ltd
Lochlands Industrial Estate Larbert
Stirlingshire Scotland FK5 3NS
U.K.

This electrical material, and any acceptable variations thereto, are specified in the schedule to this variation and in the documents therein referred to.

COLFONTAINE, 27.02.1998

Le Directeur du siège de Colfontaine,

P. HOUGARDY. A. RENAUD.

CODE : EEx d II C T4

Institut Scientifique de Service Public

VARIATION N° 8 OF 27.02.1998 TO THE CERTIFICATE OF CONFORMITY INIEX 86.103.566 of 28.11.1986

SCHEDULE

Apparatus : Model 500 Chromatograph.

Subject of the variation :

Optional use of cable entries certified by BASEEFA N° Ex 96D 1508 U and Ex 94C 1337 U.

Descriptive documents :

The test report ISSeP 86.d.566/8.
The drawing n° DUK 3253/010/1 issue. 9 of 21.01.98.
The letter ref Mr John P. PHEE of 23.02.98

Particular prescriptions : unchanged.

KEMA
REGISTERED QUALITY

(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:

EEx 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

KEMA

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)	19.06.1997
	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)	

3. Samples

Arnhem, 6 November 1997
by order of the Board of Directors of N.V. KEMA

C.M. Boschloo
Certification Manager

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: Locked Bag 2032 Strathfield NSW 2135 Australia
Telephone (02) 9746 4900 Fax (02) 9746 8460

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 2380.6—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**

L. Hillman for

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

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:

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

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 Arrangemenet 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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No.: **Ex 2441X** Issue 0: **13 August 1999** **Original Issue**

Date of expiry: **13 August 2009**

Certificate Holder: **Govan Industries Pty. Ltd.**
156-160 Bamfield Road
WEST HEIDELBERG VIC 3081

Electrical Equipment: **EP and DP Ranges of Junction Boxes and Control Stations**

Type of Protection and Marking Code: **Ex e IIC T6 IP6*** **Class I Zone 1**
DIP IIC T6 IP6* **Class II**
(*Refer Table 1)
AUS Ex 2441X

Manufactured by: **Govan Industries Pty Ltd**

Issued by:

Engineering, Testing and Certification Centre
2 Smith Street, REDBANK, QLD 4301, Australia
Postal Address: PO Box 467, GOODNA, QLD 4300, Australia
Phone: (07) 3810 6381 *Fax: +617 3810 6366*

Quality System Certified to AS/NZS ISO 9001 Certification No 6039

STANDARDS AUSTRALIA

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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Certificate of Conformity

Certificate No: AUS Ex 2085

Issue: 0 **Original Issue:** 8 June 1995
Issue: 1 **Date of Issue:** 5 August 2004

Date of Expiry: 8 June 2005

Certificate Holder: **CSE.Ex Pty Ltd**
122 Canterbury Road
Padstow NSW 2211

Electrical Equipment: FJBO Ex d Junction Boxes

Trade Names: CSE.Ex; CSE; Stahl; R Stahl or Pierlite

Type of Protection and Marking Code: Ex d IIB T6 IP66 Class I Zone 1 (Aluminium
Ex d I/IIB T6 IP66 Class I Zone 1 (Cast Iron, Gunmetal)
AUS Ex 2085

Manufactured By: CSE.Ex Pty Ltd

Issued by:

ITACS

International Testing and Certification Services Pty. Ltd. (ABN 60 098 886 563)
4– 6 Second Street, Bowden, South Australia, 5007 Australia
Phone: (08) 8346 8680 *Fax: (08) 8346 7072* *Intl. Fax: +61 8 8346 7072* www.itacslab.com

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Certificate No: AUS Ex 2085 **Issue:** 1 **Date of Issue:** 5 August 2004

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP 69 and the Procedures 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 (Including Amdt No 1 - July 1992)	**Electrical equipment for explosive atmospheres - Explosion-protection techniques - Part 2 : Flameproof enclosure d**
AS 1939 - 1990	**Degrees of protection provided by enclosures for 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.: NE95/0030
File Reference: 30/001/0265 (P80137)

Signed for and on behalf of issuing authority

Position General Manager

Date of issue 5 August 2004

Issued by:

ITACS

International Testing and Certification Services Pty. Ltd. (ABN 60 098 886 563)
4– 6 Second Street, Bowden, South Australia, 5007 Australia
Phone: (08) 8346 8680 Fax: (08) 8346 7072 Intl. Fax: +61 8 8346 7072 www.itacslab.com

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Schedule

Certificate No: AUS Ex 2085 **Issue:** 1 **Date of Issue:** 5 August 2004

Certified Equipment:

The Clipsal/Wilco FJBO Series flameproof junction box is of cast construction and manufactured from either cast iron, gunmetal for Group I application or aluminium, cast iron, gunmetal for Group II A & B applications. The base and lid are fastened together with four socket headed retaining bolts.

The junction box is capable of having heat generating components up to a maximum of 10 watts.

The base has four cable gland entries maximum size M25 for cable access.

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

Drawings:

DRAWING NO.	DRAWING TITLE	REVISION	DRAWN/REVISION DATE
W-567	CERTIFICATION DRAWING GENERAL ARRANGEMENT FJBO Ex d JUNCTION BOX	A	5.6.95
W-568	CERTIFICATION DRAWING FJBO Ex d JUNCTION BOX BACK BOX	A	5.6.95
W-569	CERTIFICATION DRAWING FJBO Ex d JUNCTION BOX COVER	A	5.6.95

Variations to Issue 0 (included in issue 1):

1. Change of Certificate holder, Manufacturer's name and alternative trade names introduced. There was no modification of a technical nature or to the specification of the product.

Issued by:

ITACS

International Testing and Certification Services Pty. Ltd. (ABN 60 098 886 563)
4– 6 Second Street, Bowden, South Australia, 5007 Australia
Phone: (08) 8346 8680 Fax: (08) 8346 7072 Intl. Fax: +61 8 8346 7072 www.itacslab.com

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

STANDARDS ASSOCIATION OF AUSTRALIA

INCORPORATED BY ROYAL CHARTER

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

CERTIFICATE FOR FLAMEPROOF ENCLOSURE

No. EEP 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 C001~~ AS 3000 Parts I and II.

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

GROUPING AND CLASSIFICATION:

Ex d IIB T6

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. Fa2
1 - KLOCKNER-MOELLER Switch - Cat. No. K-Na

Cat. No. FC4 B202-WP

1 - KRAUS AND NAIMER Switch - Cat. No. C31

NOTE
THIS CERT
SUPERSEDED BY
EX. 610
DMcKay.

G. I. Reid
for Chairman of Committee EL/29

W. J. Stewart
Director, Standards Association of Australia

EL/29

Date: 1977.08.25

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 FC4 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 FC4C202-WP to include for Kraus & Naimer C31 A202 Style Switch 32 AMP rating
2. FC4A202-WP - Single Switch Unit (16 AMP)
3. FC4F-WP - Single Switch (as above) and one Pilot Light
4. FC4G-WP - As above but 2 Pilot Lights
5. FC4D-WP - Single Switch Unit and one Push Button
6. FC4E-WP - As above but 2 Push Buttons
7. FC4I-WP - Single Push Button
8. FC4J-WP - Twin Push Button
9. FC4K-WP - Triple Push Button
10. FC4-L-WP - Single Push Button & Pilot Light
11. FC4-M-WP - Twin Push Button & Pilot Light
12. FC4-N-WP - Single Push Button & 2 Pilot Lights
13. FC4-O-WP - Single Pilot Light
14. FC4-P-WP - Twin Pilot Light
15. FC4-R-WP - Triple Pilot Light
16. FC4 enclosure to be fitted with a Robertshaw temperature con[illegible] Cat. No. FC4-TC Flameproof only 20AMP 240 Volt rating Rob[illegible] EA5 series Drg. No. 2249.

