PINE CREEK METER STATION
HAZARDOUS AREA DOSSIER



FYFE REFERENCE: 18756-5-HAD-012

APA REFERENCE: HAD DATA REPOSITORY/ ADP_1317_PCS

Prepared by: _____ Date: 18-Nov-2011
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Reviewed by: _____ Date: 18-Nov-2011
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Principal Process Engineer - Fyfe

Client Accepted: _____ Date:
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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.

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 perform close inspection of all electrical equipment in accordance to AS/NZS 60079 series on site to verify installation. His role was also to review inspection sheets and provide recommendations for remedial actions to ensure compliance.

David Bourke 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 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

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

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

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Revision History:

Rev.	Status	Date	Prepared	Reviewed	Approved
A	Preliminary issue for client's review	28-Sep-2011	AZP	TCB	
0	Original Issue	18-Nov-2011	AZP	TCB	EZG

1 Site Information

An inspection on the Pine Creek meter station site was performed on 7 September 2011 by Tony Bird, a principal process engineer from Fyfe, Neville Green, an electrical engineer from Sitzler and David Bourke a surveyor from Fyfe.

Pine Creek meter station is located at KP1317 on the ADP.

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.

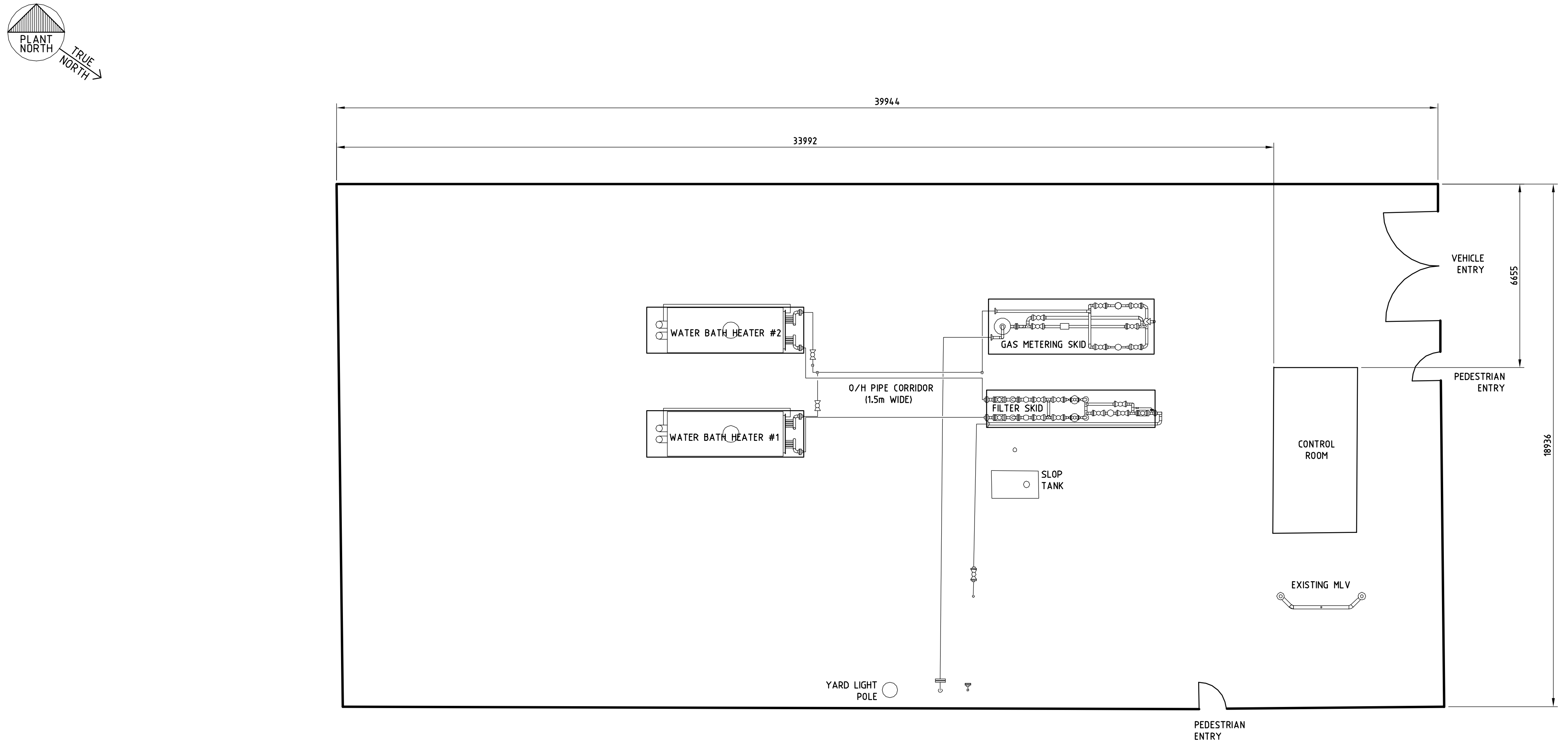
Vents and PSV discharges from the dry filter, filter separator and knock out pots and vents from instrument manifolds and pneumatic controllers are sent to a local vent stack. The vent stack is fitted with a flame arrestor.

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

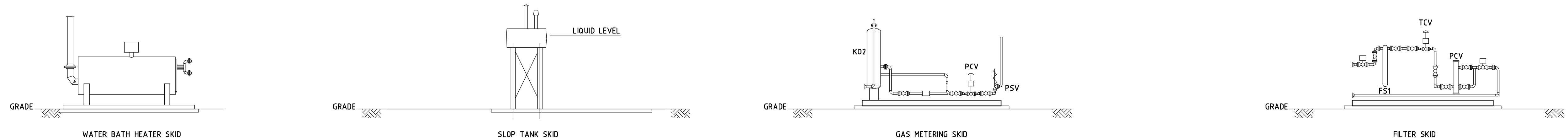
Gas is conditioned at each water bath heater to provide fuel gas for the pilot and main burners. The fuel gas conditioning trains comprise of pre-heat coil, strainer, primary pressure regulating valve, actuated ESD valves, secondary pressure regulating valve, meter and temperature control valve. A control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

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

Drawing Number	Description	Revision
APA Group Arrangement Drawing		
Fyfe Updated Plot Plan		
AD 1317-6014	Meter Station– Pine Creek MS	0
P&ID		
AD 1317-7000	Pine Creek Station Gas Conditioning Skid	0
AD 1317-7001	Pine Creek Station Water Bath Heater No 1A & No 1B	0
AD 1317-7002	Pine Creek Station Metering Skid	0
AD 1317-7003	Pine Creek Station Slops Tank	0



PLAN VIEW
SCALE 1:100



ELEVATIONS
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.
2. ALL DIMENSIONS ARE BASED ON 3D SCAN DATA. ALL 3D DATA RETAINED BY FYFE

HOLDS:

REV	REVISION DESCRIPTION	DATE	DRN.	CKD.	APP.
0	ORIGINAL ISSUE AS PER FYFE 3D SCAN DATA	30/11/11	FYFE	TCB	

REFERENCE DRAWINGS	DRG.NO.
P & ID DIAGRAM	AD1317-7003
P & ID DIAGRAM	AD1317-7002
P & ID DIAGRAM	AD1317-7001
P & ID DIAGRAM	AD1317-7000

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APA Group

SHEET NO.		SCALE	1:100
LEVEL DATUM		FILENAME	AD1317-6014
FIELD BOOK		DATE	30/11/2011
		DRAWN	FYFE
		CHECKED	TCB
DESIGN ENGINEER		APPROVING ENGINEER	

PROJECT AMADEUS BASIN TO DARWIN PIPELINE

TITLE METERING STATION
PLOT PLAN - PINE CREEK
PINE CREEK PLOT PLAN

PROJECT NO.	DRAWING NO.	REV
	AD1317-6014	0

DRY FILTER VESSEL – DF-1

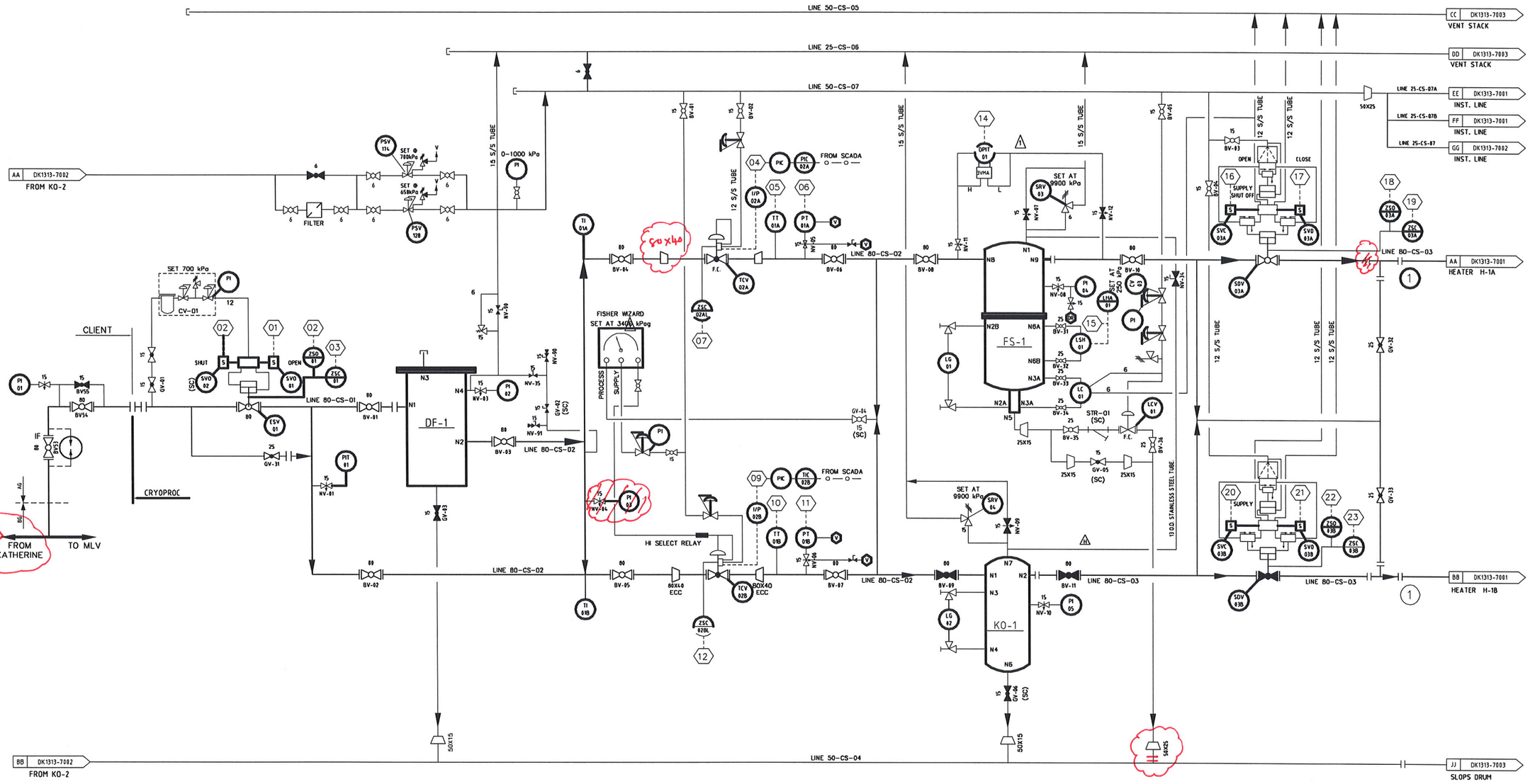
MODEL	HSB-13-3F
SIZE	8" CLASS 600#
DESIGN PRESS.	9900 kPag
DESIGN TEMP.	38°C
REF. DRG.	SB-225

FILTER SEPARATOR VESSEL – FS-1

MODEL	HF-500F-NW80
SIZE	6" CLASS 600#
DESIGN PRESS.	9900 kPag
DESIGN TEMP.	38°C

KNOCKOUT POT – KO-1

MODEL	NOT APPLICABLE
O.D.	6" CLASS 600#
TAN TO TAN	1572mm
DESIGN PRESS.	9900 kPag
DESIGN TEMP.	38°C



DWG No.	REFERENCE DRAWINGS

NOTES

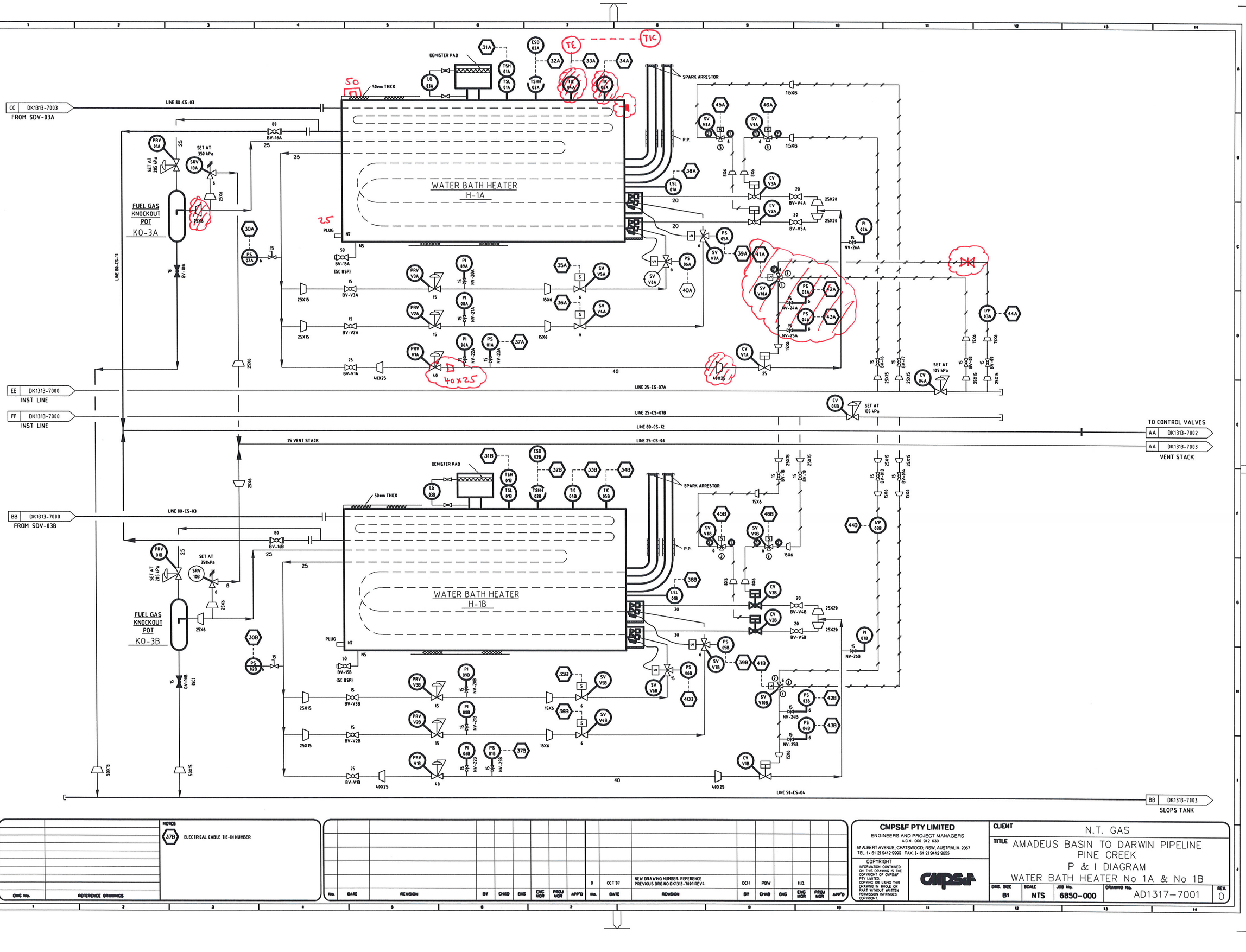
1. ALL PIPING AND CONNECTING PIPING TO BE HORIZONTAL.
2. (11) ELECTRICAL CABLE TIE-IN NUMBER.

No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APP'D
0	OCT'07	NEW DRAWING NUMBER. REFERENCE PREVIOUS DRG NO DK1313-7000 REV 7	DCH	BP		H.D.		

CLIENT: N.T. GAS

TITLE: AMADEUS BASIN TO DARWIN PIPELINE
PINE CREEK
P & I DIAGRAM
GAS CONDITIONING SKID

DRG. SIZE	SCALE	JOB No.	DRAWING No.	REV.
B1	NTS	6850-000	AD1317-7000	0



NOTES

37B ELECTRICAL CABLE TIE-IN NUMBER

DWG No.	REFERENCE DRAWINGS

No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APP'D
0	OCT '07	NEW DRAWING NUMBER. REFERENCE PREVIOUS DRG NO DK1313-7001 REV4	DCH	PDW		H.D.		

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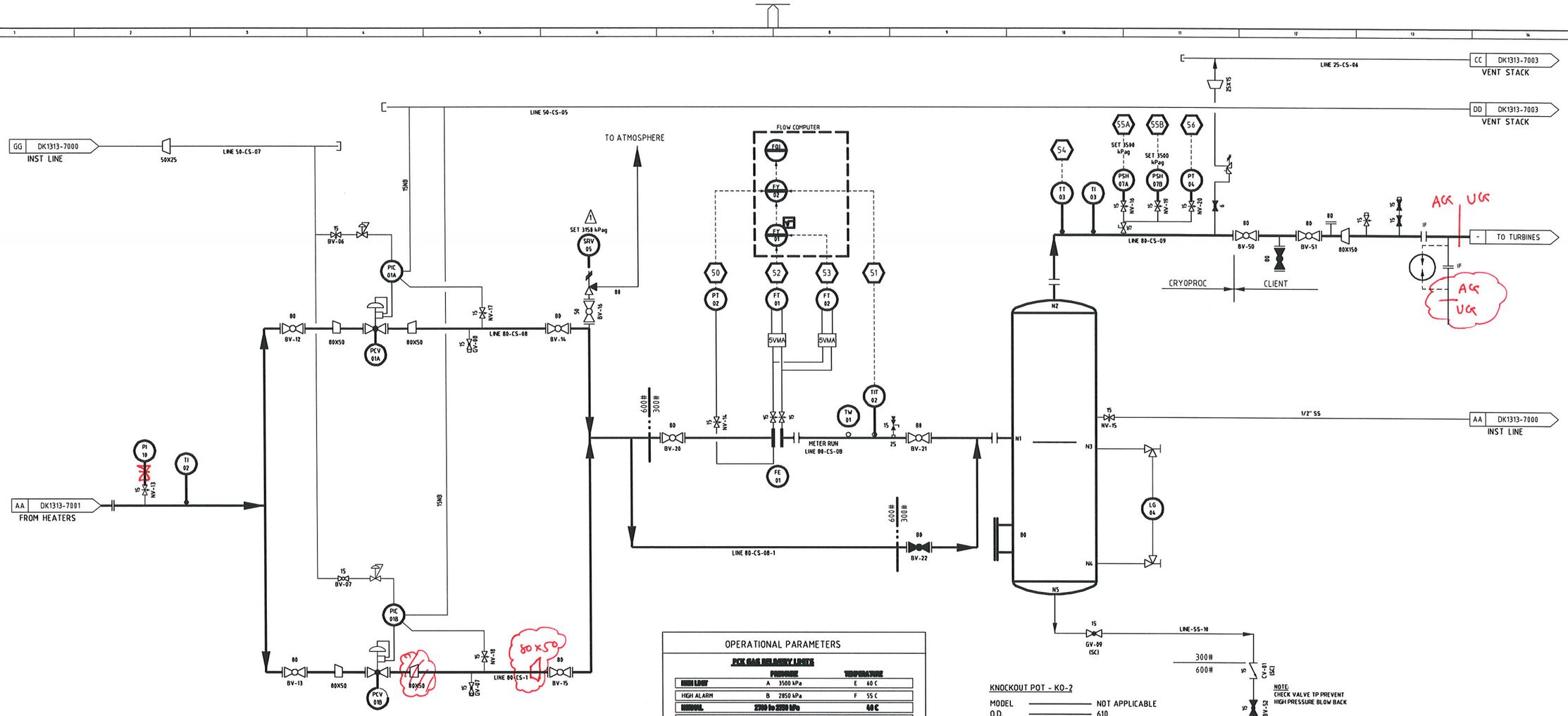
TITLE: AMADEUS BASIN TO DARWIN PIPELINE
PINE CREEK
P & I DIAGRAM
WATER BATH HEATER No 1A & No 1B

DRG. SIZE	SCALE	JOB No.	DRAWING No.	REV.
B1	NTS	6850-000	AD1317-7001	0



OPERATIONAL PARAMETERS

PCK GAS DELIVERY LIMITS

		PRESSURE		TEMPERATURE
HIGH LIMIT	A	3500 kPa	E	60 C
HIGH ALARM	B	2850 kPa	F	55 C
NORMAL		2700 to 2750 kPa		40 C
LOW ALARM	C	2600 kPa	G	35 C
LOW LIMIT	D	2900 kPa	H	20 C

OUTPUT COMMANDS

A: FTS - Emergency Shutdown
B: PSV on KOP will blow
C: Alarm only - at PCC
D: FTS - EDL switch to diesel
E: Possible PCC initiated shutdown
F: Alarm only
G: Alarm only
H: Possible EDL initiated shutdown

NOTE: AFTER CONDITIONS EXCEED FIRST ALARM LEVELS, BUT BEFORE FTS, OTHER AUTOMATIC CONTROLS MAY OPERATE SUCH AS PSVs OPENING AND SSVs CLOSING.
NOTE 2: 15 C PROVING TEMP ASSUMED.

PCK PRESSURE SETTINGS (kPa)

ACTIVE PCV	2700 - 2750		
MONITOR PCV	2650 - 2700		
TCV Pneumatic Override	3400		
HHP	3500		
PSV	3150	PSV @ MOP	2850
Inst Gas	700	Inst Gas PSV	800

DATA SOURCES:

A: P&ID DRG DK1313-7002
B: P&ID DRG DK1313-7002
C: Interface Manual - App D
D: ESTIMATION ONLY * NOT CONFIRMED YET
E: Interface Manual - App D
F: Interface Manual - App D
G: PCK PLC Ladder listing rung 147
H: ESTIMATION ONLY * NOT CONFIRMED YET
NORMAL: P&ID DRG DK1313-7002

PRESSURE SETTINGS: P&ID DRG DK1313-7002

KNOCKOUT POT - KO-2

MODEL	NOT APPLICABLE
O.D.	610
TAN TO TAN	2250
DESIGN PRESS.	2850 kPa
DESIGN TEMP.	50 C

NOTE: CHECK VALVE TO PREVENT HIGH PRESSURE BLOW BACK

NOTES
50 ELECTRICAL CABLE TIE-IN NUMBER

DWG No.	REFERENCE DRAWINGS

No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APP'D
0	OCT'07	NEW DRAWING NUMBER. REFERENCE PREVIOUS DRG NO DK1313-7002 REV 6	DCH	BP		H.D.		