Chairman of Committee EL/29

Director, Standards Association

EL/29 77807

Date: 78.10.05
S/LF:DMcC/1978-11-17

AUSEx_1039

Price: $27.50 (incl 10 % GST)

Certificate #:	AUSEx_1039	**Issue Date:**	4/05/1993
Issue #:	2	**Expiry Date:**	14/02/2000
		Status:	EXPIRED

Certificate Holder:	Gerard Industries Pty Ltd
Address:	12 Park Terrace Bowden Adelaide South Australia 5007 Australia
Manufacturer:	Wilco Electrical Pty Ltd
Product Description:	Type FS Series | Flameproof Switches
Equipment Category:	Switches
Protection Type:	d
Gas Group:	I IIB
Marking Group:	
IP Rating:	IP 65
Test Report #:	LOSC4396 **Issued by:** Quality Assurance Services
Standards:	AS 2480-1986 AS 1939-1986
Notes:	N/A

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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.

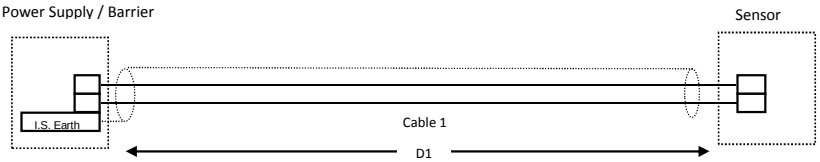
Intrinsically Safe Barrier Assessment Sheet

Document No:		**Prepared By:**	
Site:		**Checked:**	
Loop Description:		**QA:**	
		Approved:	
Loop Drawing Number:		**Date:**	

Hazardous Area:

H. A. Report:		**Area Class:**	
H. A. Drawing No.:		**Gas Group:**	
		Temperature Class:	

Cable Screens shall be connected to intrinsically safe earth at the Intrinsically Safe Barrier end.



I.S. Device details (Hazardous Area) [Note 2]

Tag:		**Max Voltage Um:**		V
Type of instrument:		**O/C Voltage Uo:**		V
Manufacturer:		**S/C Current Io:**		mA
Model Number:		**Power Po:**		mW
Serial No:		**Allowable Cap. Co:**		uF
Certificate Number:		**Allowable Ind. Lo:**		mH
Certifying Authority:		**L/Ro:**		uH/Ohm
Protection Type:				

Cables:

Cable 1:			**Cable 2:**			**Total Cable:**		
Tag:			**Tag:**					
Capacitance:		uF/m	**Capacitance:**		uF/m	**Capacitance:**		uF
Inductance:		mH/m	**Inductance:**		mH/m	**Inductance:**		mH
L/R_C:		mH/Ohm	**L/R_C:**		mH/Ohm	**Max L/Rc**		mH/Ohm
Length(D1):		m	**Length(D2):**		m			

I.S. Apparatus Parameters (Hazardous Area):

Tag:		**O/C Voltage Ui:**		V
Type of instrument:		**S/C Current Ii:**		mA
Manufacturer:		**Power Pi:**		mW
Model Number:		**Capacitance Ci:**		uF
Serial No:		**Inductance Li:**		mH
Certificate Number:				
Certifying Authority:				
Protection Type:				

Checks:

			PASS/FAIL/NA
1	Uo <= Ui	<=	
2	Io <= Ii	<=	
3	Po <= Pi	<=	
4	$Ci+C_{Cable}$ <= Co	<=	
6	$Li+L_{Cable}$ <= Lo	<=	
	OR		
7	L/R_{Cable} < 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 LSLL 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) $C_i + C_{cable} < C_o$; and
(b) either $L_i + L_{cable} < L_o$, or $L/R_{cable} < L/R$.

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 μF/km.
(b) L = 0.8 mH/km.
(c) L/R = 56 μH/Ω.

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

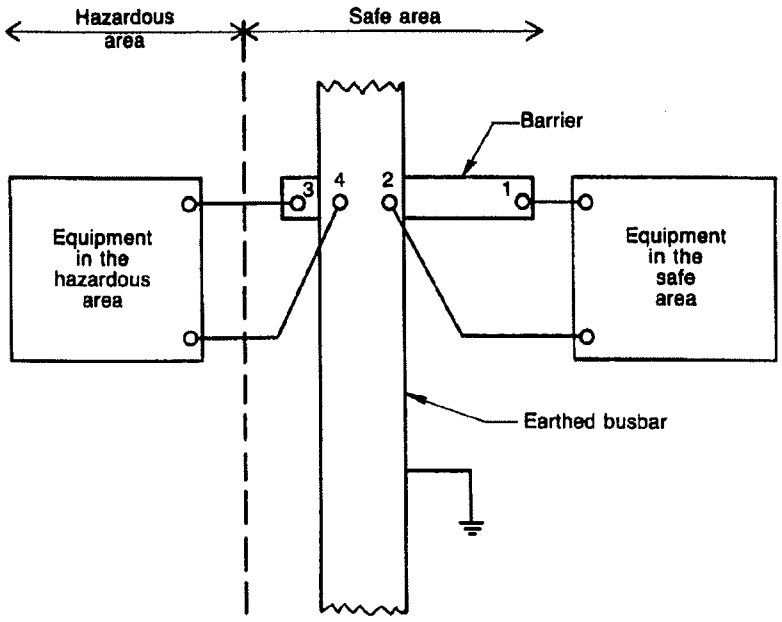
EXTERNAL PARAMETERS
MAXIMUM VALUES FOR GROUP IIC (HYDROGEN)*

Barrier type	Permissible configuration	Max. permissible capacitance μF	Max. permissible inductance mH	Max. permissible *L/R* ratio μH/Ω
27 V 270 Ω	Figure A1	0.15	3.7	55
22 V 150 Ω	Figure A1	0.2	1.5	40
15 V 100 Ω	Figure A1	0.8	1.5	60
	Figure A2	0.8	1.5	60
10 V 47 Ω	Figure A1	3.0	1.0	80
	Figure A2	3.0	1.0	80
	Figure A3	0.2	1.0	40
47 V 10 Ω	Figure A1	>1 000	0.16	100
	Figure A2	>1 000	0.16	100
	Figure A3	3.0	0.16	50
1 V 2 Ω	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:

$$L/R \text{ ratio} = \frac{\text{Inductance per unit length } (\mu H)}{\text{Resistance per unit length } (\Omega)}$$



NOTE: Barrier can be either positive or negative.