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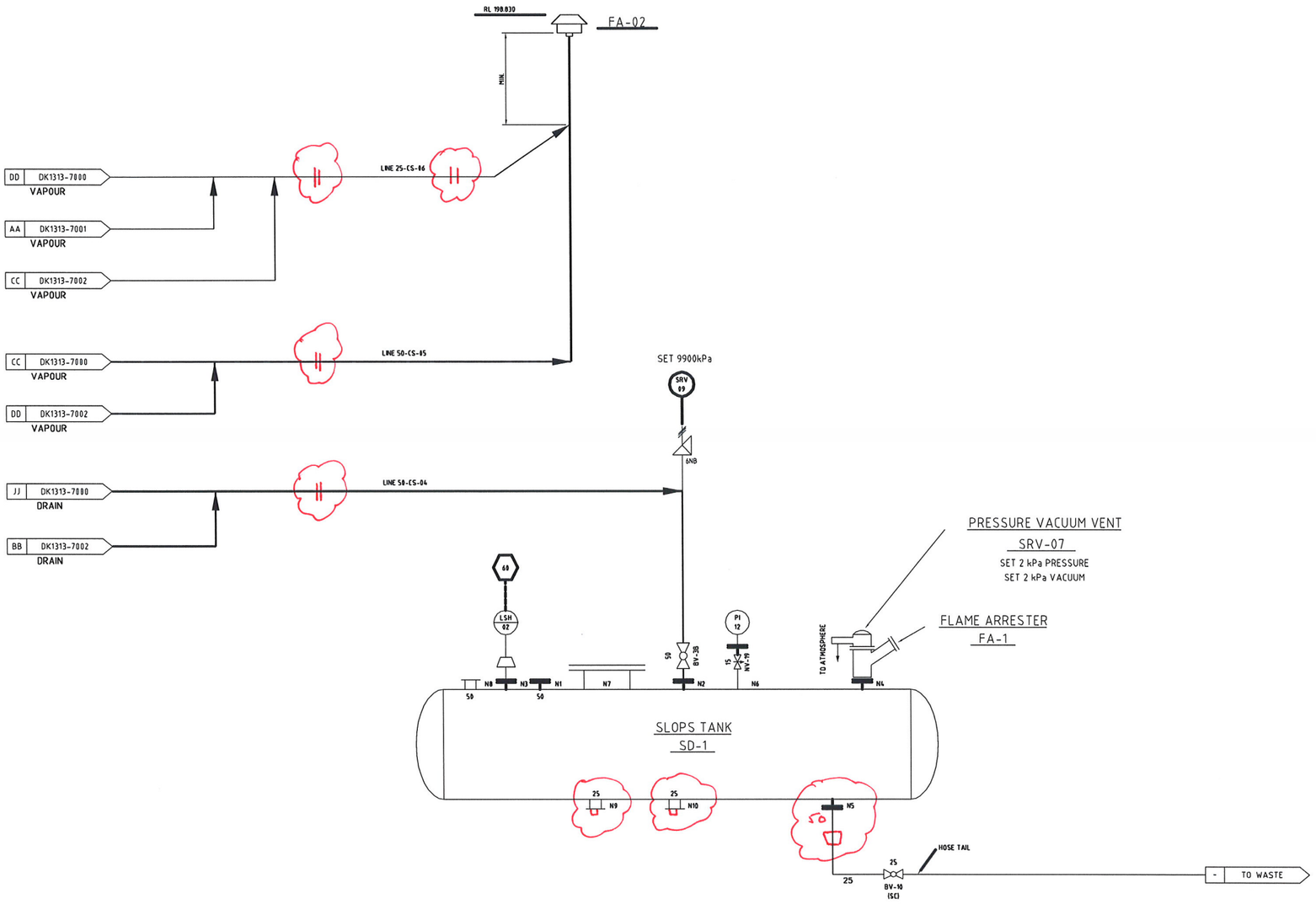
TITLE: AMADEUS BASIN TO DARWIN PIPELINE
PINE CREEK
P & I DIAGRAM
GAS METERING SKID

DRG. SIZE	SCALE	JOB No.	DRAWING No.	REV.
B1	NTS	6050-000	AD1317-7002	0



NOTES

DWG No.	REFERENCE DRAWINGS

No.	DATE	REVISION	BY	CHKD	ENG	ENG MGR	PROJ MGR	APP'D
0	OCT'07	NEW DRAWING NUMBER. REFERENCE PREVIOUS DRG NO DK1313-7003 REV.4	DCH	BP		H.D.		

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CLIENT: N.T. GAS

TITLE: AMADEUS BASIN TO DARWIN PIPELINE
PINE CREEK
P & I DIAGRAM
SLOPS TANK

DRG. SIZE	SCALE	JOB No.	DRAWING No.	REV.
B1	NTS	6850-000	AD1317-7003	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_XXXX_SECTION_2

Prepared by: _____ Date: 26-Sep-2011
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Reviewed by: _____ Date: 26-Sep-2011
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Manager, Mechanical Engineering - Fyfe

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Revision History:

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

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	
Warrego	Scraper Station ONLY	0610
Morphett Creek	Mainline valve	0660
Renner Springs	Scraper Station	0733
Fergusson	Mainline valve	0791
Elliot Meter Station	Meter Station	
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	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

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,
- Katherine 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

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 2.7.11).

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 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 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.

2.4.1.7 Katherine Meter / Regulating Station

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

2.4.1.8 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 a 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.

2.4.1.9 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 5800 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.

2.4.1.10 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 1filter, 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.

2.4.1.11 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 Water, 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.

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.

2.4.1.12 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.

2.4.1.13 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 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 Gas Composition

Component	Symbol	mol%
Methane	CH_4	86.954
Ethane	C_2H_6	2.557
Propane	C_3H_8	0.829
i-Butane	C_4H_{10}	0.118
n-Butane	C_4H_{10}	0.216
i-Pentane	C_5H_{12}	0.066
n-Pentane	C_5H_{12}	0.054
n-Hexane	C_6H_{14}	0.074
n-Heptane	C_7H_{16}	0.017
n-Octane	C_8H_{18}	0.004
n-Nonane	C_9H_{20}	0.004
Carbon Dioxide	CO_2	0.936
Nitrogen	N_2	8.172
Total		**100**
Specific Gravity (mixture)		**0.62**

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 3 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

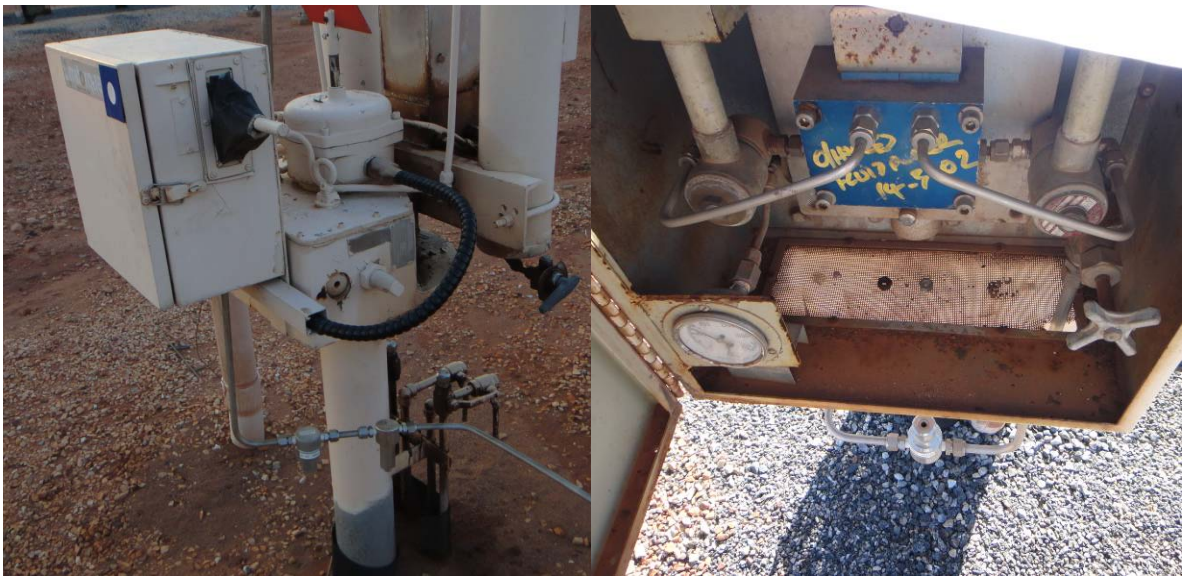
Some of the actuated mainline valves (MLV) installed at the scraper stations as shown in the following photographs include an enclosure containing the solenoids and a hand pump for the valve. The solenoids vent to a location outside of the enclosure, however the tubing connections to the solenoid are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

2.7.7 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

2.7.8 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

2.7.9 ODORANT INJECTION SYSTEM

2.7.9.1 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

2.7.9.2 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

2.7.9.3 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

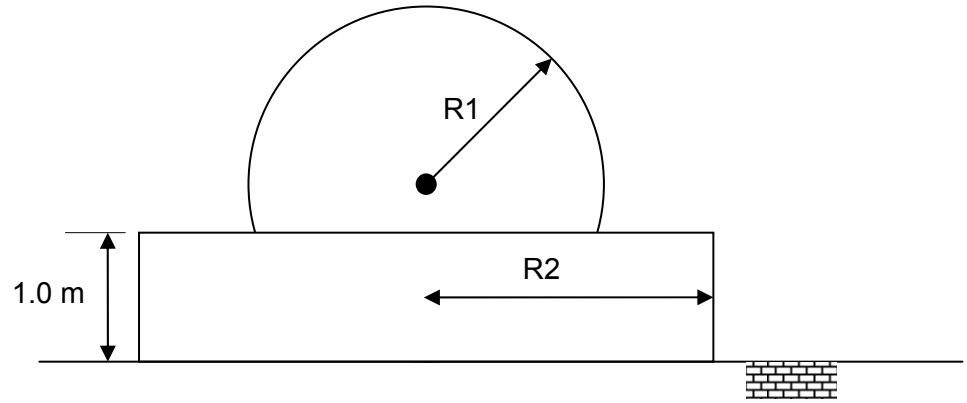
2.7.10 GROUND EFFECT

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.

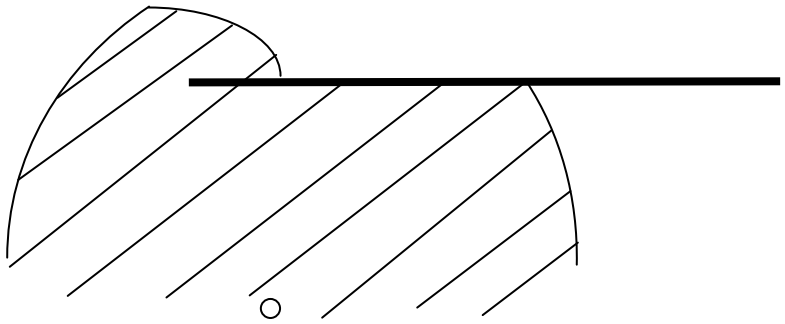
The main process pipework has a hazardous area of radius 2 m, and is located less than 2 m above grade. The direction of release from flanged joints and screwed fittings could be in any direction, therefore ground effects are to be considered. Other hazardous area zones will be sufficiently above grade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



2.7.11 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.



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:	A	B	C	D	
Flammable material list and characteristics	**Author:**	YZW	TCB	TCB	TCB	
Amadeus Basin to Darwin Pipeline	**Checked:**	TCB	RDK	RDK	RDK	
Surface facilities	**QA:**					
	Date:	31/08/2011	24/08/2011	19/09/2011	26/09/2011	

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:	A	B	C	D	
Author:	YZW	TCB	TCB	TCB	
Checked:	TCB	RDK	RDK	RDK	
QA:	ARD				
Date:	31/08/2011	24/08/2011	19/09/2011	26/09/2011	

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	**Revision:**	A	B	C	D	
List of sources of release	**Author:**	YZW	TCB	TCB	TCB	
Amadeus Basin to Darwin Pipeline	**Checked:**	TCB	RDK	RDK	RDK	
Surface facilities	**QA:**	ARD				
	Date:	31/08/2011	24/08/2011	19/09/2011	26/09/2011	

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	**Revision:**	A	B	C	D	
List of sources of release	**Author:**	YZW	TCB	TCB	TCB	
Amadeus Basin to Darwin Pipeline	**Checked:**	TCB	RDK	RDK	RDK	
Surface facilities	**QA:**	ARD				
	Date:	31/08/2011	24/08/2011	19/09/2011	26/09/2011	

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	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	2.7.6
16	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	2.7.7
17	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	2.7.8
18	Odorant injection system pipework		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	2.7.9.1

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

Part II – Sheet 4 of 4

List of sources of release

Amadeus Basin to Darwin Pipeline

Surface facilities

Revision:	A	B	C	D	
Author:	YZW	TCB	TCB	TCB	
Checked:	TCB	RDK	RDK	RDK	
QA:	ARD				
Date:	31/08/2011	24/08/2011	19/09/2011	26/09/2011	

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 storage tanks	Amadeus Basin to Darwin Pipeline surface facilities	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	2.7.9.2
					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		
20	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	2.7.9.3
21	Ground effect		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	2.7.10

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

APPENDIX B HAZARDOUS AREA MAPPING DRAWINGS

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

3 Observation For Improvement (OFI)

OFI No.	Description	Proposed Remedy
AD 1317-OFI-1 Slops tank (Refer additional information)	Various non compliance issues in accordance with AS 1692, AS 1940 and AS 1597.	Replace slop tank with double skinned tank (self bunded tank) Add restriction orifice to liquid drain line from filter vessels
AD 1317-OFI-2 Vent tip	The pressure vacuum (PV) vent tip on the slop tank should be relocated so that the hazardous zone does not extend into the areas where personnel may be present.	Replace PV vent for one that allows discharge to be piped away and vertically upwards
AD 1317-OFI-3 Pyrophoric iron	Pipeline corrosion products collected in the filter elements can spontaneously combust on exposure to the atmosphere. This can be rectified by immersing the elements in water as they are removed from the filter vessel	Install a water trough close to the filter vessels with drain point and update filter change out procedures.
AD 1317-OFI-4 Light	The light pole at inlet / outlet piping is within the extent of hazardous area zone 2 area specified for piping. Following previous hazardous area investigation in 2010, the light has been disconnected (refer photograph) however the cables are within a hazardous area and should be suitably terminated.	Terminate cables properly.
AD 1317-OFI-5 Flappers used on PSV tail pipe.	Flappers are designed for low velocity engine exhausts and they can come off due to high velocity gas vents. Canvas caps can be used to prevent rain and debris ingress. The canvas caps also provide an indication if the PSV has discharged	Replace flapper with canvas cap.
AD 1317-OFI-6 Vent holes	Refer additional information	Remove caps on local vents and add canvas caps to avoid rain ingress.

OFI No.	Description	Proposed Remedy
AD 1317-OFI-7 Data manuals	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 1317-OFI-8 Water bath heater stack	The stack on the water bath heater does not have personnel protection insulation or guarding.	Install protective guarding.
AD 1317-OFI-9 P&IDs	P&IDs are not up to date	As build drawings and revise P&IDs
AD 1317-OFI-10 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 1317-OFI-11 vent	The hazardous area from the vent will extend outside of the fenced compound	Recommend temporary exclusion zone during pipeline blowdowns
AD 1317-OFI-12 Control room	The control room is within the extent of hazardous area zone 2 area. The height of the blowdown on MLV bypass needs to be adjusted so that the control room will be out of the range of hazardous zone specified for the blowdown.	Modify the vent stack so that blowdowns are above the height of the control room (dependent on plume analysis).
AD 1317-OFI-13 Isolation from the power station	The outlet flange connection to the power station is fitted with an insulation gasket but no surge arrestor is fitted. A similar concern is raised at the Katherine meter station and the findings of that OFI should be adopted at Pine Creek.	APA to review requirements and update as required. Reference to outcomes from the review at Katherine meter station.
AD 1317-OFI-14 Solenoid Valve AD 1317-SVO-01/02	Equipment and cable ID required.	Fit Equipment and cable ID.
	UV damage to sheath.	Repair as required.
	Solenoid housing cracked at gland entry.	Replace solenoid housing.
	Replace gasket preshished at solenoid cable termination.	Replace as necessary.
	Ex ratings of glands are illegible.	Verify Ex ratings.

OFI No.	Description	Proposed Remedy
AD 1317-OFI-15 Valve limit switch AD 1317-ZSC/ZSO-01	Equipment and cable ID required.	Fit Equipment and cable ID.
	Verification of equipments and accessories is required.	Verify equipment details to confirm AUS Ex compliance for flameproof instalment.
	UV damaged cabling.	Repair as required.
AD 1317-OFI-16 Junction box AD 1317-JB	Equipment and cable ID required.	Fit Equipment and cable ID.
	Nil certification available for plugs.	Replace uncertified plugs (High priority).
	UV damage to cables.	Repair as required.
	Exposed armour at main control cable requires re-termination.	Repair as required.
AD 1317-OFI-17 Pressure Transmitter AD 1317-PIT-01	Equipment and cable ID required.	Fit Equipment and cable ID.
	Blue cable sheath required.	Fit equipment with blue sheath.
	Nil hazardous area certification available.	Replace the equipment or get hazardous area certification.
AD 1317-OFI-18 Differential Pressure Transmitter AD 1317-DPIT-01	Equipment and cable ID required.	Fit Equipment and cable ID.
	Blue cable sheath required.	Fit equipment with blue sheath.
AD 1317-OFI-19 Valve limit switch AD 1317-ZSC-02AL	Equipment and cable ID required.	Fit Equipment and cable ID.
	UV damage to cables.	Repair as required.
	Cable resting or process pipe requires support.	Repair as required.
	Nil hazardous area certification available.	Replace the equipment or get hazardous area certification.
AD 1317-OFI-20 Pressure convertor AD 1317-I/P-02A AD 1317-I/P-02B	Equipment and cable ID required.	Fit Equipment and cable ID.
	Blue cable sheath and IS labelling required.	Fit equipment with blue sheath and IS label.

OFI No.	Description	Proposed Remedy
AD 1317-OFI-21 Junction box AD 1317-JB	Equipment and cable ID required.	Fit Equipment and cable ID.
	Blue cable sheath required.	Fit equipment with blue sheath.
AD 1317-OFI-22 Temperature transmitter AD 1317-TT-01A	Equipment and cable ID required.	Fit Equipment and cable ID.
	Blue cable sheath required.	Fit equipment with blue sheath.
	Re-route cabling and fix the support to process piping.	Repair as required.
AD 1317-OFI-23 Pressure Transmitter AD 1317-PT-01A AD 1317-PT-01B	Equipment and cable ID required.	Fit Equipment and cable ID.
	Blue cable sheath required.	Fit equipment with blue sheath.
	Ex nameplate is faded.	Replace Ex nameplate.
AD 1317-OFI-24 Valve limit switch AD 1317-ZSC/ZSO-03A AD 1317-ZSC/ZSO-03B	Equipment and cable ID required.	Fit Equipment and cable ID.
	UV damage to cables.	Repair as required.
	Verification of equipments and accessories is required.	Verify equipment details to confirm AUS Ex compliance for flameproof installation.
AD 1317-OFI-25 Solenoid Valve AD 1317-SVO/SVC-03A AD 1317-SVO/SVC-03B	Equipment and cable ID required.	Fit Equipment and cable ID.
	Equipment painted heavily, hence illegible.	Replace the equipment due to age and condition.
	Ex certification expired 2001.	
AD 1317-OFI-26 Valve limit switch AD 1317-ZSC-02BL	Equipment and cable ID required.	Fit Equipment and cable ID.
	UV damage to cables.	Repair as required.
	Nil hazardous area certification available.	Replace the equipment or get hazardous area certification.

OFI No.	Description	Proposed Remedy
AD 1317-OFI-27 Junction box AD 1317-JB	Equipment and cable ID required.	Fit Equipment and cable ID.
	Blue cable sheath and IS labelling required.	Fit equipment with blue sheath and IS label.
	Re-route cabling and fix the support to process piping.	Repair as required.
AD 1317-OFI-28 Temperature transmitter AD 1317-TT-01B	Equipment and cable ID required.	Fit Equipment and cable ID.
	Blue cable sheath required.	Fit equipment with blue sheath.
	UV damage to cables.	Repair as required.
AD 1317-OFI-29 Low level switch AD 1317-LSH-01	Equipment ID required.	Fit Equipment ID.
	Equipment painted heavily, hence illegible.	Replace the equipment.
	Ex certification expired 2001.	
AD 1317-OFI-30 Pressure switch AD 1317-PS-01A AD 1317-PS-01B	Equipment ID required.	Fit Equipment ID and remove existing PS02A tag.
	UV damage to cables.	Repair as required.
	Verify compound filled barrier type gland is installed to cabling.	Verify as required.
AD 1317-OFI-31 Pressure switch AD 1317-PS-02A AD 1317-PS-02B	Equipment ID required.	Fit Equipment ID.
	UV damage to cables.	Repair as required.
	Verify compound filled barrier type gland is installed to cabling.	Verify as required.
AD 1317-OFI-32 Solenoid valve AD 1317-SV-V4A/ 5A AD 1317-SV-V4B/V5B	Equipment ID required.	Fit Equipment ID.
	Cable ID seems incorrect.	Review as per P&ID.
	Top entry cable gland installation not recommended.	Suggest rotating 180 degree vertically for bottom entry.
	SV-V4B has DIP adaptor between cable gland and solenoid housing.	Remove if adaptor is not consistent with cable installation method of protection.

OFI No.	Description	Proposed Remedy
AD 1317-OFI-33 Pressure convertor AD 1317-I/P-03A AD 1317-I/P-03B	Equipment ID required.	Fit Equipment ID.
	IS circuit installation requires blue cable sheath and labels.	Fit equipment with blue sheath and labels.
	UV damage to cables.	Repair as required.
AD 1317-OFI-34 Solenoid valve AD 1317-SV-9A	Equipment ID required.	Fit Equipment ID.
	UV damage to cables.	Repair as required.
	Nil hazardous area certification available.	Replace the equipment or get hazardous area certification.
	Verify cable ID with cable schedule.	Verify as required.
AD 1317-OFI-35 Solenoid valve AD 1317-SV-10A	Equipment ID required.	Fit Equipment ID.
	UV damage to cables.	Repair as required.
	Nil hazardous area certification available.	Replace the equipment or get hazardous area certification.
AD 1317-OFI-36 Cables	Unterminated cabling exits within cable tray above fuel gas lines.	Terminate/earth cables within suitable rates enclosure or remove completely.
AD 1317-OFI-37 Solenoid valve AD 1317-SV-8B AD 1317-SV-9B	Equipment ID required.	Fit Equipment ID.
	UV damage to cables.	Repair as required.
	Nil hazardous area certification available.	Replace the equipment or get hazardous area certification.
	Adaptor is cracked at solenoid housing.	Replace the adaptor.
AD 1317-OFI-38 Pressure Transmitter AD 1317-PIT-02	Equipment ID required.	Fit Equipment ID.
	UV damage to cables.	Repair as required.
	Blue cable sheath required.	Fit equipment with blue sheath.
AD 1317-OFI-39 Temperature Transmitter AD 1317-TT-01	Equipment ID required.	Fit Equipment ID.
	UV damage to cables.	Repair as required.
	Blue cable sheath required.	Fit blue sheath.
AD 1317-OFI-40 Flow Transmitter AD 1317-FT-02	Equipment ID required.	Fit Equipment ID.
	UV damage to cables.	Repair as required.
	Blue cable sheath required.	Fit equipment with blue sheath.

OFI No.	Description	Proposed Remedy
AD 1317-OFI-41 Temperature Transmitter AD 1317-TIT-02	Equipment ID required.	Fit Equipment ID.
	UV damage to cables.	Repair as required.
	Exposed armour at gland entry.	Re-terminate cabling for armour.
AD 1317-OFI-42 Temperature Transmitter AD 1317-TT-03	Circuit ID required.	Fit circuit ID.
	UV damage to cables.	Repair as required.
	Blue cable sheath required.	Fit equipment with blue sheath.
	Cable support required.	Fit cable support.
AD 1317-OFI-43 High pressure switch AD 1317-PSH-07 A/B	Equipment ID is incorrect.	Fit Equipment ID.
	Circuit ID required.	Fit circuit ID.
	UV damage to cables.	Repair as required.
AD 1317-OFI-44 Pressure Transmitter AD 1317-PT-04	Equipment and cable ID required.	Fit Equipment and cable ID.
	Nil certification available for plugs.	Replace uncertified plugs (High priority).
	Nil evidence of IS barrier installed.	Flameproof installation required.
AD 1317-OFI-45 High level switch AD 1317-LSH-02	Circuit ID required.	Fit circuit ID.
	Cable support required.	Fit cable support.
	UV damage to cables.	Repair as required.
	Flameproof device substantially painted and potentially compromising flame paths.	Further investigation required.