FIGURE A1 INSTALLATION CONFIGURATION 2-WIRE SYSTEM WITH SINGLE BARRIER

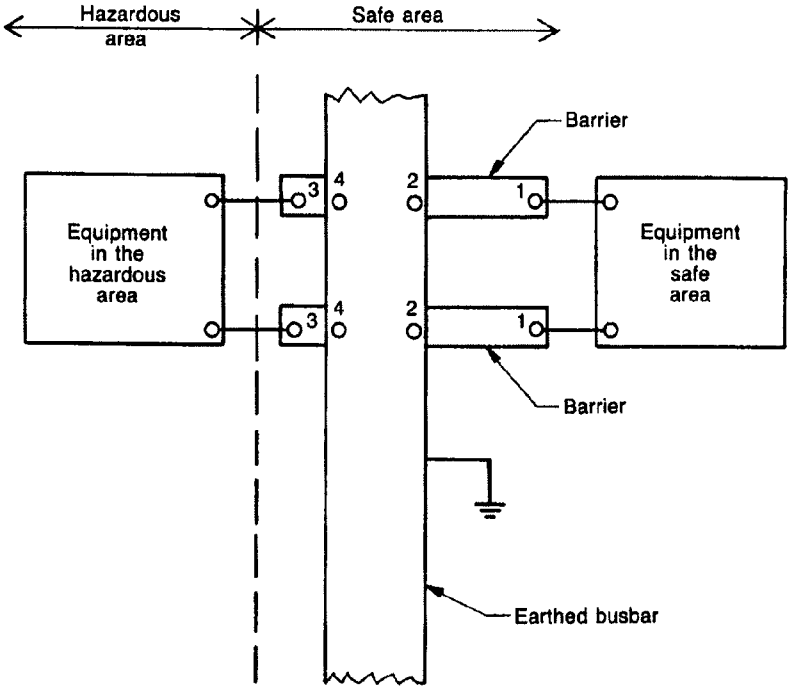


FIGURE A2 INSTALLATION CONFIGURATION 2-WIRE SYSTEM WITH TWO BARRIERS OF LIKE POLARITY

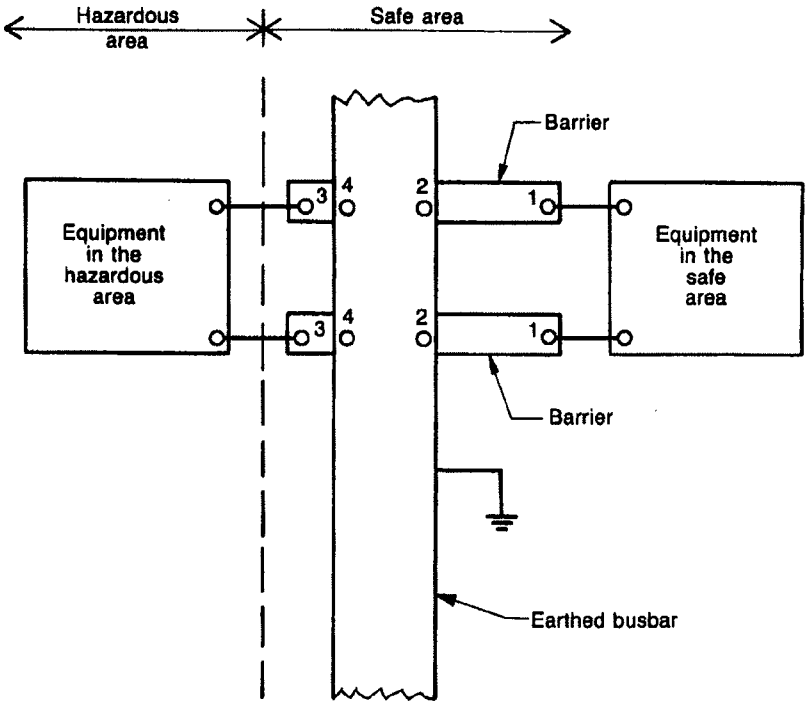


FIGURE A3 INSTALLATION CONFIGURATION 2-WIRE SYSTEM WITH TWO BARRIERS OF OPPOSITE POLARITY

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^2)		7/0.5 mm (1.5 mm^2)	
Screening	**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^2)	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:

Dissipation per terminal: $P = I^2[R_t + L \times R_c]$ . . . . E(1)

$P = I^2[R_t + R_d]$ . . . . E(2)

where

P = power dissipation, in watts

I = current through terminal (max. allowable or limited by cable size)

R_t = internal resistance of terminal, in ohms

R_c = 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_d = 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:

$MDP = aP_1 + bP_2 + cP_3 \ldots + zP_n$ . . . . E(3)

where

aP_1; bP_2; cP_3, ... zP_n 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^2 cable = 0.092 W

P_2 12 amps 1.0 mm^2 cable = 0.763 W

P_3 15 amps 2.5 mm^2 cable = 0.530 W

B. ***P* (TBK16) for**

P_4 47 amps 16 mm^2 cable = 0.790 W

Maximum number of allowable terminals:

$$P_1 \text{ only} = \frac{15.0}{0.092} = 163; \quad \textit{or}$$

$$P_2 \text{ only} = \frac{15.0}{0.763} = 19; \quad \textit{or}$$

$$P_3 \text{ only} = \frac{15.0}{0.530} = 28; \quad \textit{or}$$

$$P_4 \text{ only} = \frac{47.0}{0.790} = 59;$$

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—

$5.52 + 4.578 + 1.590 + 2.37 =$ **14.058 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^2	Enclosure types No. 1 No. 2 No. 3 No. 4 No. 5
0.5	
1.0	
2.5	$\frac{ohms/1000\ m \times L}{1000}$
4.0	
6.0	
10.0	
16.0	
25.0	
35.0	
50.0	where L is in metres
70.0	
95.0	

TABLE C2

TERMINAL/COMPONENT RESISTANCE (R_t)

Component type	Average resistance (ohms)
TBK 2.5 TBK 4 TBK 6 TBK 10 TBK ... *n*	Determined by test

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^2	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
			Enclosure Total =	14.058

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.

FYFE
Earth Partners
ENVIRONMENT
DEVELOPMENT
RESOURCES

MAINTENANCE REGISTER

Site:

APA Group

DATE	DESCRIPTION	ASSOCIATED TAGS	DOSSIER UPDATE AS REQUIRED (YES / NO / NA)								
			P&ID	DATASHEET	HA EQUIPMENT REGISTER	CERTIFICATE OF CONFORMITY	INSTALLATION CHECK LIST	REPAIR & EXAMINATION REPORT	HA CLASSIFICATION	HA DRAWING	REMARKS

MAINTENANCE REGISTER

Site:

DATE	DESCRIPTION	ASSOCIATED TAGS	DOSSIER UPDATE AS REQUIRED (YES / NO / NA)								
			P&ID	DATASHEET	HA EQUIPMENT REGISTER	CERTIFICATE OF CONFORMITY	INSTALLATION CHECK LIST	REPAIR & EXAMINATION REPORT	HA CLASSIFICATION	HA DRAWING	REMARKS

FYFE Earth Partners
ENVIRONMENT DEVELOPMENT RESOURCES

MAINTENANCE REGISTER

Site:

APA Group

DATE	DESCRIPTION	ASSOCIATED TAGS	DOSSIER UPDATE AS REQUIRED (YES / NO / NA)								
			P&ID	DATASHEET	HA EQUIPMENT REGISTER	CERTIFICATE OF CONFORMITY	INSTALLATION CHECK LIST	REPAIR & EXAMINATION REPORT	HA CLASSIFICATION	HA DRAWING	REMARKS

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 3 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.

SITZLER
ABN 17 091 273 013
SITZLER Pty Ltd
Construction and Civil Contractors,
Project Managers and Developers

Ref: I:\data\sitzler\contracts\darwin\sbsj12\fyf1 fyfe pty ltd hazardous areas reporting award 28.07.11\fyf1 fyfe southern end pipeline\reports\palm valley meter station\electrical equipment for hazardous area summary report - palm valley 29.08.11.doc

29 August 2011

FYFE PTY LTD
Level 3, 80 Flinders St
Adelaide SA 5000

Attention: Tony Bird

Dear Tony,

RE: AMADEUS PIPELINE – PALM VALLEY METER STATION

HAZARDOUS AREA ELECTRICAL INSPECTION REPORTING

Please find attached hazardous area device inspection sheets for the above site as part of the visual grade of inspection reporting completed on August 3rd 2011. In addition we also provide a copy of FYFE's instrument index 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, the installed equipment was of intrinsically safe to Australian standards and 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 and where long term ultraviolet damage has occurred.
3. Re-tensioning of cable entry gland at instrument compromising the ingress protection and/or explosion protection rating of the equipment.
4. Conduit sealing (compound barrier) between flameproof equipment to mitigate the effects of pressure-piling.
5. Replacement of inappropriately certified blanking plugs/adaptors on equipment.
6. Replace flameproof equipment where evidence of unauthorised equipment modifications have occurred.
7. Segregation of installed I.S. cabling from low voltage power cabling.
8. Replacement of equipment impending failure due to the age and poor condition.
9. 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 a nominal design life of 30 years. Where nil evidence of hazardous area certification existing it is recommended that replacement of this equipment be made and certified to Australian standards extending the lifecycle of the installation. For example, the replacement of solenoid SLV-17 associated with the station limit valve. 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 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

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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

0845
0844

General

Device ID or tag:	MOISTURE ANALYSER ~~SOLENOID~~ Regulator	Asset:	
Circuit ID:	?	Physical location:	PALM VALLEY
Area classification :	?	Environment: (hot?)	EXTERNAL

Data from Label

Apparatus type: (light, JB, Motor)	JB	Type of protection: (d,e, i, n, p etc)	d.
Manufacturer:	CROUSE HINDS	Gas group: (IIA/B/C)	CL I GR ABCD CL II GR E F & G
Full model number:	010 S 235 TYPE EAB	Temp class: (T1-T6)	?
Serial number:	?	Certificate number:	? 986 / C22.2 No 30
IP Class		Test authority: (BAS, PTB, SAA etc)	UL / CSA

Number of cables:	1

For each cable entry	gland 1	gland 2	others BUNG
Gland manufacturer:	COUPLED TO SOLENOID	ALCO	NOT CLASSIFIED
Model:	–	FLP W 204	NO 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	⊗	
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	⊗	BUNG
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	⊗	- Loose
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 documentatio0n	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 D. Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Nil hazardous area certification to Australian standards hence conformity assessment required.
- Replace uncertified conduit bung.
- Equipment ID required.

Reviewed by: N. Lukeman
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

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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

0845

General

Device ID or tag:	MOISTURE ANALYSER ~~SOLENOID~~	Asset:	
Circuit ID:	Vapour. Reg Regulator	Physical location:	PALM VALLEY
Area classification :		Environment: (hot?)	EXTERNAL - SHELTER

Data from Label

Apparatus type: (light, JB, Motor)	~~SOLENOID~~ Regulator	Type of protection: (d,e, i, n, p etc)	Exd IIC T3
Manufacturer:	GO	Gas group: (IIA/B/C)	CL1 DIV 1 GP ABC & D
Full model number:	HPR2 ELECTRIC	Temp class: (T1-T6)	T3
Serial number:	?	Certificate number:	Ex 96D 1862
IP Class	?	Test authority: (BAS, PTB, SAA etc)	KEMA (Ex)

Number of cables:	1

For each cable entry	gland 1	gland 2	others ADAPTER
Gland manufacturer:	COUPLED		?
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	⊗
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	⊗ - NO EARTH
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	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 documentatio0n	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	Ø
2	No undue accumulation of dust or dirt	all	X	Ø
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required

Contractor (write): Inspector D.Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Conformity assessment to Australian standards required.
- Equipment ID required.

Reviewed by: N. 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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

0847
0846

General

Device ID or tag:	HEAT TRACE	Asset:	
Circuit ID:	?	Physical location:	PALM VALLEY
Area classification :	?	Environment: (hot?)	EXTERNAL SHELTER

Data from Label

Apparatus type: (light, JB, Motor)	JB	Type of protection: (d,e, i, n, p etc)	e
Manufacturer:	WEIDMULLER / KLIPPON	Gas group: (IIA/B/C)	IIC
Full model number:	K4	Temp class: (T1-T6)	T6
Serial number:	571	Certificate number:	AUS Ex 614X
IP Class	IP 66 / 67	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	2

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	ALCO	NO INFO	
Model:	FLPW 204		
Gland type of protection: (d,e)			

Inspection → Circle as checked

		Applicable to protection type:	Internal	External
	A Equipment			
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	⊗ – EARTH NOT USED
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 documentatio0n	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 D WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Cable and equipment ID required.
- Verify Ex rating of gland 2 on site.

Reviewed by: N. 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

SITZLER

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Specifications

0857
0856

General

Device ID or tag:	—	Asset:	
Circuit ID:	—	Physical location:	PATA VALLEY
Area classification :		Environment: (hot?)	EXTERNAL – COVERED

Data from Label

Apparatus type: (light, JB, Motor)	JB - HEATTRACE	Type of protection: (d,e, i, n, p etc)	e
Manufacturer:	GOUAN	Gas group: (IIA/B/C)	IIC
Full model number:	EP1511	Temp class: (T1-T6)	T6
Serial number:	—	Certificate number:	2441X
IP Class	66	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	2

For each cable entry	gland 1	gland 2	others BLANK.
Gland manufacturer:	ALCOA	KOPEX	GOUAN
Model:	FLPW 205	HAN 0505	M25
Gland type of protection: (d,e)		Exe II	e IIC IP66 AUS Ex 2476U

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	(X)	
2	Equipment ID or circuit ID is correct	all	X	(X)	NO ID
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)	NO VIS.
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	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 documentatio0n	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): Inspector D WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment and cable ID required.
-

Reviewed by: N. 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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

0834

General

Device ID or tag:	—	Asset:	
Circuit ID:	P005	Physical location:	DALM VALLEY
Area classification :		Environment: (hot?)	EXTERNAL - COVERED

Data from Label

Apparatus type: (light, JB, Motor)	JD - LIGHTING.	Type of protection: (d,e, i, n, p etc)	d
Manufacturer:	CLIMAX STAHL	Gas group: (IIA/B/C)	IIB
Full model number:	FJ80A/203	Temp class: (T1-T6)	T6
Serial number:	—	Certificate number:	AUS Ex 2085.
IP Class	— IP66	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	3

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	?	?	?
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	⊗
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	⊗ - LOOSE
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	⊗ - NO EARTH
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 documentatio0n	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 D. WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 2/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment ID required
- Cable gland required tightening.

Reviewed by: N. 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

SITZLER

Based on AS/NZS 60079 part 17

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0843
0842

Specifications

General

Device ID or tag:		Asset:	
Circuit ID:	D0085	Physical location:	PALM VALLEY
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)	Ex d
Manufacturer:	GOVAN	Gas group: (IIA/B/C)	IIB
Full model number:		Temp class: (T1-T6)	T6
Serial number:		Certificate number:	FLP 771 DIP 63
IP Class	65	Test authority: (BAS, PTB, SAA etc)	-

Number of cables:	3

For each cable entry	3X gland 1	gland 2	3X others ADAPTORS
Gland manufacturer:	?		NO CERT. ?
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	⊗
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	⊗ - NOT EXTERNAL
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	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 documentatio0n	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): Inspector D. Williams	**Supervisor**	**Client (write): Inspector**
Date: 3/8/11		**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment ID required.
- Replace uncertified adaptors and verify cable gland certification.
- J Box appears to have been modified w/ model number had been covered via lockout mechanism, further investigation required.

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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

0848

General

Device ID or tag:	240v JB	Asset:	
Circuit ID:	P007	Physical location:	PALM VALLEY
Area classification :		Environment: (hot?)	EXTERNAL SHELTER

Data from Label

Apparatus type: (light, JB, Motor)	~~GOVAN~~ JB	Type of protection: (d,e, i, n, p etc)	Exd
Manufacturer:	GOVAN	Gas group: (IIA/B/C)	IIB
Full model number:	604 FCS	Temp class: (T1-T6)	T6
Serial number:		Certificate number:	238 FLP771
IP Class	IP 65	Test authority: (BAS, PTB, SAA etc)	AUS EX

Number of cables:	4

For each cable entry	gland 1	gland 2	others	
Gland manufacturer:	~~CANDY~~ READALCO	NOT ACCESSIBLE	ALCO	ALCO
Model:	FLPW 2044		FLPW2044	FLPW 2044
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	⊗
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	⊗ — LOOSE
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	⊗ — EARTH NOT VIS.
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 documentatio0n	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 D.Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment ID required
- Verify 1x gland is Ex rated (flameproof).
- Tighten loose gland connections.