Additional Information

AD 1317-OFI-1

Slops tank

The slops tank receives liquids collected from the filter separators the tank is elevated to allow emptying under gravity for disposal. At the time of the site visit the tank was approximately 20% full. The liquids could be condensate, compressor oil or water and therefore the tank should be designed as a storage tank for flammable liquids which is covered by Australian standards AS 1940 “The storage and handling of flammable and combustible liquids” and AS 1692 “Steel tanks for flammable and combustible liquids”. Additionally there is an access ladder / platform that should comply with AS 1657 “Fixed platforms, walkways, stairways and ladders - Design, construction and installation”. Some deficiencies identified in the tank arrangement include:

- No spill containment bund.
- No evidence that the liquid inlet to the tank included a drop pipe and a liquid seal
- No obvious earthing of tank.
- No obvious earth connection point for vehicle / container during draining of the tank.
- The tank was fitted with a rubber hose for emptying the tank. There is a potential for static generation in the hose.
- No restriction orifices in the drain lines to minimise gas break through.
- The tank vent is pointing vertically downwards that increases the size of the hazardous area.
- No explosion / fire over pressure protection on tank (explosion hatch).
- No safe break connection on hose.
- Access ladder at incorrect angle, rungs round steel that present a fall / slip potential (partially remedied with anti-slip tape).

The tank should be replaced with a properly designed tank that meets the requirements of the Australian standards and environmental (EPA) requirements.

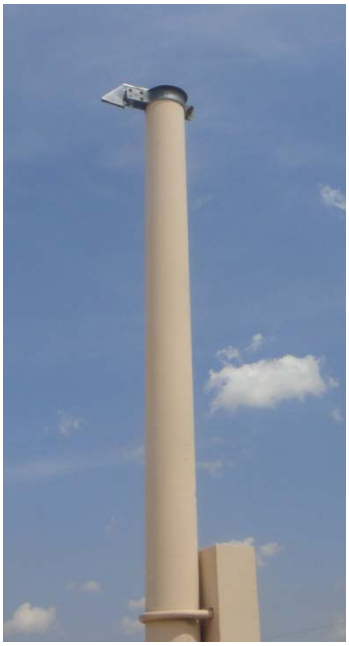
APA should consider the addition of an orifice in the liquid drain line to minimise the gas flow rate if the control valve fails open. Calculations should be performed on the maximum gas rate through the level control valves and the associated capacity of the vent points. It is recommended that plume dispersion is performed on the vent point of the tank to determine the extent of the hazardous area.

The requirement for an elevated tank should be evaluated. Fyfe’s recommendation would be to install a double skinned fibreglass tank at grade. The tank should include an orifice on the inlet line from the filter vessels (the location would be dependent on the pressure rating of the line), flame arrestor and explosion hatch. The vents should be sized in accordance with AS 1940 and API 2000 “Venting atmospheric and low-pressure storage tanks: non-refrigerated and refrigerated”.

The generation of static in the emptying connection should conform to velocity requirements in AS/NZS 1020 “The control of undesirable static electricity”. It is recommended that the hose is replaced with one with an integral earth.

AD 1317-OFI-4
Light Pole Cabling

AD 1317-OFI-5
PSV Discharge Flapper



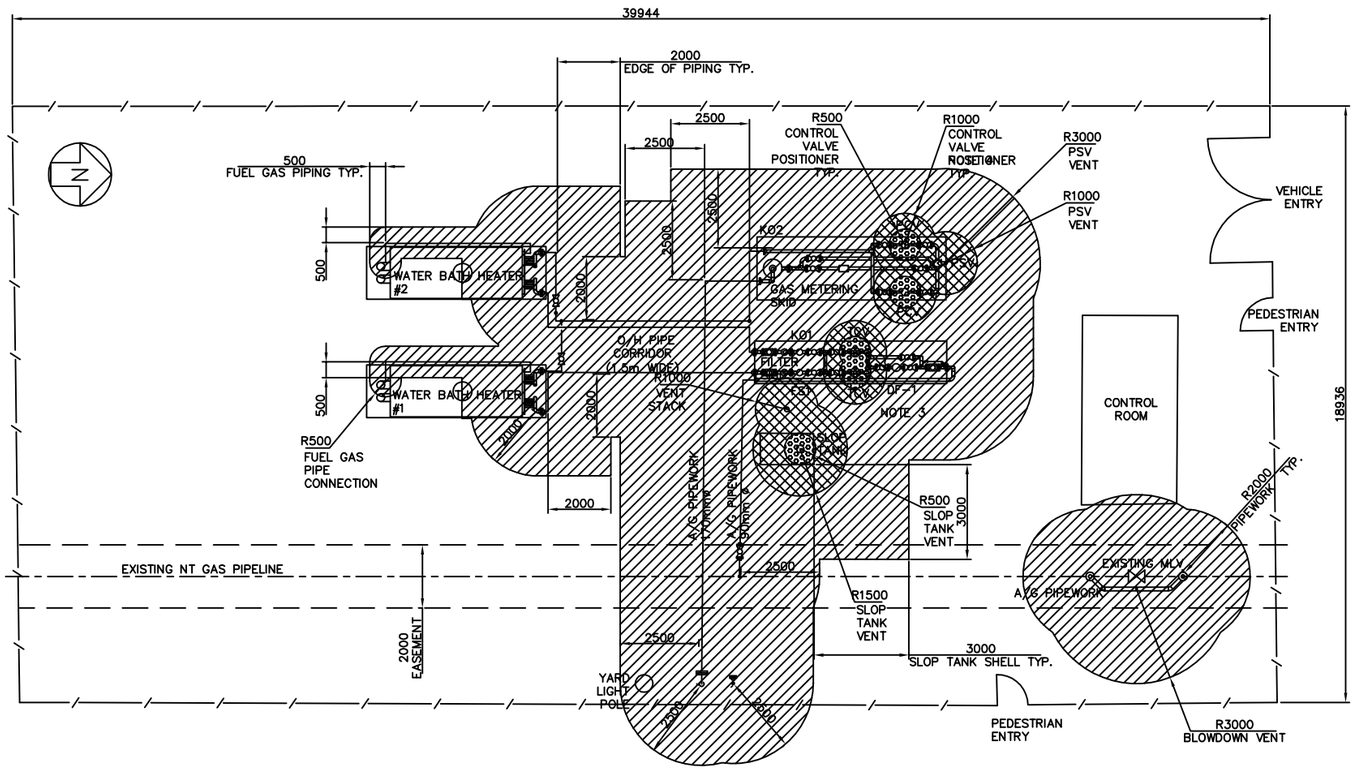
AD 1317-OFI-8
Water Bath Heater Stack

The stacks on the water bath heaters are not provided with any personnel protection or insulation.

4 Hazardous Area Mapping Drawings

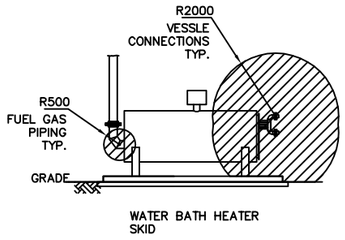
This section contains the hazardous area mapping drawings.

Drawing Number	Description	Revision
AD 1317-9401	Pine Creek Meter Station Hazardous Area	0

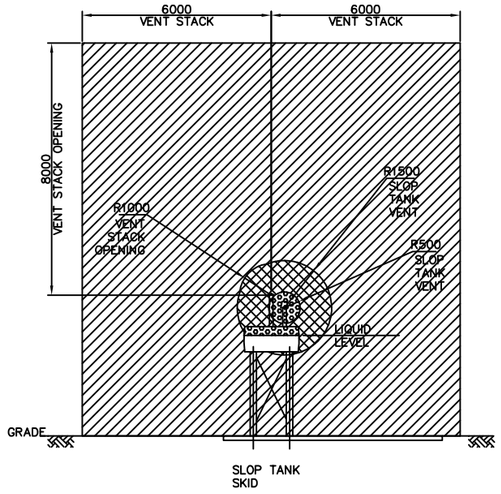


PLAN VIEW
SCALE 1:100

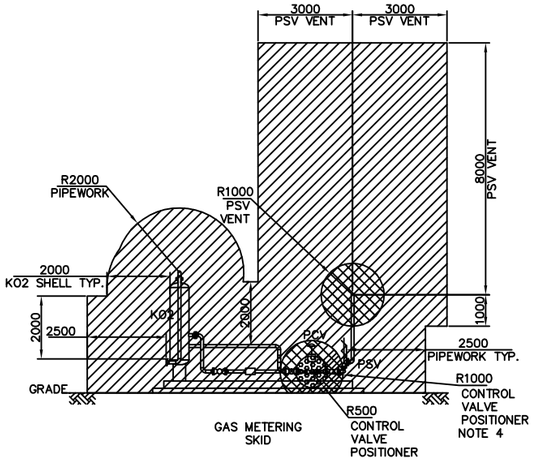
PROCESS EQUIPMENT ITEM				OPERATING CONDITIONS	DESCRIPTION OF FLAMMABLE		SOURCE OF RELEASE		DISTANCE OF SOURCE TO			EQUIPMENT GROUP AND TEMPERATURE	REMARKS
EQUIPMENT No.	DESCRIPTION	LOCATION	FLAMMABLE MATERIAL	PRESSURE & TEMPERATURE	& MATERIAL CONTAINMENT	VENTILATION	DESCRIPTION	GRADE	BOUNDARY OF ZONE 0	BOUNDARY OF ZONE 1	BOUNDARY OF ZONE 2	CLASS	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
–	PROCESS PIPING, JOINTS, VALVES & FITTINGS	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	≤9,900 kPag ≤60°C	CLOSED SYSTEM WITH FLANGES, PIPING, JOINTS & VALVES	NATURAL (OPEN AIR)	FLANGES, JOINTS, VALVE SEALS, DRAINS & VENTS	SECONDARY	N/A	N/A	2m RADIUS FROM EDGE OF PIPING ROUTES.	IIA, T1	SECTION 7.1.1 & SECTION 7.8
–	INSTRUMENT PIPING, JOINTS, VALVES & FITTINGS	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	≤700 kPag ≤60°C	CLOSED SYSTEM WITH FLANGES, PIPING, JOINTS & VALVES	NATURAL (OPEN AIR)	FLANGES, JOINTS, VALVE SEALS, DRAINS & VENTS	SECONDARY	N/A	N/A	1m RADIUS FROM EDGE OF PIPING ROUTES.	IIA, T1	SECTION 7.1.2
–	FUEL GAS PIPING, JOINTS, VALVES & FITTINGS	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	≤350 kPag ≤60°C	CLOSED SYSTEM WITH FLANGES, PIPING, JOINTS & VALVES	NATURAL (OPEN AIR)	FLANGES, JOINTS, VALVE SEALS, DRAINS & VENTS	SECONDARY	N/A	N/A	0.5m RADIUS FROM EDGE OF PIPING ROUTES.	IIA, T1	SECTION 7.1.3
–	CONTROL VALVES	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	≤9,900 kPag ≤60°C	VALVES WITH PACKED GLAND/ POSITIONER	NATURAL (OPEN AIR)	VALVES & DRAINS & VENTS, POSITIONERS & CONNECTIONS	CONTINUOUS PRIMARY &SECONDARY	0.5m RADIUS AROUND FLOW CONTROL POSITIONERS.	0.3m RADIUS FROM VALVE GLANDS; 1m RADIUS AROUND FLOW CONTROL POSITIONERS.	AS CLASSIFIED FOR PIPING.	IIA, T1	SECTION 7.1.4
–	PRESSURE RELIEF VALVES	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	≤9,900 kPag ≤60°C	VALVES & PIPING DISCHARGING VERTICALLY UPWARDS	NATURAL (OPEN AIR)	PIPE VENT TO ATMOSPHERE	PRIMARY &SECONDARY	N/A	1m RADIUS FROM VENT TIPS	6m LATERALLY, 8m ABOVE AND 1m BELOW THE DISCHARGE POINT	IIA, T1	SECTION 7.1.5
FA-02	VENT STACK	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	ATM. PRESSURE & AMB. TEMP.	VALVES & PIPING DISCHARGING VERTICALLY UPWARDS	NATURAL (OPEN AIR)	PIPE VENT TO ATMOSPHERE	PRIMARY &SECONDARY	N/A	1m RADIUS FROM VENT TIPS	6m LATERALLY, 8m ABOVE AND 6m BELOW THE DISCHARGE POINT	IIA, T1	SECTION 7.1.6
FS-1 DF-1	FILTER SEPARATORS	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	≤9,900 kPag ≤38°C	ENCLOSED VESSELS WITH QUICK OPENING CLOSURES	NATURAL (OPEN AIR)	FLANGES, JOINTS, VALVE SEALS, DRAINS & VENTS	SECONDARY	N/A	0.3m RADIUS AROUND THE QUICK OPENING CLOSURES.	0.3m RADIUS AROUND THE QUICK OPENING CLOSURES AND 2m RADIUS FROM THE EDGE OF THE VESSELS	IIA, T1	SECTION 7.3
SD-1	SLOP TANK	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	ATM. PRESSURE & AMB. TEMP.	OPEN VESSEL	NATURAL (OPEN AIR)	PIPING CONNECTIONS & VENTS	CONTINUOUS PRIMARY &SECONDARY	INSIDE THE TANK ABOVE LIQUID LEVEL AND 0.5 m RADIUS FROM VENT TIPS.	1.5m RADIUS FROM TANK VENT TIPS.	3m RADIUS FROM TANK SHELL AND VENT TIPS.	IIA, T1	SECTION 7.4
H-1 H-2	WATER BATH HEATERS	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	≤9,900 kPag ≤60°C	ENCLOSED VESSELS	NATURAL (OPEN AIR)	PIPING CONNECTIONS	SECONDARY	N/A	N/A	2m RADIUS FROM VESSEL CONNECTIONS.	IIA, T1	SECTION 7.5
KO-1 KO-2	KNOCKOUT POTS	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	≤9,900 kPag ≤38°C	ENCLOSED VESSELS	NATURAL (OPEN AIR)	PIPING CONNECTIONS	SECONDARY	N/A	N/A	2m RADIUS FROM THE EDGE OF THE VESSELS.	IIA, T1	SECTION 7.6
–	GROUND EFFECT	PINE CREEK STATION	NAT. VAP. CAT "G(i)"	≤9,900 kPag ≤60°C	CLOSED SYSTEM WITH FLANGES, PIPING, JOINTS & VALVES	NATURAL (OPEN AIR)	FLANGES, JOINTS, VALVE SEALS, DRAINS & VENTS	SECONDARY	N/A	N/A	1.5m LATERALLY AND EXTENDING TO 1m ABOVE GRADE FOR ALL PROCESS PIPING LESS THAN 2m ABOVE GRADE.	IIA, T1	SECTION 7.8



WATER BATH HEATER
SKID

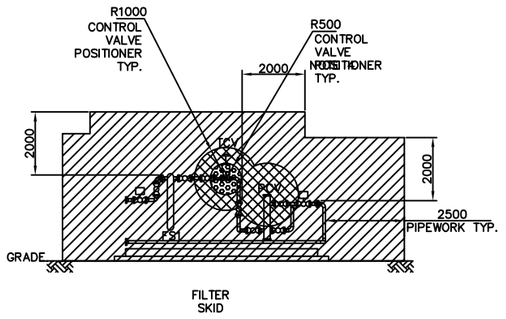


SLOP TANK
SKID



GAS METERING
SKID

NOTES:
1. THIS HAZARDOUS AREA CLASSIFICATION IS BASED ON CALCULATION 18756-1-REP-001 "HAZARDOUS AREA REPORT FOR NT GAS REGULATING AND METERING STATIONS".
2. GAS APPARATUS GROUP IIA AND GAS TEMPERATURE CLASS T1 ARE APPLIED TO HAZARDOUS AREA CALCULATIONS.
3. A ZONE 1 AREA OF 0.3m RADIUS EXISTS AROUND THE QUICK OPENING CLOSURES ON THE FILTERS.
4. A ZONE 1 AREA OF 0.3m RADIUS EXISTS AROUND ALL CONTROL VALVES.



FILTER
SKID

ELEVATIONS
SCALE 1:100

LEGEND
- ZONE 0
- ZONE 1
- ZONE 2

0 2.5 5.0 7.5 10
SCALE 1:100 METRES

DWG. No.	REFERENCE DRAWINGS

REV	DESCRIPTION	PROJ. ENGINEER	DATE	DRAWN	DATE	CHECKED	DATE	PROJ. MANAGER	DATE
0	ORIGINAL ISSUED FOR DOSSIER								
A	ISSUED FOR HAZARDOUS AREAS CLASSIFICATION			FYF	20.8.10				

CLIENT: N.T. GAS

FYFE

CLIENT | DATE | FYFE REF No

AMADEUS BASIN TO DARWIN PIPELINE

PINE CREEK STATION
HAZARDOUS AREA PLAN

DRAWING NUMBER	SHEET	REVISION
AD1317-9401	A1	0

5 Hazardous Area Equipment Register and Certificates of Conformity

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

FYFE
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ENVIRONMENT
DEVELOPMENT
RESOURCES

Pine Creek Meter Station
Hazardous Area Equipment Register

APA Group

Doc No.: 18756-5-70-012
Rev: 0
Date: 18-Nov-2011

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.		
AD-1317-SVO-01	AD 1317-10-7000	ESV-01	Solenoid valve (open)	Lucifer		821003	AD 1317-9401	2	IIA	T1	Ex m, e IIC T5	AUS Ex 321
AD-1317-SVO-02	AD 1317-10-7000	ESV-01	Solenoid valve (open)	Lucifer			AD 1317-9401	2	IIA	T1	Ex m, e IIC T5	AUS Ex 321
AD-1317-ZSC/ZSO-01	AD 1317-10-7000	ESV-01	Valve limit switch (close)/ (open)	Bettis	3R-321 AFC		AD 1317-9401	2	IIA	T1	Ex d IIB T6	SAA ? Ex 95?
AD-1317-JB		Gas Conditioning Skid	Junction box	Govan	F150		AD 1317-9401	2	IIA	T1	Ex d IIA/IIB T6 IP65	AUS Ex 349
AD-1317-PIT-01		Gas Conditioning Skid	Pressure Transmitter	Rosemount	3051TG4A2B21BS4M5T1	P50754039	AD 1317-9401	2	IIA	T1	IP 66/67	
AD-1317-DPIT-01	AD 1317-10-7000	FS-01	Pressure differential transmitter	Rosemount	3051CD4A02A1BM5I7T1S5	R50517285	AD 1317-9401	2	IIA	T1	Ex ia IIC T5 (40C)	AUS Ex 1249x
AD-1317-ZSC-02AL	AD 1317-10-7000	TCV-02A/B	Valve limit switch (close)	Masoneilan	400496-911		AD 1317-9401	2	IIA	T1	Class 1 Group B,C,D	Not SAA Approved
AD-1317-I/P-02A	AD 1317-10-7000	TCV-02A/B	Pressure converter (posioner)	Masoneilan	8012-2C	X34555-1-88-8	AD 1317-9401	2	IIA	T1	Ex ia IIC T6	SAA Ex 94
AD-1317-JB		TCV-02A/B	Junction box	Govan	FW4W		AD 1317-9401	2	IIA	T1	Ex d IIB T6 IP 65	AUS Ex 157
AD-1317-TT-01A	AD 1317-10-7000	TCV-02A/B	Temperature transmitter	Rosemount	444-RI2-U1-A1-I7	A212445	AD 1317-9401	2	IIA	T1	Ex ia IIC T6 (40C) T5 (70C)	AUS Ex 122x
AD-1317-PT-01A	AD 1317-10-7000	TCV-02A/B	Pressure transmitter	Rosemount	3051CG5A22A1AB4I7M5	R50523853	AD 1317-9401	2	IIA	T1	Ex ia IIC T5(40C) T4 (60C)	AUS Ex 1249x
AD-1317-ZSC/ZSO-03A	AD 1317-10-7000	SDV-03A	Valve limit switch	Bettis	3R-021-AFC		AD 1317-9401	2	IIA	T1	Ex d IIB T6	SAA ? Ex 95?
AD-1317-SVO/SVC-03A	AD 1317-10-7000	SDV-03A	Solenoid valve	Herion			AD 1317-9401	2	IIA	T1	Ex e IIC IP 65	AUS Ex 198
AD-1317-ZSC-02BL	AD 1317-10-7000	TCV-02A/B	Valve limit switch (close)	Masoneilan	400496-911		AD 1317-9401	2	IIA	T1		
AD-1317-I/P-02B	AD 1317-10-7000	TCV-02A/B	Pressure converter (posioner)	Masoneilan	8012-2C	X34555-1-88-3	AD 1317-9401	2	IIA	T1	Ex ia IIC T6	SAA Ex 94
AD-1317-JB		TCV-02A/B	Junction box	Govan	FW4W		AD 1317-9401	2	IIA	T1	Ex d IIB T6 IP 65	AUS Ex 157
AD-1317-PT-01B	AD 1317-10-7000	TCV-02A/B	Pressure transmitter	Rosemount	3051CG5A22A1AB4I7M5	0957563	AD 1317-9401	2	IIA	T1	Ex ia IIC T5(40C)	AUS Ex 1249x
AD-1317-TT-01B	AD 1317-10-7000	TCV-02A/B	Temperature transmitter	Rosemount	444-RI2-U1-A1-I7	A212446	AD 1317-9401	2	IIA	T1	Ex ia IIC T6 (40C)	AUS Ex 122x
AD-1317-ZSC/ZSO-03B	AD 1317-10-7000	SDV-03B	Valve limit switch	Bettis	3R-021-AFC		AD 1317-9401	2	IIA	T1	Ex d IIB T6	SAA ? Ex 95?
AD-1317-SVO/SVC-03B	AD 1317-10-7000	SDV-03B	Solenoid valve	Herion			AD 1317-9401	2	IIA	T1	Ex e IIC IP 65	AUS Ex 198
AD-1317-LSH-01	AD 1317-10-7000	FS-01	Low level switch	Magnatrol	D75-1B20-BNW		AD 1317-9401	2	IIA	T1		Not SAA Approved
AD-1317-PS-01A	AD 1317-10-7001	H-1A fuel gas supply line	Pressure switch	United Electric	J120-702		AD 1317-9401	2	IIA	T1	Ex d IIB T5 IP 66	AUS Ex 542-2
AD-1317-PS-02A	AD 1317-10-7001	H-1A fuel gas supply line	Pressure switch	United Electric	J120-702		AD 1317-9401	2	IIA	T1	Ex d IIC T5 IP 66	AUS Ex 542-2
AD-1317-SV-V4A / V5A	AD 1317-10-7001	Water bath heater H-1A	Solenoid valve	Herion	970806	852506 / 838998	AD 1317-9401	2	IIA	T1	Ex e, s IIC	AUS Ex 198 DIP 118
AD-1317-I/P-03A	AD 1317-10-7001	H-1A fuel gas supply line	Pressure converter (posioner)	Masoneilan	8005 A	080061-211	AD 1317-9401	2	IIA	T1	Ex ia IIC T5	AUS Ex 94
AD-1317-SV-9A	AD 1317-10-7001	Water bath heater H-1A	Solenoid valve	Asco	FA80035	FAB8320A18	AD 1317-9401	2	IIA	T1	I / II A & B T5	
AD-1317-SV-10A	AD 1317-10-7001	H-1A/B fuel gas supply line	Solenoid valve	Tyco	F79U		AD 1317-9401	2	IIA	T1		
AD-1317-PS-01B	AD 1317-10-7001	H-1B fuel gas supply line	Pressure switch	United Electric	J120-702		AD 1317-9401	2	IIA	T1	Ex d IIB T6 IP 66	AUS Ex 542-2
AD-1317-PS-02B	AD 1317-10-7001	H-1B fuel gas supply line	Pressure switch	United Electric	J120-702		AD 1317-9401	2	IIA	T1	Ex d IIB T6	AUS Ex 542-1x
AD-1317-SV-V4B / V5B	AD 1317-10-7001	Water bath heater H-1B	Solenoid valve	Lucifer	821003	8704 / 8604	AD 1317-9401	2	IIA	T1	Ex m, e IIC T5	AUS Ex 321-1
AD-1317-I/P-03B	AD 1317-10-7001	H-1B fuel gas supply line	Pressure converter (posioner)	Masoneilan	8005 A	080061-211	AD 1317-9401	2	IIA	T1	Ex ia IIC T5	AUS Ex 94
AD-1317-SV-8B	AD 1317-10-7001	Water bath heater H-1B	Solenoid valve	Asco	FA80033	56707A	AD 1317-9401	2	IIA	T1		
AD-1317-SV-9B	AD 1317-10-7001	Water bath heater H-1B	Solenoid valve	Asco			AD 1317-9401	2	IIA	T1		
AD-1317-JB		Meter Run	Junction box	Govan	F7		AD 1317-9401	2	IIA	T1	Ex d IIA IIB T6 IP 65	AUS Ex 401
AD-1317-PT-02	AD 1317-10-7002	FE-01	Pressure transmitter	Rosemount	3051	0459808	AD 1317-9401	2	IIA	T1	Ex ia IIC T5(40C) T4 (60C)	AUS Ex 122x
AD-1317-FT-01	AD 1317-10-7002	FE-01	Flow transmitter	Rosemount	3051PD2A22A1AM5T7L4Q4	0459795	AD 1317-9401	2	IIA	T1	Ex ia IIC T5 (40C) T4 (60C)	Aus Ex 1249x
AD-1317-FT-02	AD 1317-10-7002	FE-01	Flow transmitter	Rosemount	3051 DP*	0459794	AD 1317-9401	2	IIA	T1	Ex ia IIC T5 (40C) T4 (60C)	Aus Ex 1249x
AD-1317-TIT-02	AD 1317-10-7002	FE-01	Temperature transmitter	Rosemount	3144PD2A1I7M5F5	01170770	AD 1317-9401	2	IIA	T1	Ex ia IIC T6(40C) T5 (70C) IP 66	AUS Ex 3794x
AD-1317-TT-03	AD 1317-10-7002	KO-02 outlet (DN80)	Temperature transmitter	Rosemount	444-RI2-U1-A1-I7		AD 1317-9401	2	IIA	T1	Ex ia IIC T6 (40C) T5 (70C)	AUS Ex 122x
AD-1317-PSH-07A/B	AD 1317-10-7002	KO-02 outlet (DN80)	High pressure switch	Allen-Bradley	BUL 836T-T256J		AD 1317-9401	2	IIA	T1	IP 66	Not SAA Approved
AD-1317-PT-04	AD 1317-10-7002	KO-02 outlet (DN80)	Pressure transmitter	Rosemount	3051IG3A2B21BB4K7M5TICI104S5	R50851678	AD 1317-9401	2	IIA	T1	Ex ia IIC T5(40C) T4 (60C) IP 65	AUS Ex 1249x
AD-1317-LSH-02	AD 1317-10-7003	Slop tank SD-1	High level switch	BESTOBELL MOBREY	S-250 DA F104	8805	AD 1317-9401	2	IIA	T1	Ex d IIB T6 IP 66	SAA 186
AD-1317-LSL-01A/B	AD 1317-10-7001	H-1A/B	Low level switch	Danfoss	RS-113		AD 1317-9401	2	IIA	T1		
AD-1317-PS-03A/B	AD 1317-10-7001	H-1A/B fuel gas supply line	Pressure switch	United Electric	J120-702		AD 1317-9401	2	IIA	T1		

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Pine Creek Meter Station
Hazardous Area Equipment Register

Doc No.: 18756-5-70-012
Rev: 0
Date: 18-Nov-2011

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.		
AD-1317-PS-04A/B	AD 1317-10-7001	H-1A/B fuel gas supply line	Pressure switch	United Electric	J120-701		AD 1317-9401	2	IIA	T1		
AD-1317-PS-05A/B	AD 1317-10-7001	H-1A/B burner 1 SV-V7A/B	Pressure switch	United Electric	J120-701		AD 1317-9401	2	IIA	T1		
AD-1317-PS-06A/B	AD 1317-10-7001	H-1A/B burner 2 SV-V6A/B	Pressure switch	United Electric	J120-701		AD 1317-9401	2	IIA	T1		
AD-1317-SVC-03A/B	AD 1317-10-7000	SDV-03A/B	Solenoid valve (close)	Bettis	NA		AD 1317-9401	2	IIA	T1		
AD-1317-SV-V6A/B	AD 1317-10-7001	H-1A/B fuel gas supply line	Solenoid valve	Tyco	F79U		AD 1317-9401	2	IIA	T1		
AD-1317-TSHH-02A/B	AD 1317-10-7001	Water bath heater H-1A/B	Temperature switch	United Electric	802 6BS		AD 1317-9401	2	IIA	T1		
AD-1317-TSLH-01A/B	AD 1317-10-7001	Water bath heater H-1A/B	Temperature switch	United Electric	F100 6BS		AD 1317-9401	2	IIA	T1		
AD-Cables		Cables										

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ENVIRONMENT
DEVELOPMENT
RESOURCES

Pine Creek Meter Station
Hazardous Area Equipment Register

Doc No.: 18756-5-70-012
Rev: 0
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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.		

FYFE
Earth Partners
ENVIRONMENT
DEVELOPMENT
RESOURCES

Pine Creek Meter Station
Hazardous Area Equipment Register

Doc No.: 18756-5-70-012
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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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DEVELOPMENT
RESOURCES

Pine Creek Meter Station
Hazardous Area Equipment Register

APA Group

Doc No.: 18756-5-70-012
Rev: 0
Date: 18-Nov-2011

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.		

EPEE
Explosion Protection Electrical Equipment

EPEE Certificate: Ex 321

SAI Global Assurance Services

Certificate No.	Ex 321	**Latest Issue**	Issue 5
		Issue Date	17-09-1998

Expiry Date	16-05-2004
Certificate Holder	Parker Hannifin (Australia) Pty Ltd 9 Carrington Road CASTLE HILL Sydney New South Wales 2154 Australia
Equipment Category	SOLENOIDS
Product Description	Lucifer Explosion Proof Coil/ Housing Assemblies
Protection Type	Type m Type e DIP
Marking Code	* see schedule | Class I | Class II | Zone 1
Gas Group	IIC
IP Rating	IP 65 IP 67
Manufacturer	Parker Lucifer
Test Report Number	LOSC 10601
Issued By	Londonderry Occupational Safety Centre
Standard	AS 2380.1-1989 AS 1939-1990 AS 2236-1994 AS 2380.6-1988 AS 2431-1981

NOTES

HOME > EPEE > EX 321

613 9729 8884

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 95-1

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

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

Description of Modification "Bettiswitch" Switch Enclosures Types: 3R and 4R This supplementary certificate relates to the change of address of Certificate Holder and Manufacturer.	Hazardous Location Class I Zone 1 Type of Protection Ex d IIB T6 Certificate Holder Bettis Actuators & Controls Ltd Brunel Way, Fareham HAMPSHIRE PO15 5SA ENGLAND Manufacturer Bettis Actuators & Control Ltd Brunel Way, Fareham HAMPSHIRE PO15 5SA ENGLAND Test Report No(s) N/A
	Australian Standard(s) N/A SAA File Reference Ref: P/3:84017 Effective Date 1984.02.14 Date of Issue 1984.02.22

Director—Administration & Approvals
Standards Association of Australia

STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

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

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 349

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

"Govan Drewburn" Junction Box

Cat No F150W

Drawing No(s)

1373 Rev. 4-11-81; 2613 and 2614

Certification Conditions

Remarks

Hazardous Location

Class I Zone 1

Type of Protection

Ex d IIB T6 IP65

Certificate Holder

Govan Drewburn Pty Ltd
156 Bamfield Road
WEST HEIDELBERG VIC 3081

Manufacturer

Govan Drewburn Pty Ltd
156 Bamfield Road
WEST HEIDELBERG VIC 3081

Test Report No(s)

SCC TR No 56739

Australian Standard(s)

AS 2480-1981

SAA File Reference

P/3: 81216/M104

Effective Date

1982.07.22

Date of Issue

1982.08.11

Director—Administration & Approvals
Standards Association of Australia

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No: 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.: 4-70538561-001 Rev: 0 Date: 31/7/03
ORDER NUMBERS
Customer: 626973
Emerson: 70538561

Issued by:

Test Safe AUSTRALIA

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

JAS-ANZ

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

STANDARDS AUSTRALIA

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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

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

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

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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Schedule

Certificate No: AUS Ex 1249X **Issue:** 5 **Date of Issue:** 30/05/2003

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

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

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

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Certified Equipment: (Continued)

(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

Issued by:

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

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

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex 1249X-5

Drawings Relating to Variations Permitted by Issue 5

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

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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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex 1249X-5

Drawings Relating to Variations Permitted by Issue 5 (Continued)

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

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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 document under Certificate Number AUS Ex 1249X
Amendments require Supplementary Certification

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

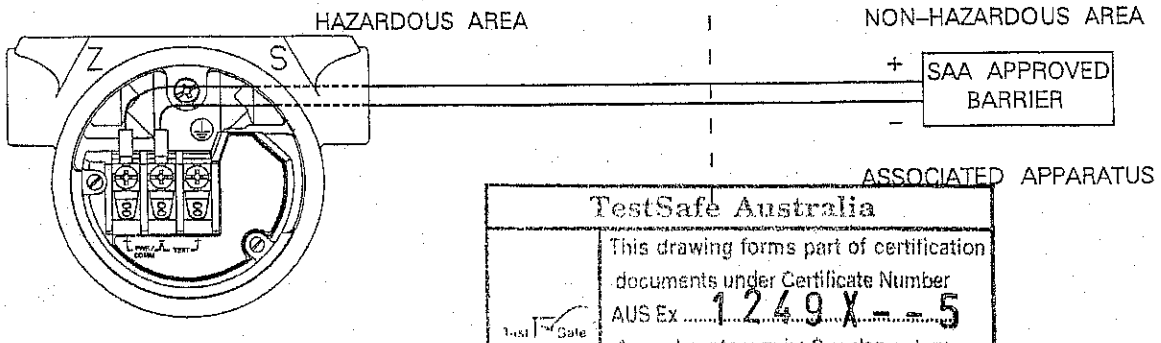
3051C	3051H	3001C	3001S
3051L	3051T	3001CL	
3051P	3051CA	3001CH	

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		RTC1Ø06448		

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

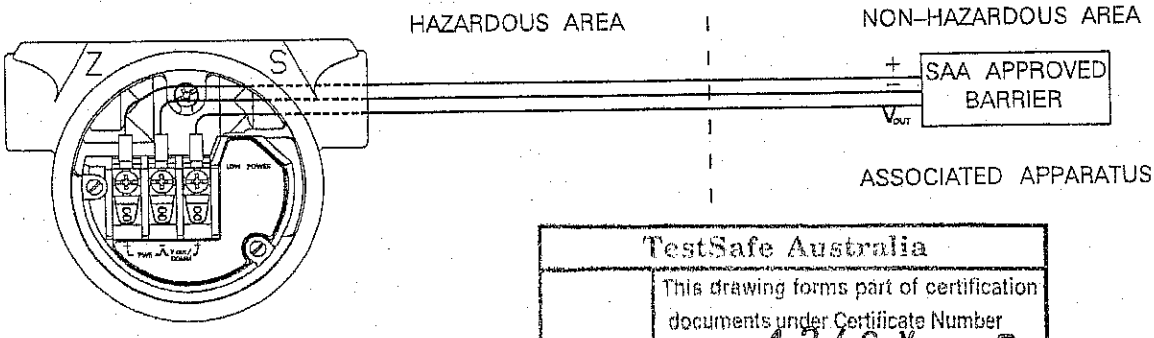
3051C	3051T
3051L	3051CA
3051P	
3051H	

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

APPARATUS PARAMETER	BARRIER PARAMETER
Vmax = 30V Imax = 200mA Pmax = 0.9W	Voc IS LESS THAN OR EQUAL TO 30V Isc IS LESS THAN OR EQUAL TO 200mA $\frac{Voc * Isc}{4}$ IS LESS THAN OR EQUAL TO 0.9W
Ci = 0.042μF Li = 10μH	Ca IS GREATER THAN 0.042 MICROFARADS 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 Debe	SIZE A	FSCM NO	DWG NO. Ø3031-1Ø26
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

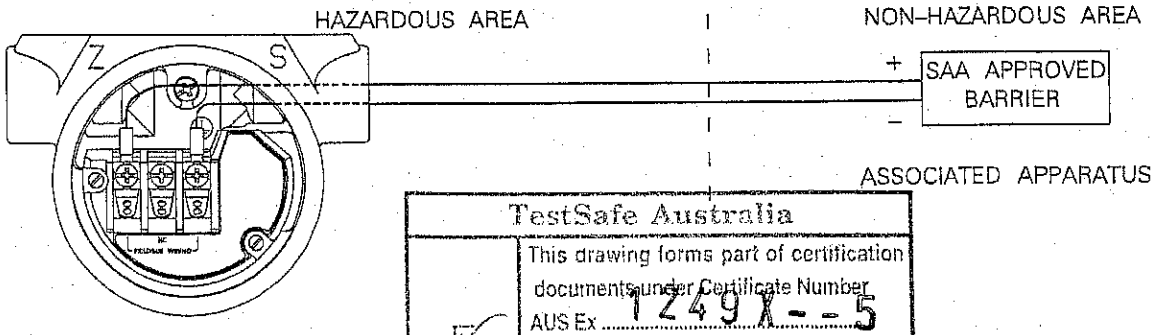
3051C	3051H	3001C	3001S
3051L	3051T	3001CL	
3051P	3051CA	3001CH	

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

Test Safe

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

CAD Maintained, (MICROSTATION)

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

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 94-2

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

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

Description of Modification

"Masoneilan" Electro-Pneumatic Transducers and Valve Positioners

This supplementary certificate relates to the equipment certified under SAA Certificate No. Ex 94-1, which may also be used with a "YEW" Safety Barrier, Cat. No. BARD-400*A/A

Drawing No(s)

A1120 Rev. C

RECEIVED
31 AUG 1983
Ans'd.....

Hazardous Location

Class I Zone 0

Type of Protection

Ex ia IIC T6

Certificate Holder

Masoneilan Australia Pty Ltd
Suite 8
651 Pacific Highway
KILLARA N S W 2071

Manufacturer

Masoneilan International Inc.
Norwood
MASSACHUSETTS 02062, U S A

Test Report No(s)

SCC TR No. 58035

Australian Standard(s)

AS 1829-1981

SAA File Reference

P/3:83067/M111

Effective Date

1983.08.11

Date of Issue

1983.08.29

Director—Administration & Approvals
Standards Association of Australia

FW0001 (826x1165x16Mjpeg)

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No.	Ex: 157	Issue 0:	Original Issue 24/2/1993
		Issue 1:	21/9/1982
		Issue 2:	30/6/1988
		Issue 3:	15/12/1993

Date of Expiry: 15/12/2003

Certificate Holder: Govan Drewburn Pty Ltd
156 Bamfield Road
WEST HEIDELBERG Victoria 3081

Electrical Equipment: FW Range of Flameproof Enclosures

Type of Protection and Marking Code: Ex d IIB T6 IP65 Class I Zone 1

Manufactured By: Govan Drewburn Pty Ltd
156 Bamfield Road
WEST HEIDELBERG Victoria 3081

Issued by:

WORKCOVER AUTHORITY

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753
Phone: (047) 244 900 Fax: (047) 244 999

STANDARDS AUSTRALIA

FW0002 (826x1165x16Mjpeg)

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, AS 2380.2-1991(incorporating Amendment No 1) and AS 1939-1990

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

Test Report No: LOSC 9955

File Reference: 93/5071

K J Foale
Signed for and on behalf of issuing authority

Coordinator, Approvals & Certification
Position

15/12/1993
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 AUTHORITY

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753
Phone: (047) 244 900 Fax: (047) 244 999

STANDARDS AUSTRALIA

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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Schedule

Certificate No. Ex: 157 Issue: 3 Date of Issue: 15/12/1993

Equipment: A range of Flameproof Enclosures designated Series FW. The range includes both control stations and junction boxes in various configurations and having up to 5 entries, as required.

Allowable Variations:
Alterations to the range of certified equipment.

This supplementary certificate also covers revalidation of the entire range of enclosures.

Drawing Schedule

C2031	Revision 1	28 July 1993
C2359	Original	8 February 1993
C2353	Original	3 February 1993
C0774-Rev.2	Revision 2	21 June 1991
C1510	Original	22 October 1992

Issued by:

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753
Phone: (047) 244 900 Fax: (047) 244 999

WORKCOVER AUTHORITY

STANDARDS AUSTRALIA

AUSEx_122X

Price: $27.50 (incl 10 % GST)

Certificate #:	AUSEx_122X	**Issue Date:**	18/09/2002
Issue #:	20	**Expiry Date:**	31/12/2005
		Status:	EXPIRED
Certificate Holder:	Rosemount Instruments Pty Ltd		
Address:	471 Mountain Highway BAYSWATER VICTORIA 3153 AUSTRALIA		
Manufacturer:	Rosemount Inc.		
Product Description:	Series 444 & 1151 | Transmitters and Model 751 Field Signal Indicator & Optional M4 LCD Indicator		
Equipment Category:	Transmitters		
Protection Type:	ia		
Gas Group:	IIC		
Marking Group:			
IP Rating:	IP 66		
Test Report #:	" 10070, 13521, TS20280 and TestSafe 23136 "	**Issued by:**	TestSafe Australia
Standards:	AS 2380.1-1989 AS 1939-1990 AS 2380.7-1987		
Notes:	N/A		

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IEC Ex Certificates

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 198

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 Equipment

'Herion' Solenoid Valve Coils

Types: 0270, 0271. 0272, 0273, 0274, 0275, 0276 and, 0277

Suitable for the following voltages

From 12 V to 250 V d.c. or
From 24 V to 380 V, 40 to 60 Hz

Drawing No(s)

0272S, 0273S

Certification Conditions

Remarks

Hazardous Location

Class I Zone 1

Type of Protection

Ex s T5

Certificate Holder

Frank Puddick Industries Pty. Ltd.,
62, Amherst Street,
CAMMERAY, NSW 2062

Manufacturer

Herion Werke K.G.,
Postfach 1560,
7012, Fellbach,
STUTTGART, GERMANY

Test Report No(s)

SCC TR Nos. 53035, 54057 and 54058

Australian Standard(s)

AS 1826-1976

SAA File Reference

EL/29:78090/M93

Effective Date

1980-08-21

Date of Issue

1980-09-22

.....
Director
Standards Association of Australia

STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

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

SUPPLEMENTARY CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 198-1

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

'HERION' SOLENOID VALVE COILS

This supplementary certificate is issued to cover the following types which are in addition to the types detailed in Certificate No. Ex 198.

Types: 0770, 0771, 0772, 0773, 0780, 0781, 0782, 0783, 0870, 0871, 0872, 0873, 0880, 0881, 0882 and 0883

suitable for the following voltages

From 12 V to 250 V d.c. or
From 24 V to 380 V, 50 to 60 Hz

Drawing Nos.

0871S

Hazardous Location
Class I Zone 1

Type of Protection
Ex s T5

Certificate Holder
Frank Puddick Industries Pty.Ltd.,
62, Amherst Street,
CAMMERAY, NSW 2062

Manufacturer
Herion Werke K.G.,
Postfach 1560,
7012, Fellbach,
Stuttgart, GERMANY

Test Report No(s)

SCC TR No. 54880

Australian Standard(s)

AS 1826 - 1976

SAA File Reference

EL/29:80144/M94

Effective Date
1980-11-06

Date of Issue
1980-11-25

J.K. Gray

Director
Standards Association of Australia

STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

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

SUPPLEMENTARY CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 198-2

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

This certificate may be withdrawn at any time if in the opinion of SAA Committee 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

"Herion" Solenoid Valve Coils

This supplementary certificate relates to the following items:

(a) Addition of Apparatus Group IIC to the Type of Protection for equipment certified under SAA Certificate Nos. Ex 198 and Ex 198-1.

(b) Change in address of Certificate Holder.

Hazardous Location

Class I Zone 1

Type of Protection

Ex s IIC T5

Certificate Holder

Frank Puddick Industries Pty Ltd
204 West Street
CROWS NEST N S W 2065

Manufacturer

Herion Werke K.G.
Postfach 1560
7012, Fellbach
STUTTGART GERMANY

Test Report No(s)

N/A

Australian Standard(s)

N/A

SAA File Reference

P/3: 83135/M111

Effective Date

1983.07.21

Date of Issue

1983.08.09

Director—Administration & Approvals
Standards Association of Australia

STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

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

SUPPLEMENTARY CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 198-3

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

'Herion' Solenoid Valve Coils

This supplementary certificate relates to the following items:

(a) Change of enclosure material to aluminium (GD-AlSi12)

(b) Extension of SAA Certificate Ex 198-2 to include the following:

'Herion' Solenoid Valve Coils Types:

0278, 0279, 0788, 0789, 0790, 0791, 0792, 0793, 0794, 0795, 0796, 0797, 0888, 0889, 0890, 0891, 0892, 0893, 0894, 0895, 0896 and 0897.

Drawing No(s)

0278S, 0585042 ZZ and 0585043 VB.

Hazardous Location

Class I Zone 1

Type of Protection

Ex s IIC T5

Certificate Holder

Frank Puddick Industries
204 West Street
CROWS NEST NSW 2065.

Manufacturer

Herion Werke K.G.
Postfach 1560
7012 Fellbach
WEST GERMANY.

Test Report No(s)

SCC letter: 1985-02-28

Australian Standard(s)

N/A

SAA File Reference

P/3: 84125/M119

Effective Date

1985-02-28

Date of Issue

1985-03-03

Director—Administration & Approvals
Standards Association of Australia

EXPLOSION PROTECTED
ELECTRICAL EQUIPMENT SUPPLEMENTARY Certificate No Ex 198-5

Certificate of Compliance

This is to certify that Standards Australia Certificate Nos. Ex 198, Ex 198-1, Ex 198-2, Ex 198-3 and Ex 198-4 issued to:

Frank Puddick Industries Pty Ltd
242 Burns Bay Road
Lance Cove NSW 2066

for the "Herion" Solenoid Valve Coils are hereby extended to include changes as detailed in the following schedule.

SCHEDULE

Description of Changes:

1. Revalidation of Certificate.
2. Inclusion of increased safety in certification.
3. Exclusion of valve coils which do not incorporate a safety fuse.
4. Addition of classification for degree of protection IP65.

The following valve coil types are now covered by this certificate:

a Coils rated for supply voltage 12 to 250V, d.c:
0270, 0272, 0770, 0772, 0780, 0782, 0788, 0790 and 0792 all for armature dia. 13mm,
0870, 0872, 0880, 0882, 0888, 0890 and 0892, all for armature dia. 16m.

b Coils rated for supply voltage 24 to 380 V, 40 to 60 Hz:
0271, 0273, 0771, 0773, 0781, 0783, 0789, 0791 and 0793, all for armature dia. 13mm,
0871, 0873, 0881, 0883, 0889, 0891 and 0893, all for armature dia. 16mm.

Drawings:

027.TD	Original	9 December 1983
0271	Issue E	22 July 1988
0278	Issue D	10 October 1985
0278 parts list Pages 1 & 2	Original	13 November 1985
0570027	Original	12 January 1983
0570219	Original	13 January 1983

Signed for and on behalf of Standards Australia

General Manager
Quality Assurance Services

QUALITY ASSURANCE SERVICES
Standards Australia

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT SUPPLEMENTARY Continuation of Certificate No Ex 198-5

Certificate of Compliance

Drawings (Continued)

0570406	Issue A	24 September 1975
0570537	Issue G	5 July 1989
0570600	Issue D	1 September 1988
0570606	Issue B	2 August 1988
0570641	Issue D	16 August 1988
0570896	Issue B	2 August 1988
0571103	Original	9 May 1977
0571623	Issue C	11 November 1988
0571635	Issue F	6 April 1987
0572003	Original	11 January 1982
0572076	Original	14 January 1983
0572102	Original	17 March 1983
0572325	Original	21 January 1983
0572327	Original	24 January 1983
0572328	Issue C	6 April 1987
0572352	Original	25 January 1983
0572405	Issue C	27 March 1991
0585026	Issue B	8 August 1989
0585042ZZ	Original	1 March 1983
0586697	Issue C	29 December 1988
0586807	Issue A	10 August 1988
0586811	Issue A	28 July 1988
0586819	Issue A	11 August 1988
0586820	Issue B	11 November 1988
07718M	Issue A	8 October 1990
0871S	Original	6 August 1970

TYPE OF PROTECTION: Ex e s IIC T5 IP65 Class I Zone 1

Test Report No: LOSC 4429 to AS 2380.1-1989, AS 2380.6-1988, AS 1826-1983 and AS 1939-1990.