Reviewed by: N. 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

SITZLER

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0581
0850
0849

Specifications

General

Device ID or tag:	MA	Asset:	RALM VALLEY
Circuit ID:	J020A / J020	Physical location:	EXTERNAL / SHELTER
Area classification :		Environment: (hot?)	AMBIENT

Data from Label

Apparatus type: (light, JB, Motor)	ANALYSER	Type of protection: (d,e, i, n, p etc)	EExd
Manufacturer:	AMETEK	Gas group: (IIA/B/C)	CLASS A GRP I IIC
Full model number:	3050 OLV	Temp class: (T1-T6)	T6
Serial number:	305A 836	Certificate number:	LCIE 01 ATEX 6007X CE 0081 (Ex) II 2G
IP Class	?	Test authority: (BAS, PTB, SAA etc)	LCIE

Number of cables:	3

2x ADAPTOR NO CERTS

For each cable entry	gland 1	gland 2	others 3x PROCESS
Gland manufacturer:	ACCO	ACCO	TRUNG
Model:	FLNP 204	FLNP 204	
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	⊗
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	⊗ NO EARTH
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 documentatio0n	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 D. Williams **Supervisor** **Date:** 3/8/14	**Client (write): Inspector** **Date:**

Device ID or tag

Action required to make device compliant:

- Conformity assessment to Australian Standards required.

Reviewed by: R.GREEN
Date: 24/8/14
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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

0853
0852

General

Device ID or tag:	SWITCH 240	Asset:	PALM VALLEY
Circuit ID:	P005 ?	Physical location:	OUT DOOR / SHELTER
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	SWITCH	Type of protection: (d,e, i, n, p etc)	DIV 1-2
Manufacturer:	WILCO	Gas group: (IIA/B/C)	CLASS 1 GRP 1, 2, 3A
Full model number:	GA SES	Temp class: (T1-T6)	?
Serial number:	?	Certificate number:	?
IP Class	?	Test authority: (BAS, PTB, SAA etc)	?

Number of cables:	2

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	NOT ACCESS	NOT ACCESS	
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	⊗
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	⊗ – EARTH NOT VISABLE
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	⊗ 17mm
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 documentatio0n	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): Inspector D. WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment ID label required
- Further verification of glands required to ensure Ex compliance.

Reviewed by: N. GREEN
Date: 20/8/11
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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

0859
0858.

General

Device ID or tag:	MA 001	Asset:	
Circuit ID:	J021	Physical location:	PALM VALLEY
Area classification :	2	Environment: (hot?)	EXTERNAL

Data from Label

Apparatus type: (light, JB, Motor)	240V ISOLATION SWT	Type of protection: (d,e, i, n, p etc)	Ex d
Manufacturer:	WILCO	Gas group: (IIA/B/C)	I / IIB
Full model number:	FS 110 - C I	Temp class: (T1-T6)	T6
Serial number:	—	Certificate number:	AUS Ex 1039
IP Class	✓	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	2

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	ALCO	ALCO	-
Model:	FLPW20S	FLPW 20	-
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	Ø
2	Equipment ID or circuit ID is correct	all	X	Ø
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	Ø
4	There are no damage or evidence of unauthorised modifications	all	X	Ø
5	Bolts, cable entries and blanking elements are correct and tight	all	X	X – LOOSE
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	Ø
2	Sealing of ducts and/or conduits is satisfactory	all	X	Ø
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	Ø – NO UIS
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	Ø
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 documentatio0n	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): Inspector D. Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Tighten loose cable gland connections.
- Note: Adjacent "light blue" sheath cabling noted in close proximity to LV power cabling. Segregation considerations & recommend remediation works.

Reviewed by: N. LAREN
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

SITZLER

Based on AS/NZS 60079 part 17

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0808 0809 0807 0806

Specifications

General

Device ID or tag:	PDISH-24	Asset:	Meter Run #2 Filter Sep.
Circuit ID:	J010	Physical location:	PUL M/S
Area classification :	TBA	Environment: (hot?)	EXTERNAL ONSHORE COLD

Data from Label

Apparatus type: (light, JB, Motor)	PRESS TX	Type of protection: (d,e, i, n, p etc)	EXIAND
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	IIC
Full model number:	3051 | 3001	Temp class: (T1-T6)	T4
Serial number:	RS0872669	Certificate number:	AUSEX 1347X / 1249X
IP Class	-	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	~~gland 2~~ BUNA	others ADAPTOR ~~BUNA~~
Gland manufacturer:	?	REDAPT	?
Model:		PA-D M20	
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	(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) – NO EARTH
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 documentatio0n	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 D. WILLIAMS Supervisor	Client (write): Inspector
Date: 3/8/11	Date:

Device ID or tag

Action required to make device compliant:

- Blue sheath to cabling or IS labelling required.

Reviewed by: N. GREEN
Date: 23/8/11
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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

0831
0830

General

Device ID or tag:	PT-25-M000	Asset:	Meter Run #2
Circuit ID:	J618	Physical location:	PIG Facility
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
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	IIC
Full model number:	3051 PG5A22A1AM5I7	Temp class: (T1-T6)	T5 (Amb 40°C) T4 (50°C)
Serial number:	0587031	Certificate number:	AUS Ex 1249X ✓
IP Class	—	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	?		
Model:			
Gland type of protection: (d,e)			

RUN 4 NO USED

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	⊗	
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	⊗ –	LOOSE
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	⊗ –	ISOLATOR
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	⊗ –	CALC

	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	⊗ –	NO. EARTH
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 documentatio0n	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 D. WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Blue sheath to cabling or IS labelling required.

Reviewed by: D. 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

SITZLER

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0833
0832

Specifications

General

Device ID or tag:	FT-25A	Asset:	Meter Run #2
Circuit ID:	J016	Physical location:	PALM VALLEY
Area classification :	?	Environment: (hot?)	EXTERNAL

Data from Label

Apparatus type: (light, JB, Motor)	Differential Pressure Tx.	Type of protection: (d,e, i, n, p etc)	ia
Manufacturer:	Rosemount	Gas group: (IIA/B/C)	IIC
Full model number:	3051PD2A22A1AMSI7	Temp class: (T1-T6)	T5
Serial number:	0587024	Certificate number:	AUS Ex 1249X
IP Class	—	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	?		
Model:			
Gland type of protection: (d,e)			

BONG NO CERT

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	⊗
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	⊗ — LOOSE
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	⊗ — NO FUNCTION
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 documentatio0n	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 D.WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- I.S. installation considered acceptable
- Note cable gland requires tightening

Reviewed by: D. GREEN
Date: 23/8/11
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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

0835
0834

General

Device ID or tag:	FT-25 - M000	Asset:	Meter Run # 2
Circuit ID:	J017	Physical location:	Palm Valley
Area classification :	TBA	Environment: (hot?)	External / covered

Data from Label

Apparatus type: (light, JB, Motor)	Temp Transmitter	Type of protection: (d,e, i, n, p etc)	Ex ia
Manufacturer:	Rosemount	Gas group: (IIA/B/C)	IIC
Full model number:	3051PDA2ZA1AM5I7	Temp class: (T1-T6)	T5
Serial number:	058 7025	Certificate number:	AUS EX 1249X
IP Class		Test authority: (BAS, PTB, SAA etc)	AUS

Number of cables:	1

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	?		BUNG. NO CERT
Model:			
Gland type of protection: (d,e)			

Inspection → **Circle as checked**

		Applicable to protection type:	Internal	External	
	A Equipment				
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	⊗	LOOSE
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	⊗	IS LABEL
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	(X)	CALC
	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	⊗	NO EARTH
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 documentatio0n	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 D. Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Blue sheath to cabling or IS labelling required.
- Cable gland requires tightening.