File: P/3: 90006, M157

Date of Issue: 10 July 1991

Date of Expiry of Validity: 10 July 2001

Signed for and on behalf of Standards Australia

General Manager
Quality Assurance Services

QUALITY ASSURANCE SERVICES
Standards 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 542 (Sheet 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 Equipment

A range of Pressure and Temperature Controls, 120 Series.

As detailed in Schedule 1

Drawing No(s)

Refer Schedule 2

Certification Conditions

Refer Schedule 1

Remarks

Hazardous Location

Class I Zone 1

Type of Protection

Ex d IIB T6 IP66

Certificate Holder

United Electric Controls
(Aust) Pty Ltd
83 Murphy Street
RICHMOND VIC 3121.

Manufacturer

United Electric Controls Co
83 School Street
Watertown
MASSACHUSETTS USA

Test Report No(s)

Londonderry Centre
TR NO: 974

Australian Standard(s)

AS 2480-1939 and
AS 1939-1981

SAA File Reference

P/3: 82153/M117

Effective Date

1984-10-29

Date of Issue

1984-10-30

This certificate is not transferable and remains the property of the Standards Association of Australia and must be returned to the Association in the event of it being revoked.

Director—Administration & Approvals
Standards Association of Australia

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

SCHEDULE 1 Description of Equipment cont'd

PRESSURE AND TEMPERATURE CONTROLS, 120 SERIES

(a) Pressure controls, Types J120, J120H, J120K, J120KH, H121, H122, H121K and H122K

(b) Temperature controls, Types B121, B122, C120, C120H, F120, F120H, E121, E122, 820E and 822E.

Each control comprises one or two snap switches and externally attached temperature or pressure sensor.

Each control may be provided with one ormore of the following options:

M315 enclosure with expoxy coating
M430 cover lock option
M440 cover chain option
M505 overtravel actuating plunger
XXXX other options which may occur and will have no bearing on explosion-protection nor electrical properties.

Certification Conditions cont'd

1. As the threaded entries are NPT, flameproof thread adaptors shall be used to permit the use of SAA certified flameproof cable glands.
2. Controls equippped with the manual reset arrangement, as detailed in Drawing No: E6296-185 Issue C, shall not be marked 'IP66'.
3. Shell petroleum jelly EDP code 82287 may be used for the lid thread

Director—Administration & Approvals
Standards Association of Australia

STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

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

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

SCHEDULE 2 Drawing No(s) cont'd

E6296-185	Issue C
E6296-186	Issue C
E6296-187	Issue B
E12259	Issue A
E12260	Issue A
E12261	Issue A
E12262	Issue B
E12263	Issue B
E12264	Issue B
E12265	Issue A
E12266	Issue A
E12267	Issue A
E12198	Issue A
E12200	Issue A
D6201-167	Issue B
D6201-203	Issue A
D6201-204	Issue A
UEA-1200G	Original
UEA-1200L	Revision 2

Director—Administration & Approvals
Standards Association of Australia

STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

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

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Continuation of Certificate No: Ex 542-1

This is to certify that SAA Certificate Nos Ex 542 issued to:

United Electric Controls (Aust) Pty LTd
83 Murphy Street
RICHMOND VIC 3121

for the 120 series range of Pressure and Temperature controls, is hereby extended to include modifications as detailed in the following schedule.

Schedule

Description of Modifications

1. Addition of various pressure sensors to the pressure controls type J120, J120K, H121, H121K, H122 and H112K.

2. Addition of the weather protected junction or indication box, fitted externally to flameproof control enclosure.

3. Removal of an unused second adjustment shaft hole from type H121 control enclosures.

4. Addition of option 1010, which includes replacement of DPDT switch for controls type C120, F120, J120,E121, B121 and H121.

5. Removal of the flat gasket type B, and replacement with the uniform O-ring gasket type A for the fitting of pressure sensors.

Drawings

E-6296-277 Sheets 1 & 2, Issue C
E-6296-278 Sheets 1 & 2, Issue B
E-6296-279 Issue B
E-12559 Sheet 1 Issue B
E-12559 Sheet 2 Issue D
E-12262 Sheet 1 Issue C
E-12262 Sheet 2 Issue D
E-12263 Issue A
E-12264 Issue A
E-12265 Sheet 1 Issue B
E-12265 Sheet 2 Issue C
UEA-1200G Issue B
UEA-1201G Issue A

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 542-1

Certification Conditions

The conditions specified in certificate Ex 542 shall apply to Ex 542-1

Type of Protection: Ex d IIB T6 IP66

Test Report: LOSC 2010 to AS 2480-1986 and 1939-1986

File: P/3: 85015/M137

Date of Issue: 28 July 1987

EXPLOSION PROTECTED
ELECTRICAL EQUIPMENT SUPPLEMENTARY Certificate No Ex 542-2

Certificate of Compliance

This is to certify that Standards Australia Certificate Nos Ex 542 and Ex 542-1 issued to:

United Electric Controls (Aust) Pty Ltd
83 Murphy Street
Richmond Vic 3121

for the 120 Series Temperature and Pressure Controls are hereby extended to include modifications as detailed in the following schedule.

SCHEDULE

Description of modifications:

Change of gas group to IIC

Models in the range

Temperature controls	B121 series: 119,120,121, E121, E122, C120, B122, F120 series: 2ACA, 2ASA, 2BCA, 2BSA, 2CCA, 2CSA, 2ACB, 2ASB, 2BCB, 2BSB, 2CCB, 2CSB, 3AC, 3AS, 3BC, 3BS, 3CC, 3CS, 4AC, 4AS, 4BC, 4BS, 4CC, 4CS, 5AC, 5AS, 5BC, 5BS, 5CC, 5CS, 8AC, 8AS, 8BC, 8BS, 8CC, 8CS, M9AA, M9BA, M9CA, M9BB, M9CB, 1BS, 2BS, 6BS, 7BS, M9B
Pressure controls (non-vented)	J120, J120K, H121, H122 series: 126, 137, 144, 134, 152, 156, 164, S126, S137, S144, S134, S152, S156, S164, S126B, S137B, S144B, S134B, S152B, S156B, S164B, 450, 451, 452, 453, 454
Pressure controls (vented)	J120, J120K, H121, H122, H121K, H122K series: 270, 274, 358, 361, 376, 550, 551, 552, 553, 554, 555, 612, 614, 455, 456, 457, 559, 701, 702, 703, 704, 705, 190, 191, 192, 193, 194, 147, S147, S147B, 157, S157, S157B, 36, 37, 38, 39, 40, 183, 184, 185, 186, 188, 189, 612, 616, 50, 51, 52, 53, 54, 55

Signed for and on behalf of Standards Australia

General Manager
Quality Assurance Services

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

Certificate of Compliance

Drawings:

E-6296-277 Sheet 1	Revision D	28 January 1992
E-6296-277 Sheet 2	Revision C	12 February 1986
E-6296-278 Sheet 1	Revision C	28 January 1992
E-6296-278 Sheet 2	Revision B	2 July 1985
E-6296-279	Revision C	28 January 1992
E-12259 Sheet 1	Revision C	28 January 1992
E-12259-Sheet 2	Revision E	29 January 1992
E-12262 Sheet 1	Revision D	28 January 1992
E-12262 Sheet 2	Revision D	12 February 1986
E-12263	Revision B	28 January 1992
E-12264	Revision B	28 January 1992
E-12265 Sheet 1	Revision C	28 January 1992
E-12265 Sheet 2	Revision D	12 February 1986
EUA-1200 G	Revision B	5 July 1985
UEA-1201 G	Revision A	8 July 1985
UEA-1200 L	Issue E	undated
E-12260	Revision B	29 January 1992
E-12261	Revision B	29 January 1992
E-12266	Revision B	29 January 1992
E-12267	Revision B	29 January 1992

TYPE OF PROTECTION: Ex d IIC T6 IP66 Class I Zone 1

Test Report No: NET 92/024 to AS 2380.1-1989 and AS 2380.2-1991

File: P/3: 91193.M165

Date of Issue: 21 April 1992

Date of Expiry of Validity: 21 April 2002

Signed for and on behalf of Standards Australia

General Manager
Quality Assurance Services

EXPLOSION PROTECTED
ELECTRICAL EQUIPMENT SUPPLEMENTARY Certificate No Ex 542-3

Certificate of Compliance

This is to certify that Standards Australia Certificate No Ex 542, Ex 542-1 and Ex 542-2 issued to:

United Electric Controls (Aust) Pty LTd

for the 120 series Temperature and Pressure Controls are hereby extended to include changes as detailed in the following schedule.

SCHEDULE

Description of changes:

Change of Address of Certificate Holder to:

Unit 2, 615 Warrigal Road
Ashburton Vic 3147

File: P/3: 92220

Date of Issue: 21 December 1992

Date of Expiry of Validity: 21 April 2002

Signed for and on behalf of Standards Australia

General Manager
Quality Assurance Services

QUALITY ASSURANCE SERVICES
Standards Australia

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

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 401

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

"Govan" Junction Box

Cat. No. F7

Drawing No(s)

3135; 1373 Rev. 4.11.81;
3214; 3076;
3137

Certification Conditions

Remarks

Hazardous Location

Class I Zone 1

Type of Protection

Ex d IIB T6 IP65

Certificate Holder

Govan Drewburn Pty Ltd
156 Bamfield Road
WEST HEIDELBERG VIC 3081

Manufacturer

Govan Drewburn Pty Ltd
156 Bamfield Road
WEST HEIDELBERG VIC 3081

Test Report No(s)

SCC TR No. 56970

Australian Standard(s)

AS 2480-1981

SAA File Reference

P/3: 81243/M108

Effective Date

1983.02.03

Date of Issue

1983.05.13

Director—Administration & Approvals
Standards Association of Australia

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No: 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 134) 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 paramcters 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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No. Ex: 186X

Issue 0: Original Issue 13/1/1981

Issue 3: 24/5/1995

Date of Expiry: 24/5/2005

Certificate Holder: BEP Engineering Products Pty Ltd
25A South Street
RYDALMERE NSW 2116

Electrical Equipment: Type S2 Switch Head

Type of Protection and Marking Code: Ex d IIC T6(T_{amb}=60) IP66 Class I Zone 1

Manufactured By: KDG Mobrey Limited
190/196 Bath Road
Slough Berkshire SL1 4DN United Kingdom

Issued by:

WorkCover Authority

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753
Phone: (047) 244 900 Fax: (047) 244 999

STANDARDS AUSTRALIA

Standards Australia Quality Assurance Services

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 Q7154) of the scheme.

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

AS 2380.1-1989 Electrical Equipment for Explosive Atmospheres-Explosion-protection Techniques - General Requirements
AS 2380.2-1991 Electrical Equipment for Explosive Atmospheres-Explosion-protection Techniques - Flameproof Enclosure d
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 11637

File Reference: LOSC 94/5922

K. J Fisher
Signed for and on behalf of issuing authority

Coordinator, Approvals & Certification
Position

24/5/1995
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 Authority

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753
Phone: (047) 244 900 Fax: (047) 244 999

STANDARDS AUSTRALIA

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Schedule

Certificate No. Ex: 186X Issue: 3 Date of Issue: 24/5/1995

Equipment: The S2 Switch Head consists of a cast enclosure having a bolt-on main access cover which houses an externally actuated switch block having up to 6 contacts. Cable entry to the interior of the enclosure is provided by means of a separately certified cable gland.

lowable Variations:

1. A change in the name of the Certificate Holder.
2. Re-validation of the certified equipment and variation to current standards.
3. Inclusion of the Type S2 Level Switch to the range of certified equipment.

Conditions of Certification:

It is a condition of safe use that the equipment be used with an appropriately certified cable gland and adaptor.

Drawing Schedule

Drawing No.	Drawing Title	Revision No.	Drawn/ Revision Date
71097/790	Mobrey Flameproof Switch Head	D	19/10/92
71097/876	Nameplate for S250 Series Flameproof Level Switches	1	7/12/94
71097/880	Certification Plate	1	4/1/95

Issued by:

WorkCover Authority

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753

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

Reference 94/5922

WORKCOVER AUTHORITY

QUALITY SYSTEM
AS3902/ISO9002

RECEIVED
20 JAN 95

BEP Instrument
(A Division of Beacon Engineering Products
Pty Limited)
25A South Street
RYDALMERE NSW 2116

Attention: Mr John Shaw

18th January, 1995

Dear Sir,

RE: YOUR TYPE S2 FLAMEPROOF MAGNETIC LEVEL SWITCH

With reference to the above apparatus which was submitted for testing for certification purposes, our testing is now complete, and our Test Report No. 11637 is attached.

Yours faithfully,

G.J. Ruming
Senior Technical Officer (Electrical)
for Operations Manager,
Londonderry Occupational Safety Centre

Encl.

95M1701

LONDONDERRY OCCUPATIONAL SAFETY CENTRE, 132 Londonderry Road Londonderry NSW 2753
Phone: (047) 244 900 Toll Free (008) 02 4205 Fax (047) 244 999 New South Wales Government

26 [illegible] 95

Reference 94/5922 WORKCOVER AUTHORITY

The Manager,
BEP Engineering Products Pty Ltd
25A South Street
RYDALMERE NSW 2116

Attention: Mr John Shaw

24 May, 1995

Dear Sir,

re: CERTIFICATION OF ELECTRICAL EQUIPMENT FOR HAZARDOUS AREAS

Apparatus: 'Mobrey' Switch Head Type: S2
Certificate No: Ex: 186X issue 3

I refer to your application dated 1/3/94 for re-validation of the above apparatus under the provisions of the Standards Australia Hazardous Area Certification Scheme.

Please find enclosed the relevant certification documents and drawings.

Yours faithfully,

K. J. Fisher

K.J. Fisher,
Coordinator, Approvals and Certification,
for Operations Manager,
Londonderry Occupational Safety Centre
encl.
cc. (with copy of certification documents)
The Manager,
Quality Assurance Services,
PO Box 1055,
STRATHFIELD NSW 2135 216
Attention: Mr Roy Jacobi

LONDONDERRY OCCUPATIONAL SAFETY CENTRE, 132 Londonderry Road Londonderry NSW 2753
Phone: (047) 244 900 Toll Free (008) 02 4205 Fax (047) 244 999 New South Wales Government

TEST REPORT

TEST REPORT NO: 11637
FILE NO: 94/5922
DATE OF ISSUE: 18th January, 1995

WORKCOVER AUTHORITY OF N.S.W.

LONDONDERRY OCCUPATIONAL SAFETY CENTRE

132 LONDONDERRY ROAD

LONDONDERRY NSW 2753

TEST OF ELECTRICAL EQUIPMENT FOR EXPLOSIVE ATMOSPHERES -

EXPLOSION-PROTECTION TECHNIQUES

GENERAL REQUIREMENTS

AND FLAMEPROOF ENCLOSURE d

TO AUSTRALIAN STANDARDS 2380.1-1989, 2380.2-1991

AND 1939-1990

APPARATUS	TYPE S2 FLAMEPROOF MAGNETIC LEVEL SWITCH
SUBMITTER	BEP ENGINEERING 25A SOUTH STREET RYDALMERE NSW 2116
GROUP	IIC
TEMPERATURE CLASSIFICATION	T6 AT 60°C AMBIENT
DEGREE OF PROTECTION	IP66
HAZARDOUS AREA	CLASS I ZONE 1

1. GENERAL

This report covers the supplementary application of BEP Instruments to include on Standards Australia Certificate No. Ex 186 a type S2 series Flameproof Magnetic Level Switch. Variations of this series are listed on Drawing 71097/790 Issue B. This application also includes the re-validation of the above certificate and the transfer of ownership of the certificate from Bestobell Mobrey Limited of the U.K. to BEP Instruments (a division of Beacon Engineering Products Pty. Limited) of 25A South Street, Rydalmere, NSW 2116.

2. TESTING

2.1 The equipment was tested to AS2380.1-1989 and AS2380.2-1991 for Group IIC and Temperature Classification T6 at 60° amb.

The following clauses of AS2380.1 were applied:

2.1, 2.3.2, 2.4.1, 2.8, 2.9, 2.10, 2.11.1, 3.2.6, 4.1, 4.2, 4.4, 4.7, 5.1.2, 5.1.3, 5.2.1, 5.2.3, 5.3 and 5.5.

The following tests were not considered necessary:

Clause 5.5 "Temperature Rise Test" due to the nature of the enclosed micro switch, negligible power would be dissipated within the enclosure thus a temperature classification of T6 with a 60° ambient is justified.

2.2 The following clauses of AS2380.2 were applied:

2.1, 2.2, 2.4, 2.10.1, 2.10.4, 2.11, 2.12.1, 2.12.3, 2.12.4, 3.1, 4.2.1, 4.2.3, 4.2.4, 4.2.5 and 4.3.1.

The following tests were not considered necessary:

Clause 4.2.3 "Determination of Explosion Pressure" and Clause 4.2.5 "Flameproof Test" as ERA Test Report File No. 5041/159 of May 1979 indicates compliance.

2.3 The equipment was also tested to AS1939-1990 for degree of protection IP66.

3. RESULTS

The apparatus complied with the standards and requirements above.

4. CONDITIONS

It is recommended the following conditions be included in the certificate for the equipment:

4.1 On installation a previously Standards Australia certified gland must be used and if necessary a previously Standards Australia certified thread adaptor.

5. ADDITIONAL INFORMATION

5.1 The marking was assessed on the basis of drawings only and included the Standards Australia Certificate No. AUS Ex 186X.

5.2 As the equipment passed a pressure test of 2640 KPa which was four times the reference pressure and the enclosure is not of welded construction, the equipment may be exempted from the routine pressure test of Clause 4.3 of AS2380.2-1991.

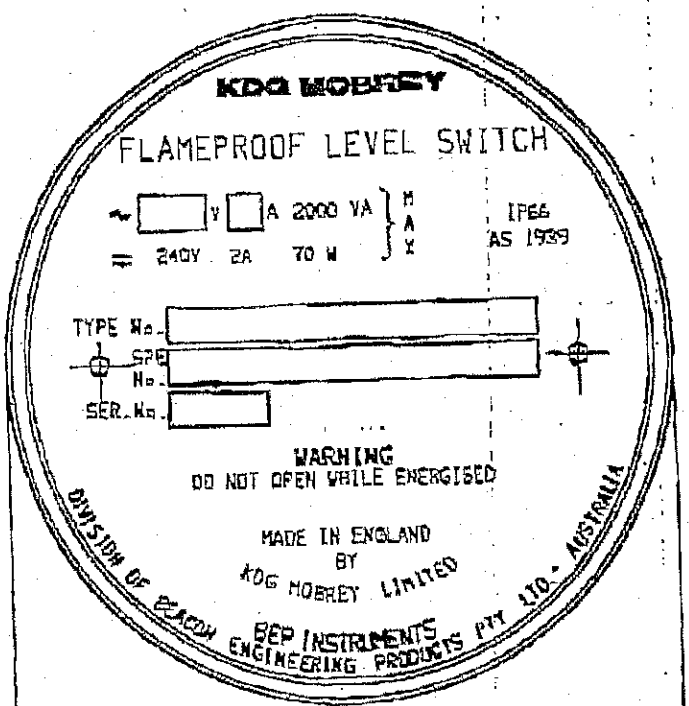
6. DRAWINGS

71097/790	Issue B	19 Oct 1992
71097/876	Issue 1	07 Dec 1994
71097/880	Issue 1	04 Jan 1995

G.J. Ruming
Senior Technical Officer
(Electrical)

G.R. Sandlant
Senior Technical Officer
(Electrical)

KDG MOBREY



ø100.00

MATERIAL & FINISH
0.71 THICK STAINLESS STEEL
BORDER, PADS LINES AND LETTERING NATURAL BRIGHT RAISED
ON A HEAVY CHEMICALLY ETCHED BLACK BACKGROUND (MATT FINISH)
FRAME: RED (MATT FINISH)

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

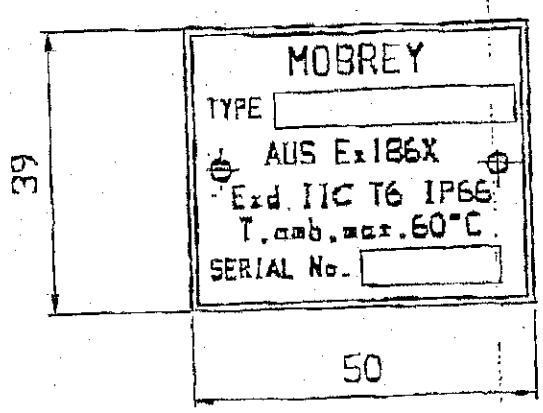
CAD PRODUCED DRAWING				
1	12.94	T12820	SLC	
ISS	DATE	CHANGE NOTE	NAME	CHECKED

S.A.(AUSTRALIA) APPROVAL

SCALE	PROJECTION	TITLE
1/1		NAMEPLATE FOR 5250 SERIES FLAMEPROOF LEVEL SWITCHES

DO NOT SCALE IF IN DOUBT ASK	DRAWN	SLC	1.12.94	DRG. NO. 71097/876
	CHECKED		7.12.94	

KDG MOBREY



NOTES:

- MATERIAL: STAINLESS STEEL 1.6 THICK

BORDER LETTERING AND PADS TO BE RAISED ON A HEAVY CHEMICALLY ETCHED BLACK BACKGROUND (MATT FINISH)

ISS	DATE	CHANGE NOTE	NAME	CHECKED
1	1.95	T12887	SLC	

SCALE 1/1

TITLE CERTIFICATION PLATE

DRAWN SLC 4.1.95

CHECKED 4-1-95

ORG. NO. 71097/880

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No.:	Ex 28	Issue 0:		Original Issue
		Issue 1-10:	See Schedule 1	
		Issue 11:	27 March 1996	Revalidation
		Issue 12:	12 February 1997	Addition to Range
		Issue 13:	11 November 1998	Minor Modification
f expiry:	27 March 2006			

ENTERED

Certificate Holder: **MM Industrial Products**
127 - 131 Airds Road
MINTO NSW 2566

Electrical Equipment: **FWP Series (wire armoured/cross braided cable) and GWP Series (unarmoured cable) Cable Glands**
(See Tables 2, 3, 4 and 5 for details)

Type of Protection and Marking Code: Ex d e p I/IIC IP## Class I Zone 1
DIP IP## Class II
- FWP Series - IP66
GWP Series - IP66/68

AUS Ex 28

Manufactured by: **MM Industrial Products**
127 - 131 Airds Road
MINTO NSW 2566

Issued by:

Engineering, Testing and Certification Centre
2 Smith Street, REDBANK, QLD 4301, Australia
Postal Address: PO Box 487, GOODNA, QLD 4300, Australia
Phone: (07) 3810 6370 Fax: (617) 3810 6366

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

STANDARDS AUSTRALIA

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

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

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

AS 2380.1 - 1989	**Electrical equipment for explosive atmospheres - Explosion-protection techniques - Part 1 : General requirements**
AS 2380.2 - 1991	**Electrical equipment for explosive atmospheres - Explosion-protection techniques - Part 2 : Flameproof enclosure d (Amdt 1 - 13 July 1992)**
AS 1828 - 1984	**Electrical equipment for explosive atmospheres - Cable glands**
AS 1939 - 1990	**Degree of protection provided by enclosures for electrical equipment (IP Code)**

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

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

Test Report No: **NM98/0001**

File Reference: **98/0204** **(P80735)**

Signed for and on behalf of issuing authority

Senior Engineer - Certification
Engineering, Testing and Certification Centre

Position

11 November 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.

Certificate No.: Ex 28 **Issue: 13**

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 6370 Fax: (617) 3810 6366

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

STANDARDS AUSTRALIA

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Schedule

Equipment:

The MM Cables "Surefit" Cable Glands consists of Series FWP and GWP as listed in Table 2, 3, 4 and 5. The cable glands are constructed of nickel plated brass alloy with metric or Imperial entry threads. The GWP series cable glands are manufactured with the option of extended backnut. The gland bodies have an angled grommet shoulder.

This supplementary certificate covers the addition of the stainless steel types and a change in the bore size in the gland body and the backnut for the GWP glands listed in Table 1.

Table 1. Modified Glands

METRIC	IMPERIAL	WHEN FITTED WITH EXTENDED BACKNUT	
		METRIC	IMPERIAL
GWPM3A	GWP3A	GWPMEX3A	GWPEX3A
GWPM3ASS	GWP3ASS	GWPMEX3ASS	GWPEX3ASS

Table 2 - FWP Series for Wire Armoured Cable

FWP SERIES GLANDS CAT NOS FOR WIRE ARMOURED CABLE		FWP SERIES GLANDS CAT NOS FOR WIRE ARMOURED CABLE	
METRIC	IMPERIAL	METRIC	IMPERIAL
FWPM0	FWP0	FWPM4A	FWP4A
FWPM1	FWP1	FWPM5	FWP5
FWPM1A	FWP1A	FWPM5A	FWP5A
FWPM1B	FWP1B	FWPM5B	FWP5B
FWPM1BSS	-	FWPM6	FWP6
FWPM2	FWP2	FWPM6A	FWP6A
FWPM2A	FWP2A	FWPM6B	FWP6B
FWPM2B	FWP2B	-	FWP7
FWPM2BSS	-	-	FWP8
FWPM3	FWP3	-	FWP9
FWPM3A	FWP3A	-	FWP10
FWPM4	FWP4		

Certificate No.: Ex 28 Issue: 13 Date of Issue: 11 November 1998

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 6370 Fax: (617) 3810 6366

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

STANDARDS AUSTRALIA

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No.....: Ex 28

Issue: 13

Date of Issue: 11 November 1998

Table 3 - FWP Series for Cross-Braided Cable

FWP SERIES GLANDS CAT NOS. FOR CROSS BRAIDED CABLE	FWP SERIES GLANDS CAT NOS. FOR CROSS BRAIDED CABLE
METRIC	METRIC
FWPM0X	FWPM3AX
FWPM1X	FWPM4X
FWPM1AX	FWPM4AX
FWPM1BX	FWPM5X
FWPM2X	FWPM5AX
FWPM2AX	FWPM5BX
FWPM2BX	FWPM6X
FWPM3X	FWPM6BX

Issued by:

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STANDARDS AUSTRALIA

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No.....: Ex 28

Issue: 13

Date of Issue: 11 November 1998

Table 4 - GWP Series for Unarmoured Cable

GWP SERIES GLANDS CAT NOS. FOR UNARMOURED CABLE			
METRIC	IMPERIAL	METRIC	IMPERIAL
GWPM0	GWP0	GWPM6A	GWP6A
GWPM1	GWP1	GWPM6B	GWP6B
GWPM1A	GWP1A	-	GWP7A/1
GWPM1B	GWP1B	-	GWP7B/1
GWPM1BSS	-	-	GWP7C/1
GWPM2	GWP2	-	GWP8A/1
GWPM2A	GWP2A	-	GWP8B/1
GWPM2ASS	-	-	GWP8C/1
GWPM3	GWP3	-	GWP8D/1
GWPM3A	GWP3A	-	GWP9A/1
GWPM3ASS	GWP3ASS	-	GWP9B/1
GWPM4	GWP4	-	GWP9C/1
GWPM4A	GWP4A	-	GWP9D/1
GWPM5	GWP5	-	GWP10A/1
GWPM5A	GWP5A	-	GWP10B/1
GWPM5B	GWP5B	-	GWP10C/1
GWPM6	GWP6	-	GWP10D/1

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Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No.....: Ex 28

Issue: 13

Date of Issue: 11 November 1998

Additional Information:

Schedule 1:
Supplementary Applications

ISSUE NO.	CHANGE/ADDITION
1	Additions to the range
2	Additions to the range
3	Additions to the range
4	Additions/modifications
5	Additions/Change of certificate holder
6	Additions to the range
7	Additions to the range
8	Change of address/respecify cable
9	Change of project name/manufacture & certificate holder
10	Additions to the range

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Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. ..... Ex 28

Issue: 13

Date of Issue: 11 November 1998

Table 5 - GWP Series for Unarmoured Cable with Extended Backnut Option

GWP SERIES GLANDS CAT NOS. FOR UNARMOURED CABLE			
METRIC	IMPERIAL	METRIC	IMPERIAL
GWPMEX0	GWPEX0	GWPMEX4	GWPEX4
GWPMEX1	GWPEX1	GWPMEX4A	GWPEX4A
GWPMEX1A	GWPEX1A	GWPMEX5	GWPEX5
GWPMEX1B	GWPEX1B	GWPMEX5A	GWPEX5A
GWPMEX2	GWPEX2	GWPMEX5B	GWPEX5B
GWPMEX2A	GWPEX2A	GWPMEX6	GWPEX6
GWPMEX3	GWPEX3	GWPMEX6A	GWPEX6A
GWPMEX3A	GWPEX3A	GWPMEX6B	GWPEX6B
GWPMEX3ASS	GWPEX3ASS	-	GWPEX7

Drawings:

DRAWING NO.	DRAWING TITLE	REVISION NO.	DRAWN/ REVISION DATE
GWPM-1	GLAND BODY GWPM/GWP	L	14/10'98.
GWPM-1SS	GWPMSS/GWPSS GLAND BODY	D	14/10'98.
GWP-4	GWPMSS/GWPSS & GWPM/GWP BACK NUT	L	23/07'98.
GWP-4EX	GWPMSS/GWPSS & GWPM/GWP EXTENDED TAIL	K	23/07'98.
GWP-2-3	GROMMET & FRICTION WASHER GWPM/GWP	J	14/10'98.

Issued by:

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STANDARDS AUSTRALIA

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter
STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

SHEET 11-12'

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

No. Ex 591 (Sheet 1 of 2)

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

This certificate may be withdrawn at any time if in the opinion of SAA Committee P/3, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been 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
A range of Cable Glands, Type FLPW
As detailed in Schedule 1

Drawing No(s)
2-212 Rev B, 2-213 Rev B, 2-214 Rev A, 2-215 Rev B, 2-218 Rev B, 2-219 Rev B, 2-462, 2-463, 2-554, 2-555, 2-700, 2-701

Certification Conditions

Remarks
This certificate supersedes SAA Certificate Nos Ex 89 and DIP 91

Hazardous Location
Class I Zone 1
Class II Divisions 1 & 2

Type of Protection
Ex IIC IPX8

Certificate Holder
Reliance Manufacturing Co
160 Breakfast Creek Road
NEWSTEAD QLD 4006

Manufacturer
Reliance Manufacturing Co
160 Breakfast Creek Road
NEWSTEAD QLD 4006

Test Report No(s)
SCC TR NOs 58860 and 60179

Australian Standard(s)
AS 1829-1984 and
AS 1939-1981

SAA File Reference
P/3: 84089/M122

Effective Date
1985-02-14

Date of Issue
1985-02-19

Director—Administration & Approvals
Standards Association of Australia

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter
STANDARDS HOUSE, 80 ARTHUR STREET, NORTH SYDNEY, N.S.W.

SHEET 12-12

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Continuation of Certificate No: Ex 591 (Sheet 2 of 2)

SCHEDULE 1 DESCRIPTION OF EQUIPMENT (cont'd)

A series of plated brass cable glands, incorporating neoprene seals, intended for use with single steel wire armoured circular cables.

The series includes the following glands:

Gland Series	Nominal Mounting Thread Dimensions	
	Diameter	Length
	mm	mm
FLPW202	20	15.8
FLPW203	20	15.8
FLPW204	20	15.8
FLPW205	20	15.8
FLPW206	20	15.8
FLPW253	25	19.0
FLPW254	25	19.0
FLPW255	25	19.0
FLPW256	25	19.0
FLPW323	32	25.4
FLPW324	32	25.4
FLPW325	32	25.4
FLPW326	32	25.4
FLPW403	40	25.4
FLPW404	40	25.4
FLPW405	40	25.4

Director—Administration & Approvals
Standards Association of Australia

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

SHEET 2-12

Certificate No: AUS Ex 591

Issue 0: Original Issue 19/02/1985
Issue 2: 10/10/1995

Date of Expiry: 10/10/2005

Certificate Holder: Reliance Manufacturing Company
40-42 Ross Street
NEWSTEAD Queensland 4006

Electrical Equipment: Range of Cable Terminating Glands "Alco" Series FLPW 202 to FLPW 755

Type of Protection and Marking Code: Ex IIIC IP66/IP68 (30 metres) Class I Zone 1 and Class II

Manufactured By: Reliance Manufacturing Company
40-42 Ross Street
NEWSTEAD Queensland 4006

Issued by:

WorkCover Authority

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753
Phone: (047) 244 900 Fax: (047) 244 999

STANDARDS AUSTRALIA

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

Page 1 of 9

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 QP134) of the scheme.

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

AS 1828-1984 Electrical Equipment for Explosive Atmospheres - Cable Glands
AS 1939-1990 Degrees of Protection Provided by Enclosures of Electrical Equipment (IP Code)

SHEET 3-12

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

Test Report No: LOSC 12689

File Reference: LOSC 94/6708

G. Mansfield
Signed for and on behalf of issuing authority

Testing Engineer
Position

10. 10. 1996.
Date of issue

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

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

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Page 2 of 9

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Schedule

SHEET 4-12

Certificate No: AUS Ex 591 Issue: 2 Date of Issue: 10/10/95

Certified Equipment: The Reliance "Alro" series "FLPW" Cable Terminating Glands provide for termination of armoured cables having nominal overall diameters over bedding ranging from a minimum of 6.00mm to a maximum of 66.70 mm. Sealing of the cable entry is achieved by means of compression washers which grip the cable sheath and bedding when the gland nut and sleeve are tightened. The armour wires are clamped by merging cones when the sleeve is tightened.

The cable glands are suitable for installation in enclosures having type of explosion-protection Ex "d", "e", "p", "n" and DIP.

Allowable Variations:

1. The range of cable glands is consolidated into one certificate Ex 591 and Group I is included.

2. Because of the method of product stockholding, it is agreed that "FLPW" glands which currently carry the Certificate No: Ex 585 may continue to be sold for a period of twelve months from the date of issue of this certificate.

   Certificate Ex 585 will be withdrawn on the 10th October 1996.

3. Abbreviated marking is permitted because of space and tooling problems. The following marking detail need not be shown on each assembly:

   (i) "Ex" and

   (ii) Suffix "X" providing the Certificate Holder complies with the conditions of manufacture.

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Page 3 of 9

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex: 591-2

Conditions of Certification:

SHEET 5-12

It is a condition of manufacture that:

1. The manufacturer's instructions for the installation of the cable glands shall be made available for use by the installer.

2. Each gland shall be supplied with an impervious washer for the mounting thread as specified in the product catalogue to maintain the Degree of Protection IP68 at the point of entry to the enclosure when the installation so requires.

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Page 4 of 9

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex: 591-2

SCHEDULE

SHEET 6-12

RANGE OF "Alco" CABLE GLANDS FOR LISTING UNDER ONE CERTIFICATE NUMBER - AUS Ex 591

GLAND Ref Nos	MOUNTING THREAD dia. mm	MOUNTING THREAD Length mm	GLAND Ref. No.	MOUNTING THREAD dia. mm	MOUNTING THREAD Length mm
FLPW 202	20	15.8	FLPW 502	50	28.6
FLPW 203	20	15.8	FLPW 503	50	28.6
FLPW 204	20	15.8	FLPW 504	50	28.6
FLPW 205	20	15.8	FLPW 505	50	28.6
FLPW 206	20	15.8	-	-	-
FLPW 253	25	19.0	FLPW 633	63	28.6
FLPW 254	25	19.0	FLPW 634	63	28.6
FLPW 255	25	19.0	FLPW 635	63	28.6
FLPW 256	25	19.0	FLPW 636	63	28.6
FLPW 323	32	25.4	-	-	-
FLPW 324	32	25.4	-	-	-
FLPW 325	32	25.4	-	-	-
FLPW 326	32	25.4		BSP	
FLPW 403	40	25.4	FLPW 753	2½"	28.6
FLPW 404	40	25.4	FLPW 754	2½"	28.6
FLPW 405	40	25.4	FLPW 755	2½"	28.6
Original Certificate AUS Ex 591			Original Certificate AUS Ex 585		

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Page 5 of 9

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex: 591-2

Drawing Schedule

SHEET 7-12

Drawing No	Drawing Title	Revision/ Issue	Dated
FLPW 202-405 (Range)			
2-219	Gland Details	D	14 Sep 1993
2-212	Gland Details	D	14 Sep 1993
2-213	Gland Details	D	14 Sep 1993
2-214	Gland Details	C	14 Sep 1993
2-215	Gland Details	D	14 Sep 1993
2-218	Gland Details	D	14 Sep 1993
462	Gland Details	B	14 Sep 1993
2-463	Gland Details	B	14 Sep 1993
2-700	FLPW Cable Gland Schedule Min. Cable Diameters	Original	20 Nov 1984
2-701	FLPW Cable Gland Schedule Min. Cable Diameters	Original	20 Nov 1984
1-1202	Seal Detail	D	24 May 1993
1-1203	Seal Detail	D	24 May 1993
1-1204	Seal Detail	D	24 May 1993
1-1205	Seal Detail	D	24 May 1993
1-1206	Seal Detail	E	24 May 1993
1-1207	Seal Detail	D	24 May 1993
1-1208	Seal Detail	D	24 May 1993
162-405	FLPW Seal Details	F	25 May 1993
FLPW 244-263	Mounting Thread Seal	Initial	28 Jun 1993
FLPW 202-405	Marking Details - FLPW Cable Gland	Initial	16 May 1995
FLPW 502-755 (Range)			
FLPW 502-755 Sheet 1 of 2	Marking Details - FLPW Cable Glands	Initial	15 May 1995
FLPW 502-755 Sheet 2 of 2	Cable Glands	A	31 Aug 1994
FLPW 59	Clamp	A	20 Oct 1991

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Page 6 of 9

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

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Addendum to Certificate No. Ex: 591-2

SHEET 8-12

Drawing No.	Drawing Title	Revision/ Issue	Dated
FLPW 502-755 (Range) continued			
FLPW 60	Body	A	16 Oct 1991
FLPW 61	Cone	A	20 Oct 1991
FLPW 63/67/502/503	Sleeve	A	23 Oct 1991
WG 502-WG 755	Seal Details	B	26 May 1993
FLPW 502-638	Seal Details	D	25 May 1993
FLPW 62	Nut	C	06 Jan 1990
FLPW 64	Body	A	16 Oct 1991
FLPW 65	Cone	A	20 Oct 1991
FLPW 66	Nut	C	05 Jan 1990
FLPW 68	Clamp	A	20 Oct 1991
FLPW 69	Body	A	16 Oct 1991
FLPW 70	Cone	A	20 Oct 1991
FLPW 71	Nut	C	05 Jan 1990
FLPW 72/76/504/505	Sleeve	A	27 Oct 1991
FLPW UFP1A-UFP5	Seal Details	B	26 May 1993
FLPW 73	Body	A	16 Oct 1991
FLPW 74	Cone	A	20 Oct 1991
FLPW 75	Nut	C	05 Jan 1990
FLPW 77	Body	A	27 Oct 1991
FLPW 78	Clamp	A	15 Feb 1994

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Certification of

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Addendum to Certificate No. Ex: 591-2

SHEET 8-12

Drawing No.	Drawing Title	Revision/ Issue	Dated
FLPW 502-755 (Range) – continued			
FLPW 79	Cone	A	29 Nov 1991
FLPW 80	Nut	B	05 Jan 1990
FLPW 81	Sleeve	A	16 Feb 1994
FLPW 82	Body	A	27 Oct 1991
FLPW 83	Clamp	A	15 Feb 1994
FLPW 84	Cone	A	29 Nov 1991
FLPW 85	Nut	B	05 Jan 1990
FLPW 86	Sleeve	A	16 Feb 1994
FLPW 87	Body	A	27 Oct 1991
FLPW 88	Clamp	A	15 Feb 1994
FLPW 89	Cone	A	29 Nov 1991
FLPW 90	Nut	C	28 Feb 1994
FLPW 91	Sleeve	A	16 Feb 1994
FLPW 92	Body	A	27 Oct 1991
FLPW 93	Cone	A	29 Nov 1991
FLPW 94	Nut	C	28 Feb 1994
FLPW 95	Sleeve	A	16 Feb 1994
FLPW 97	Clamp	A	15 Feb 1994
FLPW 99	Nut	B	05 Jan 1990
FLPW 100	Sleeve	A	16 Feb 1994

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Page 8 of 9

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

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Addendum to Certificate No. Ex: 591-2

SHEET 10-12

Drawing No	Drawing Title	Revision Status	Date
FLPW 502-753 (Range) - continued			
FLPW 102	Clamp	A	15 Feb 1994
FLPW 104	Nut	B	05 Jan 1990
FLPW 105	Sleeve	A	16 Feb 1994
FLPW 107	Clamp	A	15 Feb 1994
FLPW 109	Nut	B	05 Jan 1990
FLPW 110	Sleeve	A	16 Feb 1994
1422	Body	Original	08 Jun 1979
1-1423	Cone	Original	11 Jun 1979
SW.FLPW 8/95	Table - ALCO "FLPW" Cable Glands	No reference	Aug 1995
SW.FLPW 8/95.A.	Appendix II - FLPW Fixing Instructions	No reference	Aug 1995

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Page 9 of 9

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

AUSEx Scheme

Certificate of Conformity

Certificate No:	AUS Ex 03.3904	**Issue 0:**	21/11/2003
		Issue 1:	12/04/2005
Date of Expiry:	21/11/2013		
Certificate Holder:	Elmako Pty Ltd 9 Damosh Ave Carrum Downs Vic 3201		
Electrical Equipment:	HAW Range of Cable Glands		
Type of Protection:	Ex d I/IIC Ex e I/II DIP		
Marking Code:	Ex d I/IIC Ex e I/II DIP A21 IP66/IP68 (30 m) AUS Ex 03.3904		
Manufactured By:	Chi An Industrial Co Ltd Changhwaa Taiwan ROC		

Issued by:

Test Safe AUSTRALIA

919 Londonderry Road Londonderry NSW 2753
Australia

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Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

AUSEx Scheme

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP69 and the Procedure (Doc Q7134) of the scheme.

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

AS/NZS 60079.0:2000	Electrical apparatus for explosive gas atmospheres – Part 0: General requirements
AS/NZS 60079.1:2002	Electrical apparatus for explosive gas atmospheres – Part 1: Flameproof enclosures 'd'
AS/NZS 60079.7:2002	Electrical apparatus for explosive gas atmospheres – Part 7: Increased safety 'e'
AS/NZS 61241.1.1:1999	Electrical apparatus for use in the presence of combustible dust – Part 1.1: Electrical apparatus protected by enclosures and surface temperature limitation - Specification for apparatus
AS 1939-1990	Degrees of protection provided by enclosures 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 successfully met the examination and test requirements as recorded in

Test Report No: TestSafe 24225, 25530

File Reference: TestSafe 2002/034451, 2004/015114

Signed for and on behalf of issuing authority

Quality & Certification Manager
Position

12 April 2005
Date of Issue

AUS Ex 03.3904-1

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Test Safe AUSTRALIA

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Australia

Phone: +61 2 4724 4900 **Fax: +61 2 4724 4999**

Schedule

Certificate No: AUS Ex 03.3904 **Issue:** 1 **Date of Issue:** 12/04/2005

Certified Equipment:

The HAW range of cable glands is suitable for inserting circular steel wire armoured cables into flameproof (Ex d) enclosures having threaded entries and increased safety (Ex e) or dust ignition protection (DIP) equipment having either plain or threaded entries. Each gland may be used as either a compression gland, utilizing the supplied inner seals, or a barrier gland, utilizing the supplied insert filled with Epoxy Putty #E14M06 manufactured by Polymeric Systems Inc. The glands consist of a body, cone, ring, sleeve, inner seal (A or B), outer seal, nut and insert. Attachment of the glands to an enclosure is facilitated by means of the male threaded portion on the body. A locknut and flat washer is required for securing glands to equipment having plain entries.

When the glands are used as compression glands, the cable inner sheath is passed through the appropriate sized inner seal and sealing of the cable is achieved by compressing the inner seal between the body and cone. In this case, the insert is not required. When the glands are used as barrier glands, the cable cores are passed through the insert and sealing of the cable is achieved by filling the insert with setting compound. In this case, the inner seal is not required. The cable wire armour is clamped between the male tapered portion on the cone and the female tapered portion on the ring. An 'O' ring is used to seal the joint between the body and sleeve to prevent dust and moisture ingress to the wire armour clamping facility. The outer seal forms a seal on the outer sheath of the cable. The outer seal also clamps the cable to prevent pulling or twisting forces from being transmitted to the conductor connections.

The HAW range is manufactured from brass alloy to Japanese Standard JIS C3604 B, which is nickel plated, and has ISO (1.5 mm pitch) mounting threads. All metallic components of the glands are manufactured from the same material. The inner and outer seals and 'O' rings for all gland ranges are made from 'NBR 1052 Rubber' manufactured by Li Ming Industrial Co., Taiwan. An entry thread seal made of red fibre is provided for DIP and IP66/IP68 applications to maintain ingress protection of the equipment on which the glands are mounted. Each gland is marked with the certification information by means of laser etching. The glands may also be used with intrinsically safe circuits, in which case the glands will have specific parts painted light blue.

Certified Equipment continued:

Alco HAW Range of Cable Glands (Compression Configuration)

Gland Code Number	Mounting Thread Dia x Length (mm)	Tightening Torque (Nm)	SWA Diameter (mm)		Cable Diameter (mm)					
					Over Bedding				Over Cable	
					Inner Seal B		Inner Seal A		Seal A	
			Min	Max	Min	Max	Min	Max	Min	Max
ALCHAW20	M20 x 20	26	0.8	1.25	6.5	8.0	8.0	10.0	11.5	16.0
ALCHAW25A	M25 x 20	41	0.8	1.25	10.0	12.0	12.0	14.0	16.0	20.0
ALCHAW25B	M25 x 20	41	1.25	1.6	14.0	16.0	16.0	18.0	20.0	24.0
ALCHAW32A	M32 x 20	68	1.25	1.6	18.0	19.5	19.5	21.5	24.0	28.0
ALCHAW32B	M32 x 20	68	1.6	2.0	21.5	23.0	23.0	25.0	28.0	32.0
ALCHAW40A	M40 x 20	106	1.6	2.0	25.0	27.0	27.0	29.0	32.0	37.0
ALCHAW40B	M40 x 20	106	2.0	2.5	28.5	31.0	31.0	33.5	37.0	42.0
ALCHAW50A	M50 x 20	166	2.0	2.5	33.0	35.0	35.0	37.5	41.0	46.0
ALCHAW50B	M50 x 20	166	2.0	2.5	36.5	39.0	39.0	42.0	45.0	51.0
ALCHAW63A	M63 x 25	260	2.5	3.15	42.0	44.5	44.5	47.0	51.0	57.0
ALCHAW63B	M63 x 25	260	2.5	3.15	47.0	50.0	50.0	53.0	57.0	63.0
ALCHAW75A	M75 x 25	375	2.5	3.15	52.5	55.5	55.5	58.5	62.0	69.0
ALCHAW75B	M75 x 25	375	2.5	3.15	58.0	61.0	61.0	64.0	66.0	75.0
ALCHAW90A	M90 x 25	540	2.5	3.15	63.0	66.0	66.0	69.0	73.0	82.0
ALCHAW90B	M90 x 25	540	2.5	3.15	68.0	71.5	71.5	75.0	81.0	90.0

Certified Equipment continued:

Alco HAW Range of Cable Glands (Barrier Configuration)

Gland Code Number	Mounting Thread Dia x Length (mm)	Tightening Torque (Nm)	Max Dia Over Cable Cores (mm)	Max No. of Cores in Compound / Core CSA (mm^2)	SWA Diameter (mm)	
					Min	Max
ALCHAW20	M20 x 20	26	7.8	7 / 0.5	0.8	1.25
ALCHAW25A	M25 x 20	41	11.8	16 / 0.5	0.8	1.25
ALCHAW25B	M25 x 20	41	15.8	21 / 0.5	1.25	1.6
ALCHAW32A	M32 x 20	68	19.1	37 / 0.5	1.25	1.6
ALCHAW32B	M32 x 20	68	22.6	51 / 0.5	1.6	2.0
ALCHAW40A	M40 x 20	106	26.6	51 / 1.5	1.6	2.0
ALCHAW40B	M40 x 20	106	31.1	51 / 2.5	2.0	2.5
ALCHAW50A	M50 x 20	166	34.5	51 / 4.0	2.0	2.5
ALCHAW50B	M50 x 20	166	39.0	4 / >16.0*	2.0	2.5
ALCHAW63A	M63 x 25	260	44.0	4 / >16.0*	2.5	3.15
ALCHAW63B	M63 x 25	260	50.0	4 / >16.0*	2.5	3.15
ALCHAW75A	M75 x 25	375	55.0	4 / >16.0*	2.5	3.15
ALCHAW75B	M75 x 25	375	60.5	4 / >16.0*	2.5	3.15
ALCHAW90A	M90 x 25	540	64.4	4 / >16.0*	2.5	3.15
ALCHAW90B	M90 x 25	540	70.4	4 / >16.0*	2.5	3.15

* For conductors greater than 16 mm^2 the largest number of cores permitted is four plus any required earth core(s).