Reviewed by: N. 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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

General

Device ID or tag:	TT25	Asset:	Meter Run #2
Circuit ID:	J019	Physical location:	Palm Valley
Area classification :	1BA	Environment: (hot?)	External - Exposed

Data from Label

Apparatus type: (light, JB, Motor)	Temp Transmitter	Type of protection: (d,e, i, n, p etc)	ia
Manufacturer:	Rosemount	Gas group: (IIA/B/C)	IIC
Full model number:	3144P-D2A1I7B4M5T1F5	Temp class: (T1-T6)	T5 (-60 ≤ Tamb ≤ 85)
Serial number:	0200437I	Certificate number:	IECEx BAS 07.0002X
IP Class	66/68	Test authority: (BAS, PTB, SAA etc)	BAS

Number of cables:	1

For each cable entry	gland 1	gland 2	others 5
Gland manufacturer:	?		1
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	⊗	
2	Equipment ID or circuit ID is correct	all	X	⊗ –	NO ID
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗ –	NO
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	⊗ –	NO
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	⊗ –	IS LABEL
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	⊗ –	CALC

	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	⊗ –	NO EARTH
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 documentatio0n	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 D. Williams Supervisor	Client (write): Inspector
Date: 3/8/11	Date:

Device ID or tag

Action required to make device compliant:

- Cable and equipment ID label required.
- Blue sheath to cabling or IS labelling required.
- Cable gland requires tightening

Reviewed by: D. GREEN
Date: 23/8/11
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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

General

Device ID or tag:	SAMPLER	Asset:	
Circuit ID:	3029	Physical location:	PALM VALLEY
Area classification :	?	Environment: (hot?)	EXTERNAL COVERED.

Data from Label

Apparatus type: (light, JB, Motor)	SOLENOID	Type of protection: (d,e, i, n, p etc)	ME
Manufacturer:	LUCIFER	Gas group: (IIA/B/C)	IIC
Full model number:	821003	Temp class: (T1-T6)	T5
Serial number:	85 03 8	Certificate number:	321-1
IP Class		Test authority: (BAS, PTB, SAA etc)	AUSEY

Number of cables:	1

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	HLD		
Model:	CLNW 20S		
Gland type of protection: (d,e)	Exd		

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	⊗
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	⊗
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 documentatio0n	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 D Williams Supervisor	Client (write): Inspector
Date: 3/6/11	Date:

Device ID or tag

Action required to make device compliant:

- Device ID required

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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

0869 0870 0868 0871

General

Device ID or tag:	PT-32	Asset:	?
Circuit ID:	NONE	Physical location:	PALM VALLEY
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)	i n d
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	IIB
Full model number:	3051TG4A2B21B1L4K7M5T1	Temp class: (T1-T6)	T5
Serial number:	01662770	Certificate number:	AUS E 03.1214 7X AUS Ex 12.4.9X
IP Class	IP. 66	Test authority: (BAS, PTB, SAA etc)	

Number of cables:

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	ALCO		BLNG. ADAPT
Model:	NOT CERT		PMDM20.
Gland type of protection: (d,e)			Exd SIRA 99 ATEX 1113

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	⊗
2	Equipment ID or circuit ID is correct	all	X	⊗ — NO ID
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	⊗ — NO EARTH
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 documentatio0n	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 O. WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Installation considered I.S. as identified by barrier photo.
- Blue sheath to cabling or IS labelling required.
- Cable ID label required.
- Loop drawing not available.

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

SITZLER

Based on AS/NZS 60079 part 17

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Specifications

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General

Device ID or tag:	LIGHT	Asset:	PALM VALLEY
Circuit ID:	P005	Physical location:	EXTERNAL / SHELTER
Area classification :		Environment: (hot?)	" "

Data from Label

Apparatus type: (light, JB, Motor)	LIGHT	Type of protection: (d,e, i, n, p etc)	FLAMEPROOF
Manufacturer:	BURN BRIGHT	Gas group: (IIA/B/C)	1, 2A 2B
Full model number:	FLP 2?? 240 MK2	Temp class: (T1-T6)	T4
Serial number:	–	Certificate number:	602
IP Class	–	Test authority: (BAS, PTB, SAA etc)	SAA

Number of cables:	1

For each cable entry	gland 1	gland 2	2 others BUNG
Gland manufacturer:	NOT ACCESSIBLE		UNCLASSIFIED
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	⊗
2	Equipment ID or circuit ID is correct	all	X	⊗ – BOTH
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	⊗ –
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 documentatio0n	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): Inspector D.Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment ID required.

Reviewed by: N. 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

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Specifications

General

Device ID or tag:	TE-9-P000	Asset:	
Circuit ID:	~~NONE~~ J002 ✓	Physical location:	PALM VALLEY
Area classification :	2	Environment: (hot?)	EXTREMAC.

Data from Label

Apparatus type: (light, JB, Motor)	TEMP ELEMENT	Type of protection: (d,e, i, n, p etc)	—
Manufacturer:	—	Gas group: (IIA/B/C)	—
Full model number:	—	Temp class: (T1-T6)	—
Serial number:	—	Certificate number:	—
IP Class	—	Test authority: (BAS, PTB, SAA etc)	—

Number of cables:	1

For each cable entry	gland 1	gland 2	others ADAPTOR RMT.
Gland manufacturer:			78521 N0000
Model:			SERIAL : 23151
Gland type of protection: (d,e)			S1

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	✓
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	✓ — NO EARTH
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 documentatio0n	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 D. WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 8/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- BLUE SHEATH TO CABLING REQUIRED. - OR LABELLED AS IS

Reviewed by: N. GREEN
Date: 23/8/11
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

SITZLER

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

0791 0789
0790

General

Device ID or tag:	TSHH-12-P000	Asset:	
Circuit ID:	J005 ✓	Physical location:	PALM VALLEY
Area classification :		Environment: (hot?)	EXTERNAL - COVERED.

Data from Label

Apparatus type: (light, JB, Motor)	PRESSURE SWITCH	Type of protection: (d,e, i, n, p etc)	IS
Manufacturer:	ASHCROFT	Gas group: (IIA/B/C)	—
Full model number:	T20T03030 1BX	Temp class: (T1-T6)	—
Serial number:	82286	Certificate number:	—
IP Class	—	Test authority: (BAS, PTB, SAA etc)	—

Number of cables:	

For each cable entry	gland 1	gland 2	others ADAPTOR NO CERT
Gland manufacturer:			
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	(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) – IS LABEL
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) – CALCS

	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) – NO EARTH
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 documentatio0n	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): Inspector D. WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- NO ACTION REQUIRED FOR I.S. DEVICE HOWEVER RECOMMEND REPLACING SWITCH DUE TO ILLEGIBLE NAMEPLATE

Reviewed by: N. GREEN
Date: 23/8/11
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

SITZLER

Based on AS/NZS 60079 part 17

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0793
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Specifications

General

Device ID or tag:	PSHH -15	Asset:	
Circuit ID:	5006 ✓	Physical location:	PALM VALLEY
Area classification :	?	Environment: (hot?)	EXTERNAL - COVERED

Data from Label

Apparatus type: (light, JB, Motor)	PRESSURE SWITCH	Type of protection: (d,e, i, n, p etc)	- IS ✓
Manufacturer:	~~GSA~~ SQUARE D	Gas group: (IIA/B/C)	-
Full model number:	? 9012 GCW-2 C	Temp class: (T1-T6)	-
Serial number:	?	Certificate number:	-
IP Class	?	Test authority: (BAS, PTB, SAA etc)	-

Number of cables:	

For each cable entry	gland 1	gland 2	others ADAPTOR.
Gland manufacturer:	?		NO CERT
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	⊗
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	⊗ - NO EARTH
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 documentatio0n	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 D. WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- BLUE SHEATHING ON CABLE REQUIRED - OR IS LABELLED IS.