Conditions of Certification:

1. The manufacturer shall provide the mounting instructions with the cable glands.

Issued by:

Test Safe AUSTRALIA

919 Londonderry Road Londonderry NSW 2753
Australia

Phone: +61 2 4724 4900 **Fax: +61 2 4724 4999**

JAS-ANZ

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

Addendum to Certificate No. AUS Ex 03.3904-1

Drawing Schedule

Drawing No	Drawing Title	Issue	Date
487-42	HAW20	Original	15/09/03
487-42A	Alco HAW Glands Marking	Original	30/09/03
487-42B	Alco HAW Glands Marking	Original	30/09/03
487-42C	Alco HAW Glands Marking	Original	30/09/03
487-43	HAW25A	Original	15/09/03
487-44	HAW25B	Original	15/09/03
487-45	HAW32A	Original	15/09/03
487-46	HAW32B	Original	15/09/03
487-47	HAW40A	Original	15/09/03
487-48	HAW40B	Original	15/09/03
487-49	HAW50A	Original	15/09/03
487-50	HAW50B	Original	15/09/03
487-51	HAW63A	Original	15/09/03
487-52	HAW63B	Original	15/09/03
487-53	HAW75A	Original	15/09/03
487-54	HAW75B	Original	15/09/03
487-55	HAW90A	Original	15/09/03
487-56	HAW90B	Original	15/09/03
ALCHAWGEN	Hagemeyer Australia Alco Glands HAW Range	1.1	30/09/03
ALCHAWINST Pages 1 & 2	Hagemeyer Australia Alco Glands HAW Series Glands – Fitting Instructions	1.0	18/11/03
ALCHAWFLMPTH	Hagemeyer Australia Alco Glands HAW Range Flameproof Joint Data	1.0	09/09/03
ALCHAWSPEC	Hagemeyer Australia Alco Glands HAW Range Specification	1.0	17/09/03
ALCHAWBARLIM	Alco - HAW Range – Barrier Glands	1/0	17/09/03
ALCHAWSCHDRG	Alco Glands – Schedule of Drawings HAW Range – Hazardous Area, Armoured Weatherproof	1.0	30/09/03

Addendum to Certificate No. AUS Ex 03.3904-1

Schedule of Variations

Variations permitted by issue 1

a) Addition of an HAW20SB cable gland to the HAW Range.
b) A change of epoxy sealing compound used for the barrier glands from Epoxy Putty #E14M06 manufactured by Polymeric Systems Inc to "Kneadaseal" epoxy putty manufactured by Polymeric Systems Inc.
c) A change in the permissible operating temperature range for the HAW Range of barrier glands from -20 °C to +75 °C to -20 °C to +100 °C, as specified in the HAW Series Glands – Fitting Instructions.
d) Modification of the gland sleeve on the HAW20 cable gland to allow easier fitment on the cable.

Alco HAW20SB Cable Gland (Compression Configuration)

Gland Code Number	Mounting Thread Dia x Length (mm)	Tightening Torque (Nm)	SWA Diameter (mm)		Cable Diameter (mm)					
					Over Bedding				Over Cable	
					Inner Seal B		Inner Seal A		Seal A	
			Min	Max	Min	Max	Min	Max	Min	Max
ALCHAW20SB	M20 x 16	26	0.8	1.25	-	-	9.1	12.3	14.0	18.0

Alco HAW20SB Cable Gland (Barrier Configuration)

Gland Code Number	Mounting Thread Dia x Length (mm)	Tightening Torque (Nm)	Max Dia Over Cable Cores (mm)	Max No. of Cores in Compound / Core CSA* (mm^2)	SWA Diameter (mm)	
					Min	Max
ALCHAW20SB	M20 x 16	26	10.0	10 / 0.5	0.8	1.25

*For conductors greater than 16 mm^2 the largest number of cores permitted is four plus any required earth core(s).

Conditions relating to issue 1

All previous conditions still apply.

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Addendum to Certificate No. AUS Ex 03.3904-1

Drawings relating to issue 1

Drawing No	Drawing Title	Issue	Date
487-42	HAW20	Original	15/09/03
487-110	HAW20SB	Original	17/03/04
487-110-11	HAW20SB - Markings	Original	02/06/04
ALCHAWGEN	Elmako Pty Ltd Alco Glands HAW Range	1.3	01/12/04
ALCHAWINST Pages 1 & 2	Elmako Pty Ltd - Alco Glands HAW Series Glands – Fitting Instructions	1.5	16/03/05
ALCHAWSPEC	Elmako Pty Ltd Alco Glands HAW Range Specifications	1.1	01/12/04
ALCHAWBARLIM	Alco - HAW Range – Barrier Glands	1.1	19/03/04
ALCHAWSCHDRG	Alco Glands – Schedule of Drawings HAW Range – Hazardous Area, Armoured Weatherproof	1.2	02/06/04
ALCHAWFLMPTH	Elmako Pty Ltd Alco Glands HAW Range Flameproof Joint Data	1.1	19/03/04

Issued by:

Test Safe AUSTRALIA

919 Londonderry Road Londonderry NSW 2753
Australia

Phone: +61 2 4724 4900 **Fax: +61 2 4724 4999**

(4)

VERIFIED COPY OF ORIGINAL CERTIFICATE

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No.: Ex 1498U *Issue:* 0 (original) *Date of Issue:* 4 October 1994

Date of Expiry: 4 October 2004

Certificate Holder: GERARD INDUSTRIES PTY LTD
12 Park Terrace
Bowden SA 5007

Electrical Equipment: "Clipsal/Wilco' explosion protected conduit accessories
(Refer schedule for type of accessory and identification)

Type of Protection and Marking Code: Ex d/IIC. Class I, Zone 1
DIP T6 IP66

Manufactured by: GERARD INDUSTRIES PTY LTD
South Australia

VERIFIED COPY OF ORIGINAL CERTIFICATE
Date 20.3.02
Issued By

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Issued by:

Quality Assurance Services

A subsidiary of Standards Australia
1 The Crescent Homebush NSW 2140 Australia Mail: PO Box 1055 Strathfield NSW 2135 Australia
Telephone (02) 746 4900 Fax (02) 746 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 2236-1985 - Electrical equipment for explosive atmospheres - Dust-excluding ignition-proof (DIP) enclosure

AS 2380.1-1994 - Electrical equipment for explosive atmospheres - Explosion protection techniques. Part 1: General Requirements

AS 2380.2-1991 - Electrical equipment for explosive atmospheres - Explosion protection techniques. Part 2: Flameproof enclosure d

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

Test Report No: SCC 58569, ITACS 676A

File Reference: TT354

Signed for and on behalf of issuing authority

General Manager

Position

4 October 1994

Date of issue

Certificate No: Ex 1498U *Issue:* 0

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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STANDARDS AUSTRALIA

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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Schedule

Equipment:

This certificate covers the following flameproof conduit accessories:

SERIES	DESCRIPTION
FCP	Flameproof conduit plugs 16-63 mm series
FR	Flameproof metric reducers
FN	Flameproof hexagon nipples
FCL	Flameproof couplings
FA (BSP)	Flameproof adaptors (BSP male thread to metric conduit female thread)
FA (NPT)	Flameproof adaptors (NPT male thread to metric conduit female thread)
DCP	Dust-Excluding Ignition - Proof (DIP) Plugs

Variations to Original Issue:

1. Inclusion of the new DCP range of DIP Plugs
2. Modifications to certified conduit accessories covered by Issue 0

Issued by:

Certificate No: Ex 1498U *Issue*: 1

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Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Ex 1498U

Addendum to Certificate No.....

Issue: 0

DRAWING NO.	DRAWING TITLE	REVISION NO.	DRAWN/ REVISION DATE
W-514	Flameproof conduit plugs 16-63 mm series	A	8 August 1994
W-515	Flameproof metric reducers	A	8 August 1994
W-516	Flameproof hexagon nipples	A	8 August 1994
W-517	Flameproof couplings	A	8 August 1994
W-518	Flameproof adaptors (BSP male thread to metric conduit female thread)	A	8 August 1994
W-519	Flameproof adaptors (NPT male thread to metric conduit female thread)	A	8 August 1994

Issued by:

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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 1498U

Issue: 0 (original) *Date of Issue*: 4 October 1994
Issue: 1 *Date of Issue*: 30 September 1997

Date of Expiry: 4 October 2004

Certificate Holder:
GERARD INDUSTRIES PTY LTD
12 Park Terrace
Bowden SA 5007

Electrical Equipment: "Clipsal/Wilco' explosion protected conduit accessories
(Refer schedule for type of accessory and identification)

Type of Protection and Marking Code:

Ex d/IIC, Class I, Zone 1
DIP T6 IP66 Class II
Aus Ex 1498U
{ For Exd/DIP Product

DIP T6 IP66 Class II
Aus Ex 1498U
{ For DIP only Product

Manufactured by: Clipsal Stahl Ex Pty Ltd

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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 2236-1994 - Electrical equipment for explosive atmospheres - Dust-excluding ignition-proof (DIP) enclosure

AS 2380.1-1989 - Electrical equipment for explosive atmospheres - Explosion protection techniques. Part 1: General Requirements

AS 2380.2-1991 Inc Amdt No 1 - Electrical equipment for explosive atmospheres - Explosion protection techniques. Part 2: Flameproof enclosure d

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

Test Report No: SCC 58569, ITACS 676A, ITACS 1185

File Reference: TT354

Signed for and on behalf of issuing authority

Technical Manager - Certification

Position

30 September 1997

Date of issue

Certificate No: Ex 1498U *Issue*: 1

Issued by:

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STANDARDS AUSTRALIA

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Schedule

Equipment:

This certificate covers the following flameproof conduit accessories:

SERIES	DESCRIPTION
FCP	Flameproof conduit plugs 16-63 mm series
FR	Flameproof metric reducers
FN	Flameproof hexagon nipples
FCL	Flameproof couplings
FA (BSP)	Flameproof adaptors (BSP male thread to metric conduit female thread)
FA (NPT)	Flameproof adaptors (NPT male thread to metric conduit female thread)

onditions of Certification:

1. The fittings shall be used in accordance with AS 2381 - Electrical equipment for explosive atmospheres - Selection, installation and maintenance.

2. The fittings shall be installed so as the required IP rating to AS 1939 - Degrees of protection provided by enclosures of electrical equipment, is maintained for the equipment concerned.

Issued by:

Certificate No: Ex 1498U *Issue*: 0

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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Addendum to Certificate No. Ex 1498U

Issue: 1

DRAWING NO.	DRAWING TITLE	REVISION NO.	DRAWN/ REVISION DATE
W-514	Flameproof conduit plugs 16-63 mm series	A	8 August 1994
W-515	Flameproof metric reducers	A	8 August 1994
W-516	Flameproof hexagon nipples	A	8 August 1994
W-517	Flameproof couplings	A	8 August 1994
W-518	Flameproof adaptors (BSP male thread to metric conduit female thread)	A	8 August 1994
W-519	Flameproof adaptors (NPT male thread to metric conduit female thread)	A	8 August 1994
W-515	Flameproof metric reducers	B	17 March 1997
W-516	Flameproof hexagon nipples	B	16 May 1997
W-518	Flameproof adaptors (BSP male thread to metric conduit female thread)	B	16 May 1997
W-519	Flameproof adaptors (NPT male thread to metric conduit female thread)	B	16 May 1997
W-646	DIP Metric threaded conduit plugs	A	8 July 1997

Issued by:

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STANDARDS 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 492 (Sheet 1 of 2)

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

This certificate may be withdrawn at any time if in the opinion of SAA Committee P/3, Certification of Electrical Equipment for Hazardous Locations, the relevant standard has been 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

A range of "Clipsal" Threaded Brass Conduit Accessories, as detailed in Schedule 1.

Drawing No(s)

F1220S, F1235 NPT, F1242, F1242BU1, F1242 BU-1, F1242 BU1-1, F1242 BU1-2, F1242 LU, F1243, F1243H, F1259, F1264M, F1242 BU, F1242 BU-2, F1242 BU-3 and F1220S-1.

Certification Conditions

1. All threads shall be engaged.
2. The conduit system shall be in accordance with Clause 3.12.3 of AS 1076, Part 1, when installed in a Zone 0 location.

Remarks

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Date 11.7.02
Issued By

Hazardous Location

Class I Zone 0

Type of Protection

Refer Schedule 1

Certificate Holder

Gerard Industries Pty Ltd
12 Park Terrace
BOWDEN S.A. 5007

Manufacturer

Gerard Industries Pty Ltd
12 Park Terrace
BOWDEN S.A. 5007

Test Report No(s)

SCC TR Nos: 58568 & 58570

Australian Standard(s)

AS 2480-1981

SAA File Reference

P/3: 83115/M113

Effective Date

1984.01.20

Date of Issue

1984.01.27

Director—Administration & Approvals
Standards Association of Australia

STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter

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

CERTIFICATE FOR EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Continuation of Certificate No: Ex 492 (Sheet 2 of 2)

SCHEDULE 1 Description of Equipment and Type of Protection (Continued)

A range of "Clipsal" Threaded Brass Conduit Accessories.

Equipment	Thread Description	Range	Type
Plug	Metric Conduit Thread	16 mm to 63 mm	Ex d IIC T6
Coupling	Metric Conduit Thread	16 mm to 63 mm	Ex d IIC T6
Long - Screw Union	Metric Conduit Thread	16 mm to 63 mm	Ex d IIC T6
Screwed Nipple	Metric Conduit Thread	16 mm to 63 mm	Ex d IIC T6
Hexagon Nipple	Metric Conduit Thread	16 mm to 63 mm	Ex d IIC T6
Barrel Union (Type IIC) Consisting of: One - Large Cap One - Small Cap One - Barrel Nut	 Metric Conduit Thread and B.S.P. Thread Metric Conduit Thread B.S.P. Thread	 16 mm to 53 mm ¾" to 2 ¼" 16 mm to 63 mm ¾" to 2¼"	Ex d IIC T6
Barrel Union (Type IIB) Consisting of: One - Large Cap One - Small Cap One - Barrel Nut	 Metric Conduit Thread and B.S.P. Thread Metric Conduit Thread B.S.P. Thread	 16 mm to 63 mm ¾" to 2¼" 16 mm to 63 mm ¾" to 2¼"	Ex d IIB T6
Adaptors	N.P.T. Thread Metric Female Conduit Thread	½", ¾", 1" to 20 mm ¾", 1" to 25 mm 1" to 32 mm 1¼", 1½" to 40 mm 1¼", 1½", 2" to 50 mm	Ex d IIC T6
Locknuts	Metric Conduit Thread	16, 20, 25, 32, 40, 50 and 63 mm	Ex d IIC T6
Reducers	Metric Conduit Thread	16 mm to 20 mm 20 mm to 25 mm 25 mm to 32 mm 32 mm to 40 mm 40 mm to 50 mm 50 mm to 63 mm	Ex d IIC T6

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Standards Association of Australia

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EXPLOSION PROTECTED ELECTRICAL EQUIPMENT CERTIFICATE OF COMPLIANCE

Supplementary Certificate Number: Ex 492U-1

This is to certify that SAA Certificate No. Ex 492 issued to:

Gerard Industries Pty Ltd
12 Park Terrace
BOWDEN SA 5007

for the Range of "Clipsal" Threaded Brass Conduit Accessories is hereby extended to include modifications as detailed in the following schedule.

SCHEDULE

Description of Modifications:

1. Alternative trade name "Wilco" in lieu of "Clipsal".
2. Modified method of marking for 16, 20 and 25mm conduit plugs.
3. Decrease size of hexagonal hole to allow readily available allan keys to be used.
4. Reference to thread detail updated.
5. Overall length of plugs changed to provide "stops" for threads.
6. Plugs Plated.

Drawings:

F1220S16 Ser	Issue 7	23 January 1991
F1220S16-2	Issue 3	23 January 1991
F1220S20-2	Issue 5	23 January 1991
F1220S25-2	Issue 4	23 January 1991
F1220S32 Ser	Issue 9	23 January 1991

TYPE OF PROTECTION: Refer to original certificate.

Test Report No: N/A

File: P/3: 90176.M159

Date of Issue: 25 March 1991

Date of Expiry of Validity : 20 January 1994

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Issued By

Page 1 of 1

Director—Administration & Approvals
Standards Association of Australia

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Certificate of Conformity

Certificate No. Ex: 157

Issue 0: Original Issue 24/2/1993
Issue 1: 21/9/1982
Issue 2: 30/6/1988
Issue 3: 15/12/1993

Date of Expiry: 15/12/2003

Certificate Holder: Govan Drewburn Pty Ltd
156 Bamfield Road
WEST HEIDELBERG Victoria 3081

Electrical Equipment: FW Range of Flameproof Enclosures

Type of Protection and Marking Code: Ex d IIB T6 IP65 Class I Zone 1

Manufactured By: Govan Drewburn Pty Ltd
156 Bamfield Road
WEST HEIDELBERG Victoria 3081

Issued by:

WORKCOVER AUTHORITY

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753
Phone: (047) 244 900 Fax: (047) 244 999

STANDARDS AUSTRALIA

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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

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, AS 2380.2-1991(incorporating Amendment No 1) and AS 1939-1990

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

Test Report No: LOSC 9955

File Reference: 93/5071

K.J Isle
Signed for and on behalf of issuing authority

Coordinator Approvals Certification
Position

15/12/1993
Date of issue

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Issued by:

WORKCOVER AUTHORITY

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753
Phone: (047) 244 900 Fax: (047) 244 999

STANDARDS AUSTRALIA

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

Certification of

EXPLOSION PROTECTED ELECTRICAL EQUIPMENT

Administered by: Standards Australia Quality Assurance Services

Schedule

Certificate No. Ex: 157 Issue: 3 Date of Issue: 15/12/1993

Equipment: A range of Flameproof Enclosures designated Series FW. The range includes both control stations and junction boxes in various configurations and having up to 5 entries, as required.

Allowable Variations:

Alterations to the range of certified equipment.

This supplementary certificate also covers revalidation of the entire range of enclosures.

Drawing Schedule

C2031	Revision 1	28 July 1993
C2359	Original	8 February 1993
C2353	Original	3 February 1993
C0774-Rev.2	Revision 2	21 June 1991
C1510	Original	22 October 1992

Issued by:

Londonderry Occupational Safety Centre

132 Londonderry Road LONDONDERRY NSW 2753

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

STANDARDS AUSTRALIA

ELECTRICAL EQUIPMENT

Certificate No. Ex 1143U

Certificate of Compliance

This certificate is issued for the electrical equipment:

Range of Brass Conduit Fittings

Submitted for certification by: Com-Duit Electrical Manufacturing Pty Ltd
Factory 22
41 Bennett Street
DANDENONG VIC 3175

and manufactured by: Com-Duit Electrical Manufacturing Pty Ltd

This electrical equipment and any acceptable variation thereto is specified in the Schedule or Schedules attached hereto and in the documents referred to therein.

This certifies that the equipment described has been found to comply with AS 2256-1985, AS 2480-1986 and AS 1939-1990.

TYPE OF PROTECTION: Ex d IIC IP65 Class 1 Zone 1
DIP IP65 Class II

This certificate is granted subject to the conditions as set out in Standards Australia Miscellaneous Publication MP42 and any additional conditions as may be prescribed by Standards Australia.

Test Report No: NET 91/019, NET 91/020

File: P/31 91064.MISC

Date of Issue: 31 July 1991

Date of Expiry of Validity: 21 July 2001

Signed for and on behalf of Standards Australia

General Manager
Quality Assurance Services

QUALITY ASSURANCE SERVICES
Standards Australia

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

EXPLOSION PROTECTED
ELECTRICAL EQUIPMENT

Continuation of Certificate No Ex 12430

Certificate of Compliance

SCHEDULE

Description of Equipment:
The Range of Brass Conduit fittings is listed in Schedule 1 and covers the range of metric and imperial conduit thread, NPT, BSP and Pg thread sizes.

Drawings:

F/P1	27 May 1991
F/P2	27 May 1991
F/P3	27 May 1991
F/P4	27 May 1991
F/P5	27 May 1991
F/P6	27 May 1991
F/P7	27 May 1991
F/P8	27 May 1991
F/P9	27 May 1991
F/P10	27 May 1991
F/P11	27 May 1991
F/P12	27 May 1991
F/P13	27 May 1991
F/P14	27 May 1991

Schedule 1

RANGE OF BRASS CONDUIT FITTINGS

1. Metric Stops.
   Part No. SM1, SM2, SM3, SM4, SM5, SM6.
   Size. 20 mm to 63 mm.

2. Imperial Stops.
   Part No. SI1, SI2, SI3, SI4, SI5, SI6.
   Size. 3/4 inch to 2.5 inch.

3. BSP Male to Metric Female Adaptors
   Part No. ABM 1-1, ABM 2-2, ABM 3-3, ABM 4-4, ABM 5-5, ABM 6-6
   Size. 1/2 inch BSP/20mm to 2 inch BSP/63mm.

4. Metric Reducers
   Part No. RMM 1-0, RMM 2-1, RMM 3-2, RMM 4-3, RMM 5-4 RMM 6-5.
   Size. 20mm/16mm to 63 mm/50mm.

Signed for and on behalf of Standards Australia

General Manager
Quality Assurance Services

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

EXPLOSION PROTECTED
ELECTRICAL EQUIPMENT

Continuation of Certificate No Ex 1245U

Certificate of Compliance

SCHEDULE 1 (Continued)

5. Metric Nipples
   Part No. NM1, NM2, NM3, NM4, NM5,
   Size. 20 mm to 50 mm.

6. Metric Couplings
   Part No. CM1, CM2, CM3, CM4, CM5, CM6.
   Size. 20mm to 63mm.

7. Metric Male to BSP Female Adaptors
   Part No. AMB 1-1, AMB 2-2, AMB 3-3, AMB 4-4, AMB 5-5, AMB 6-6
   Size. 20 mm/1/2 inch BSP to 63mm/2inch BSP

8. BSP Male to Metric Female Reducers
   Part No. RBM 2-1, RBM 3-1, RBM 3-2, RBM 4-3, RBM 5-4, RBM 6-5
   Size. 3/4 inch BSP/20mm to 2 inch BSP/50mm.

9. NPT Male to Metric Female Reducers
   Part No. RNM 2-1, RNM 3-1, RNM 3-2, RNM 4-3, RNM 5-4 RNM 6-5
   Size. 3/4 inch NPT/20mm to 2 inch NPT/50mm.