Reviewed by: D. GREEN
Date: 27/8/11
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

SITZLER

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0792 0795
0793

Specifications

General

Device ID or tag:	PSHH - 15A	Asset:	
Circuit ID:	- J039 ✓	Physical location:	BALA VALLEY
Area classification :	2	Environment: (hot?)	EXTERNAL - COVERED.

Data from Label

Apparatus type: (light, JB, Motor)	PRESSURE SWITCH	Type of protection: (d,e, i, n, p etc)	- IS ✓
Manufacturer:	~~ESA~~ SQUARE D	Gas group: (IIA/B/C)	- CL II DIV 2 GR F,G + CL III
Full model number:	9012 GCW-2 C	Temp class: (T1-T6)	-
Serial number:	-	Certificate number:	-
IP Class	-	Test authority: (BAS, PTB, SAA etc)	-

Number of cables:	1

For each cable entry	gland 1	gland 2	others ADAPTOR NB: CORT
Gland manufacturer:	?		
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	⊗
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	⊗ - NO EARTH
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 documentatio0n	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 D. WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- CABLE ID REQUIRED.
- BLUE CABLE SHEATHING REQUIRED OR IS LABELLING

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

SITZLER

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0798 ~~0800~~ 0801
0799
0800

Specifications

General

Device ID or tag:	PT-14-0000	Asset:	Station Inlet Pressure
Circuit ID:	J004 ✓	Physical location:	Palm Valley
Area classification :	TBA	Environment: (hot?)	External, Covered

Data from Label

Apparatus type: (light, JB, Motor)	Pressure Transmitter	Type of protection: (d,e, i, n, p etc)	Exd n. ia ✓
Manufacturer:	Rosemount	Gas group: (IIA/B/C)	IIC ✓
Full model number:	3051 / 3001	Temp class: (T1-T6)	~~T6~~ T5 ✓
Serial number:	— 8144256	Certificate number:	AUS EX 03.1347X ✓
IP Class	—	Test authority: (BAS, PTB, SAA etc)	AUS EX 1249X ✓

Number of cables:	1

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	2		RING REPART ✓
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	⊗	
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	⊗ —	IS CABLE
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	⊗ —	COCL

	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	⊗ —	NO EARTH
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 documentatio0n	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 D.Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- BLUE CABLE SHEATH OR IS LABEL REQUIRED

Reviewed by: D. CARDEN
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

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0805
0804

Specifications

General

Device ID or tag:	ZSC/ZSO SLV-17-P000	Asset:	Station Limit Valve
Circuit ID:	NONE	Physical location:	PACA VALLEY
Area classification :	2	Environment: (hot?)	EXTERNAL

Data from Label

Apparatus type: (light, JB, Motor)	LINE VALVE ZSC ZSO	Type of protection: (d,e, i, n, p etc)	—
Manufacturer:	RICHARDS	Gas group: (IIA/B/C)	—
Full model number:	—	Temp class: (T1-T6)	—
Serial number:	20069	Certificate number:	—
IP Class	—	Test authority: (BAS, PTB, SAA etc)	—

Number of cables:	1

For each cable entry	gland 1	gland 2	others ADAPTOR NO CERT.
Gland manufacturer:	?		
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	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	IS CABLE
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	— CABLE

	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	— NO EARTH
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 documentatio0n	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 D. Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/4	**Date:**

Device ID or tag

Action required to make device compliant:

- Cable ID labels required.
- Blue sheath to cabling or IS labelling required.

Reviewed by: N. GREEN
Date: 27/8/14
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

SITZLER

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802, 803

Specifications

General

Device ID or tag:	PCV-17-P000	Asset:	
Circuit ID:	J028	Physical location:	Palm Valley
Area classification :	TBA	Environment: (hot?)	External - Exposed

Data from Label

Apparatus type: (light, JB, Motor)	Valve Solenoid / JBox	Type of protection: (d,e, i, n, p etc)	Class 1 div 1
Manufacturer:	PAB	Gas group: (IIA/B/C)	IIB
Full model number:	1D117	Temp class: (T1-T6)	T6
Serial number:	CB120M	Certificate number:	SAA-FLP693, DIP45 (J/Box)
IP Class	4	Test authority: (BAS, PTB, SAA etc)	SAA

Number of cables:	1

For each cable entry	gland 1	~~gland 2~~ ADAPTORS 2	others JB
Gland manufacturer:	Alco	NO CERTS	
Model:	WG206		
Gland type of protection: (d,e)			d ?

BUNGS X2 NO CERTS

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	⊗
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	⊗ — NO EARTH
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 documentatio0n	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): Inspector D. Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Replace blanking plugs / adaptors / gland with Ex rated equipment at junction box.
- Insufficient information on solenoid, further information required.

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

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0817
0816
0815

Specifications

General

Device ID or tag:	PDISH-~~22~~ 21	Asset:	Meter Run #1 Filter Sep.
Circuit ID:	I008	Physical location:	PALM VALLEY
Area classification :	?	Environment: (hot?)	EXTERNAL - COVERED.

Data from Label

Apparatus type: (light, JB, Motor)	PRESSURE DIFF TX	Type of protection: (d,e, i, n, p etc)	d n ia
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	IIC
Full model number:	3501 CO3A2ZA1BM5K7	Temp class: (T1-T6)	T5.
Serial number:	RS0872671	Certificate number:	AUS Ex 1347X / 1249X
IP Class	—	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	

For each cable entry	gland 1	gland 2	others BUNGS
Gland manufacturer:	?		REDAPT
Model:			FA-10 M20
Gland type of protection: (d,e)			— SIRA

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	⊗	
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	⊗ —	IS LABEL
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	⊗ —	CALC

	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	⊗ —	NO EARTH
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 documentatio0n	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 O Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Blue sheath to cabling or IS label required

Reviewed by: N. GREEN
Date: 23/8/11
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

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0820
0819
0818

Specifications

General

Device ID or tag:	LSH-21A-M000	Asset:	Filter Separator #1
Circuit ID:	J009 ✓	Physical location:	PALM VALLEY
Area classification :	?	Environment: (hot?)	EXTREMITE

Data from Label

Apparatus type: (light, JB, Motor)	LEVEL SWITCH	Type of protection: (d,e, i, n, p etc)	d ✓
Manufacturer:	FRANK W. MURPHY	Gas group: (IIA/B/C)	IIB ✓
Full model number:	L1200 SPDT	Temp class: (T1-T6)	T6 ✓
Serial number:	–	Certificate number:	AUS Ex 609 ✓
IP Class	–	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	~~gland 2~~ JB	others ADAPTOR	BUNKS NO ABCT
Gland manufacturer:	?	SAE	NO CERT	
Model:		FNJ1		
Gland type of protection: (d,e)		SAA CERT No. FLP 693 DIP 45.		

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	⊗
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	⊗ – IS LABEL
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗
14	Entity calculation/documentation is available	i	X	⊗ – CALC

	B Installation			
1	Type of cable is appropriate, cables are undamaged	all	X	⊗ – SUN
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	⊗ – NO EARTH
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 documentatio0n	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 **Supervisor**	**Client (write): Inspector**
Date:	**Date:**

Device ID or tag

Action required to make device compliant:

- INCORRECT EQUIPMENT ID (SHOULD BE LSH-21)
- INSTALLATION MAY REQUIRE ATTENTION (AS PER MANUF. INST.) WITH RESPECT TO AN Exd RATED CONDUIT SEAL RELATING TO PRESSURE PEERING WITH CONNECTED J-BOX.
- EX CERTIFICATION FOR ADJACENT J-BOX IS APPLICABLE TO DIP INSTALLATION AND NIL REFERENCE TO FLAMMABLE GAS INSTALLATION.
- IS installation requiring blue sheath to cable or labelling, IS.

Reviewed by: N. GREEN
Date: 27/8/11
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

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Specifications

General

Filter Separator #2

Device ID or tag:	LSH-21A	Asset:	Level Switch
Circuit ID:	J011	Physical location:	Palm Valley
Area classification :	TBA	Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	Level Switch	Type of protection: (d,e, i, n, p etc)	SXD class 2 Zone 1
Manufacturer:	Frank W. Murphy	Gas group: (IIA/B/C)	IIB
Full model number:	L1200 DPDT	Temp class: (T1-T6)	T6
Serial number:	—	Certificate number:	AUSEX-609
IP Class	—	Test authority: (BAS, PTB, SAA etc)	AUSEX

Number of cables:	1

For each cable entry	gland 1	JB ~~gland 2~~	~~others~~ ADAPTOR
Gland manufacturer:	~~[illegible]~~ ?	SAE	NO CERT
Model:		FNJ1	
Gland type of protection: (d,e)		d	

SAA CERT No. FLP 693 DIP 45

X2 BUNGS NO CERT

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	⊗	
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	⊗ —	IS CABLE
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	⊗ —	CALC

	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	⊗ —	NO EARTH
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 documentatio0n	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): Inspector **Supervisor**	**Client (write): Inspector**
Date:	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment ID required changing from "21A" to 24.
- IS installation requiring blue sheath to cable or IS labelling.

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

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Specifications

General

Device ID or tag:	PT-22-M00	Asset:	Meter Run #1
Circuit ID:	J014 ✓	Physical location:	PALM VALLEY
Area classification :	2	Environment: (hot?)	EXTERNAL - COVERED

Data from Label

Apparatus type: (light, JB, Motor)	PRESSURE TRANSMITTER	Type of protection: (d,e, i, n, p etc)	ia ✓
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	IIC ✓
Full model number:	3051PGSA22A1AM5I7	Temp class: (T1-T6)	T5 ✓
Serial number:	0925440	Certificate number:	AUS Ex 1249X ✓
IP Class	—	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	2		ADAPTOR NO CERT
Model:			
Gland type of protection: (d,e)			

BONG INCORRECT

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	⊗	
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	⊗	IS LABEL
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	⊗ —	CALCS

	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	⊗ —	NO EARTH
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 documentatio0n	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 D. Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- BLUE CABLE SHEATH OR IS LABELLING REQUIRED.

Reviewed by: M. GREEN
Date: 27/8/11
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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0823

General

Device ID or tag:	FT-22A-M000	Asset:	Meter Run # 1
Circuit ID:	NONE J013	Physical location:	PALM VALLEY
Area classification :		Environment: (hot?)	EXTERNAL - COVERED.

Data from Label

Apparatus type: (light, JB, Motor)	Tx	Type of protection: (d,e, i, n, p etc)	ia
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	IIC
Full model number:	3051D02A22A1RM5I7	Temp class: (T1-T6)	T5
Serial number:	0858993	Certificate number:	AUS Ex 12149X
IP Class	—	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	?		BARTEC REDAPT M20.
Model:			
Gland type of protection: (d,e)			Exd IIC BAS No. 531218U

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	⊗	
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	⊗ –	IS LABEL
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	⊗ –	CALC

	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	⊗ –	NO EARTH
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 documentatio0n	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): Inspector D. WILLIAMS **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- BLUE CABLE SHEATH OR IS LABELLING REQUIRED.
- CIRCUIT ID TAG REQUIRED.

Reviewed by: N. GREEN
Date: 27/8/11
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

0826
0825

General

Device ID or tag:	FT-22-M000	Asset:	Meter Run #1
Circuit ID:	NONE J012	Physical location:	PALM VALLEY
Area classification :	?	Environment: (hot?)	EXTERNAL - COVERED

Data from Label

Apparatus type: (light, JB, Motor)	TX	Type of protection: (d,e, i, n, p etc)	ia
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	IIC
Full model number:	3051PD2A22A1AM5I7	Temp class: (T1-T6)	T5
Serial number:	0925420	Certificate number:	AUS Ex 1249X
IP Class	—	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	?		ADAPTOR NO CERT
Model:			
Gland type of protection: (d,e)			

BUNG NO CERT

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	⊗
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	⊗ — IS CABLE
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗
14	Entity calculation/documentation is available	i	X	⊗ — CALC

	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	⊗ — NO EARTH
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 documentatio0n	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 D. Williams Supervisor	Client (write): Inspector
Date: 3/8/11	Date:

Device ID or tag

Action required to make device compliant:

- CIRCUIT ID TAG REQUIRED.
- BLUE CABLE SHEATH 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

SITZLER

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

0827
0828
0829

General

Device ID or tag:	TT-22-	Asset:	Meter Run #1
Circuit ID:	J012	Physical location:	PALM VALLEY
Area classification :	3	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)	IIC
Full model number:	~~3144PD1I70776~~	Temp class: (T1-T6)	T5
Serial number:	3144PD2A1I7MSFS 0I170776	Certificate number:	AUS Ex 02.3794x
IP Class	—	Test authority: (BAS, PTB, SAA etc)	

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**

	A Equipment	Applicable to protection type:	Internal	External	
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) -	IS LABEL
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) -	CABLE

	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) -	NO EARTH
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 documentatio0n	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	X
3	Electrical insulation is clean and dry	all	X	

Faults found? (circle as appropriate)

No:

Yes: List action required

Contractor (write): Inspector D. Williams **Supervisor**	**Client (write): Inspector**
Date: 3/8/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Blue sheath to cabling or IS labelling required.

Reviewed by: D. GREEN
Date: 23/8/11
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

Record Name Plate Details						Record other nameplate information that may be relevant
Manufacturer		Vin		Chin		
Serial No.		Lin		Lin		
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	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 unautorised modifications (Y=OK)	Y	N	N/A	N/C	DCV	
Installation					**Grade**	**Remarks**
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	
Barriers					**Grade**	**Remarks**
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
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:_____

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 > 0.5mm2 for multistranded and 1mm2 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 unautorised 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	
Creapage 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

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 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	

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	
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	

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	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	

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:_____

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 INTRINSICALLY SAFE EQUIPMENT (EX 'i')

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:

Condition

Condition upon receipt:
Old repair label details:
Reported Fault (if any):

Action

Repair action:…… …… …… …… …… ……
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 INCREASED SAFETY ENCLOSURES (EX 'e')

FYFE Earth Partners
ENVIRONMENT DEVELOPMENT RESOURCES

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
AD00-PSHH-15	AD00-2-7002	Station limit valve AD00-SLV-17	Nil hazardous area certification evident for equipment use in Australia.
AD00-PSHH-15A	AD00-2-7002	Station limit valve AD00-SLV-17	Nil hazardous area certification evident for equipment use in Australia.
AD00-SV-17	AD00-2-7002	Station limit valve AD00-SLV-17	Device is old.
			Blanking plugs, adaptors and gland are not Ex rated.
AD00-LSH/ LAH-21A	AD00-2-7003	Filter separator AD00-FS-1	Re-label instrument tag from 21A to 21.
			Blue sheath to cabling or IS labeling required.
			Ex certification of adjacent junction box is applicable to DIP installation and nil reference to flammable gas installation.
AD00-LSH/ LAH-24A	AD00-2-7003	Filter separator AD00-FS-2	Re-label instrument tag from 24A to 24.
			Blue sheath to cabling or IS labeling required.
			Ex certification of adjacent junction box is applicable to DIP installation and nil reference to flammable gas installation.
AD00-Light		Chromatography shelter	Hazardous area certification of conformity is not available.