10. NPT Male to Metric Female Adaptors
    Part No. ANM 1-1, ANM 2-2, ANM 3-3, ANM 4-4, ANM 5-5, ANM 6-6
    Size. 1/2 inch NPT/20mm to 2 inch NPT/63mm.

11. Metric Male to NPT Female Adaptors
    Part No. AMN 1-1, AMN 2-2, AMN 3-3, AMN 4-4, AMN 5-5, AMN 6-6
    Size. 20mm/1/2 inch NPT to 63mm/2 inch NPT.

12. Pg Male to Metric Female Adaptors
    Part No. APM 0-1, APM 1-1, APM 2-2, APM 3-3, APM 4-4, APM 5-5
    Size. Pg 13/20mm to Pg 42/50mm.

13. Metric Male to Imperial Female Adaptors
    Part No. AMI 1-1, AMI 2-2, AMI 3-3, AMI 4-4, AMI 5-5
    Size. 20 mm/3/4 inch Imperial to 50 mm/2 inch Imperial

14. Imperial Male to Metric Female Adaptors
    Part No. AIM 0-1, AIM 1-1, AIM 2-2, AIM 3-3, AIM 4-4, AIM 5-5
    Size 5/8 inch Imperial/20mm to 2 inch Imperial/50mm.

Signed for and on behalf of Standards Australia [signature]

General Manager
Quality Assurance Services

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

6 Equipment 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.

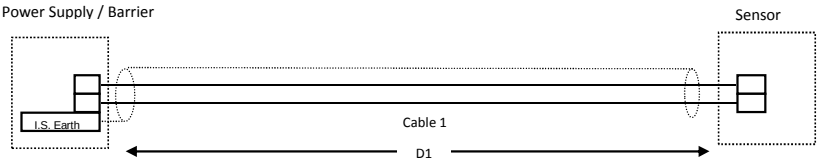
Intrinsically Safe Barrier Assessment Sheet

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

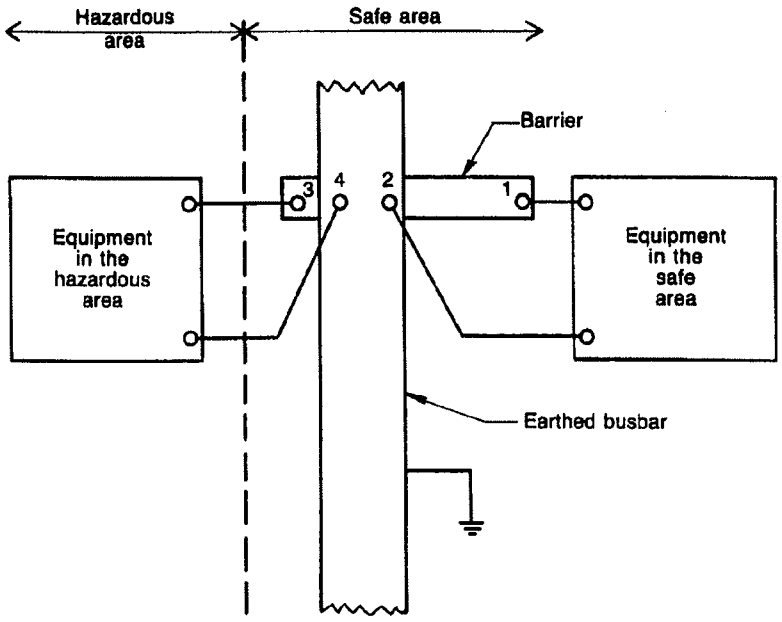
EXTERNAL PARAMETERS
MAXIMUM VALUES FOR GROUP IIC (HYDROGEN)*

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

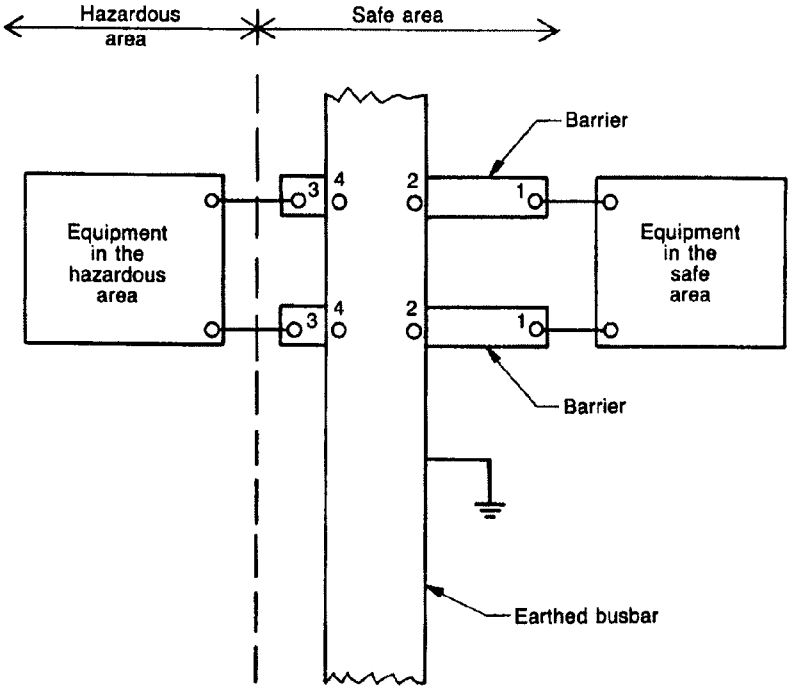


FIGURE A2 INSTALLATION CONFIGURATION 2-WIRE SYSTEM WITH TWO BARRIERS OF LIKE POLARITY

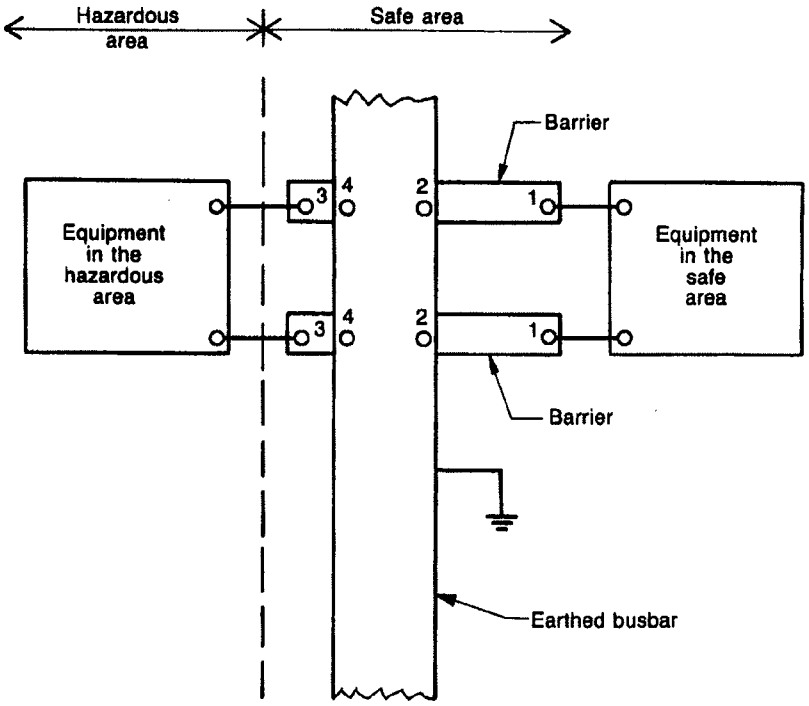


FIGURE A3 INSTALLATION CONFIGURATION 2-WIRE SYSTEM WITH TWO BARRIERS OF OPPOSITE POLARITY

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) and Installation, Operation and Maintenance (IOM) Manual

Documentation in relation to this section is to be included and maintained by APA Group.

9 Maintenance Register

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

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

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 Register

Close visual inspection to confirm equipment installations was performed by Neville Green, an electrical engineer from Sitzler during a site visit on 7 September 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\fyf3 fyfe northern end pipline\reports\pine creek\electrical equipment for hazardous area summary report - pine creek 20.09.11.docx

20 September 2011

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

Attention: Tony Bird

Dear Tony,

RE: AMADEUS PIPELINE – PINE CREEK 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 September 8th 2011. 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.

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 only as defined within the above standards. Detailed equipment/installation inspections in accordance with the above standards were not performed however it is a requirement that detailed inspections be performed prior to initial energising of equipment installed within hazardous classified areas and in the absence of any information it is assumed this has been completed by others.

The visual 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 also 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 compliance evaluation of each device.

In some cases the nameplate detail of the installed equipment was illegible and hence the equipment method of protection and associated certification could not be identified.

A compilation of the inspection findings/actions across the installation is provided as follows:

1. Re-termination of cabling at equipment with exposed cable armour.
2. Verification of compound filled barrier style cable glands to prevent transmission of flammable gases.
3. Terminate exposed cabling appropriately and earth or completely remove where located within and/or passing through hazardous classified areas.
4. 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.
5. Application of blue cable sheathing and/or labelling to clearly identify intrinsically safe installations.
6. Provide additional cable support and cover to prevent further mechanical and ultraviolet damage and where cabling rests on process piping.
7. Replace/remediate cabling where long term ultraviolet damage has occurred.
8. Replacement of uncertified hazardous area installed equipment and insufficiently ingress protected/damaged components with certified equipment.
9. Verification of flameproof installation & design techniques with respect to uncertified equipment and installation adjacent to intrinsically safe installations.
10. Replacement of equipment impending failure due to the age and poor condition.

It is evident that the lifetime expectancy of some equipment installed would be considered approaching a nominal design life of 30 years. Where nil evidence of Australian hazardous area certification exists, and nameplate details are illegible, we recommend replacement with Australian certified equipment. Where evidence of Australian certification was valid at the time of installation, and the general condition is acceptable for use within the hazardous area, minor remediation works can be completed with minimal operational impacts. The establishment of a regular periodic maintenance regime with respect to hazardous area compliance is also 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,

N. Green

Neville Green
Engineering Services Manager
Encl. Device Inspection Sheets.

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

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

General

Device ID or tag:	CVO-01/SVO-02	Asset:	GAS COND'S SKID, ESV-01
Circuit ID:		Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

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

Number of cables:	2

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	⊗	ID - CABLE - ECQUIP
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	⊗	→ PORSIWOD GASKET.
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	⊗	- UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	⊗	- CRACKED GLAND HOUSING.
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	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	⊗	UV
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.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable ID required
- UV damage to sheath, remediation required.
- Replace solenoid housing cracked @ gland entry.
- Replace gaskets perished at solenoid cable termination
- General condition is poor.
- Verify Ex ratings of glands which are illegible.

Reviewed by: D.GREEN
Date: 19/9/11
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:	ZSC - 01	Asset:	GAS ANOT SKID. ESV-01
Circuit ID:	–	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	VALVE LIMIT SWITCH	Type of protection: (d,e, i, n, p etc)	Ex d
Manufacturer:	BETTIS	Gas group: (IIA/B/C)	IIB
Full model number:	3R-B21 AFC	Temp class: (T1-T6)	T6
Serial number:	–	Certificate number:	SAA? Ex 95?
IP Class	–	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	~~gland 2~~	~~others~~
Gland manufacturer:	CMA	? PLUG ILLEGIBLE	? ADAPTOR
Model:	FW PM		
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	Ⓧ	ID - CABLE - GLAND
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	Ⓧ	UV
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	
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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	Date:

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D required
- Verify equipment + associated details to confirm AUSEx compliance for flameproof installation.
- UV damaged cabling in poor conditions.

Reviewed by: N. GREEN
Date: 8/9/11
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:	2SO-01	Asset:	GAS CONDITIONING SKID. BSV-01
Circuit ID:	-	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label - ILLEGIBLE

Apparatus type: (light, JB, Motor)	VALVE LIMIT SWITCH	Type of protection: (d,e, i, n, p etc)	Ex d
Manufacturer:	BETTIS	Gas group: (IIA/B/C)	IIB
Full model number:	3R-321 AFC	Temp class: (T1-T6)	T6
Serial number:	-	Certificate number:	SAA? Ex 95 ?
IP Class	-	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	~~gland 2~~ 8 ILLEGIBLE PLUG.	~~others~~ 3 ADAPTOR
Gland manufacturer:	CMA	?	GLOBAL ?
Model:	~~CMA~~ FWPM		1235 ?
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	Ⓧ	ID - CABLE - EQUIP
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	Ⓧ	UV
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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D. required + equip, AUS Ex
- Verify adaptor, plug details to confirm compliance for flameproof installation.
- UV damaged cabling in poor condition

Reviewed by: N. GREEN
Date: 8/9/11
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: - (JB?)	Asset: GAS CONDITIONING SKID
Circuit ID:	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) JUNCTION BOX	Type of protection: (d,e, i, n, p, etc) Ex d
Manufacturer: GOVAN	Gas group: (IIA/B/C) IIA / IIB
Full model number: F 150	Temp class: (T1-T6) T6
Serial number:	Certificate number: AUS Ex 349
IP Class 65	Test authority: (BAS, PTB, SAA etc)

Number of cables: 32

For each cable entry gland 1 x 30 gland 2 x 2 others PLUGS x 2 Top

Gland manufacturer:	CMA	ALCO	?
Model:	EWPM	ELPW 328	?
Gland type of protection: (d,e)	IP66D, IIC, Ex d AUS Ex 28	IIC AUS Ex 591	?

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)	ID - CABLE - EQUIP
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)	- 3x NIL BUNGS.
6	Flange facings are clean and undamaged	d	X		
7	Lamp rating, type and position correct	all	X		- MAIN CABLE EXPOSED ARMOUR
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	I.S ccts?
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)	- UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	(X)	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 13/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment ID required, some cable ID's required (approx. 10 cables).
- Replace uncertified plugs.
- Provide certified plugs x 3 to bottom of enclosure ↳ High Priority !!
- UV damage to several cables requiring remediation
- Exposed armour at main control cable required re-termination.
- Verify I.S. circuits within JB and evaluate as required.

Reviewed by: N. GREEN
Date: 19/9/11
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: – (PIT 01)	Asset: GAS COND'R. SKID INLET
Circuit ID: –	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) Pressure Transmitter	Type of protection: (d,e, i, n, p etc) –
Manufacturer: ROSEMOUNT	Gas group: (IIA/B/C) –
Full model number: 3051TG4A2B21B2E4M5T1	Temp class: (T1-T6) –
Serial number: PS0754039	Certificate number: –
IP Class 66/67	Test authority: (BAS, PTB, SAA etc) –

Number of cables:	1

For each cable entry	gland 1	gland 2	~~others~~
Gland manufacturer:	ALCO		ADAPT
Model:	ALCHA W20 M20		M20
Gland type of protection: (d,e)	d 1/11C, e 1/11 AUS Ex 03.3904		Ex d IIC BAS # 831218 U

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	⊗	ID-CABLE-LOOP
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	⊗	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	

	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	⊗	N/A.
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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Cable + equipment I.O. required.
- BLUE CABLE SHEATH REQUIRED.
- Haz. Area. certification label required on device.

Reviewed by: N. GREEN
Date: 8/9/11
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: – (DPIT 01)	Asset: GAS CONDITIONING SKID. FS-1
Circuit ID: –	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

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: 3051CD4A02A1BM5I7T155	Temp class: (T1-T6) T5 (40°C)
Serial number: RS0517285	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:	CMA		REDAPT
Model:	FWPM		M20
Gland type of protection: (d,e)	Ex		~~BAS~~ EEx d IIC BAS 231218U

Inspection ⟶ **Circle as checked**

	A Equipment	Applicable to protection type:	Internal	External	Note
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)	~~[illegible]~~ CABLE
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	(X)	- EQUIP
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)	BLUE
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	(X)	
14	Entity calculation/documentation is available	i	X	X	

	B Installation			
1	Type of cable is appropriate, cables are undamaged	all	X	(X)
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	(X)
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D. required.
- Blue cable sheath required.

Reviewed by: N. GREEN
Date: 8/9/11
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: (2 SC-02 AL) ~~BL~~	Asset: GAS COMP. SKID TCV-07A
Circuit ID: —	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) VALVE LIMIT SWITCH	Type of protection: (d,e, i, n, p etc) CLASS 1
Manufacturer: MASONEILAN	Gas group: (IIA/B/C) GROUP B, C, D
Full model number 4004 96-911	Temp class: (T1-T6)
Serial number: —	Certificate number: NOT SAA APPROVED
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)	—		

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	Ø	- CONFIRM - EQUIP
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	Ø	
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	- UV - CABLE ON PIPE
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	
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.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.O. required.
- UV damaged cable requires remediation.
- Cable resting on process pipe requires supporting.
- Nil AUS certn. available for device + adaptors to evaluate.

Reviewed by: D.GREEN
Date: 8/9/11
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: (I/P -02A) ~~FB~~	Asset: GAS COND'S SKID TCV-02A
Circuit ID: —	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) PRESSURE CONVERTER	Type of protection: (d,e, i, n, p etc) Ex i a
Manufacturer: MASONEILAN	Gas group: (IIA/B/C) IIC
Full model number: 8012-2C	Temp class: (T1-T6) T6
Serial number: X34555-1-88-8	Certificate number: SAA Ex 94
IP Class	Test authority: (BAS, PTB, SAA etc)

i.

Number of cables:	1

For each cable entry	gland 1	gland 2	~~others~~ CONNECTED TO
Gland manufacturer:	?	?	GOVAN
Model:	?	?	ENG4W
Gland type of protection: (d,e)	?	?	d

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 - EQ
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	X - CG
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 EWI
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 UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	X
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the 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** N.GREEN	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D. required
- Provide blue cable sheath/I.S. labelling to I/P T.B.

Reviewed by: N. GREEN
Date: 8/9/11
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: - (JB)s	Asset: TCV-02A (JP JBox)
Circuit ID: -	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) JUNCTION BOXES	Type of protection: (d,e, i, n, p etc) Ex d
Manufacturer: GOVAN	Gas group: (IIA/B/C) IIB
Full model number: FW 4W	Temp class: (T1-T6) T6
Serial number:	Certificate number: AUS Ex 157
IP Class 65	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)			

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	- CCT - EQ
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)	Illegible.
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)	DV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D required
- Provide the cable sheath / I.S. labelling to I.B.

Reviewed by: N. GREEN
Date: 8/9/11.
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:	IT-01 A	Asset:	GAS CONDITIONING SKID
Circuit ID:	–	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	TEMPERATURE TRANSMITTER	Type of protection: (d,e, i, n, p etc)	Ex ia
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	IIC
Full model number:	444-R12-UT-AT-I7	Temp class: (T1-T6)	T6 (40°C) T5 (70°C)
Serial number:	(444 R12U1A1I7)	Certificate number:	AUS Ex 12 2 X
IP Class	AL12445	Test authority: (BAS, PTB, SAA etc)	

ia

ILLEGIBLE

Number of cables:	1

For each cable entry	gland 1	~~gland 2~~ CLIPSAL	~~others~~ ARMOURED
Gland manufacturer:	CMA	CLIPSAL	CLIPSAL
Model:	–		F1235 (DPT)
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	X	
2	Equipment ID or circuit ID is correct	all	X	(X)	- CCT - EQ
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	X	
4	There are no damage or evidence of unauthorised modifications	all	X	X	- CCT FIXED TO PIPE.
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)	SHEATH
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)	UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	X	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable ID. required
- Re-route cabling and support not fixed to process piping.
- Provide blue outer sheath to cable.

Reviewed by: N. GREEN
Date: 8/9/11
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: -(PT -01 A)	Asset:
Circuit ID: -	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) PRESSURE TRANSMITTER	Type of protection: (d,e, i, etc) Ex ia
Manufacturer: ROSE MOUNT	Gas group: (IIA/B/C) II C
Full model number: ~~1144-9-1200-422-17~~	Temp class: (T1-T6) T5 (40°C) T4 (60°C)
Serial number: RS0523853	Certificate number: AUS Ex 1249X
IP Class D3051CG5A22 A1 AB4I7M5	Test authority: (BAS, PTB, SAA etc)

FADED NAMEPLATE

Number of cables:	1

For each cable entry

	gland 1	gland 2	others ADAPTOR
Gland manufacturer:	CMA		
Model:	FWPM		FAIINM
Gland type of protection: (d,e)			

AUS Ex 1498 0

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)	CABLE EQUIP.
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)	BLUE
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)	NO

	B Installation				
1	Type of cable is appropriate, cables are undamaged	all	X	(X)	UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	(X)	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D. required
- Blue sheath to cabling required.
- Replace faded Ex nameplate.

Reviewed by: N. GREEN
Date: 8/9/11
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: - (2 SC/25003 A)	Asset: GAS CONDITIONING SKID SDV-03A
Circuit ID: -	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) VALVE LIMIT SWITCH	Type of protection: (d,e, i, n, p etc) Ex d
Manufacturer: BETTIS	Gas group: (IIA/B/C) IIB
Full model number: 3R-021 AFC	Temp class: (T1-T6) T6
Serial number:	Certificate number: SAA? Ex 95?
IP Class	Test authority: (BAS, PTB, SAA etc)

Number of cables:	1

For each cable entry	gland 1	~~gland 2~~ PLUG?	~~others~~ ADAPTOR
Gland manufacturer:	CMA	1	CLIPSAL
Model:	EWPM	1	E1235
Gland type of protection: (d,e)		1	

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 - CLT
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	X - EQ
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 - UV PAINTED
2	Sealing of ducts and/or conduits is satisfactory	all	X	X
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U.X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.O. required.
- Verify equipment + accessory details to confirm AUSEx compliance for flameproof installation.
- UV damaged cabling requireing remediation

Reviewed by: N. GREEN
Date: 8/9/11
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:- (SV0/SKE03 A)	Asset: GAS CONDITIONING SKID SDV-03A
Circuit ID: -	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label - ILLEGIBLE - INFO BASED UPON PREVIOUS NOTES / SOLENOIDS.

Apparatus type: (light, JB, Motor) SOLENOID VALVE	Type of protection: (d,e, i, n, p etc) (Ex e, s)
Manufacturer: ~~BETTIS~~ (HERION)	Gas group: (IIA/B/C) (IIC)
Full model number:	Temp class: (T1-T6)
Serial number:	Certificate number: AUS Ex 198
IP Class (65)	Test authority: (BAS, PTB, SAA etc)

LEGIBLE TO 1 SOL. ONLY @ 03B.

Number of cables: 2	

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	- CCT
2	Equipment ID or circuit ID is correct	all	X	⊗	- EQUIP.
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗	
4	There are no damage or evidence of unauthorised modifications	all	X	⊗	- PAINTED
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	⊗	- PAINTED.
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	⊗
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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cct I.D. required.
- Equipment painted heavily hence illegible.
- Ex cert'n expired 2001, due to age/condition suggest replacement.

Reviewed by: N. GREEN
Date: 8/9/11
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: -(ZSC-02BL)	Asset: GAS CONDITIONING SKID TCV-02B
Circuit ID: -	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) VALVE LIMIT SWITCH	Type of protection: (d,e, i, n, p etc) ILLEGIBLE
Manufacturer: MASONEILAN	Gas group: (IIA/B/C)
Full model number: 400496-911	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
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	⊘	-CCT
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊘	- EQ
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	⊘	UV
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	
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 N. GREEN Supervisor	Client (write): Inspector
Date: 8/9/11	Date:

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.O. required.
- Cable damaged (UV) requiring remediation.
- Nil AUSEx certification detail available to evaluate.

Reviewed by: N. GREEN
Date: 8/9/11
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: (I/P-02B)	Asset: GAS CONDITIONING SKID TCV-02B
Circuit ID: –	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) I/P TRANSDUCER	Type of protection: (d,e, i, n, p etc) Ex ia
Manufacturer: MASONEILAN	Gas group: (IIA/B/C) IIC
Full model number: 8012-2C	Temp class: (T1-T6) T6
Serial number: X34555-1-88-3	Certificate number: SAA Ex 94
IP Class	Test authority: (BAS, PTB, SAA etc)

Number of cables: 1

For each cable entry	gland 1	gland 2	~~others~~ CONNECTED TO
Gland manufacturer:	?	?	~~Relay~~ COVAN
Model:	?	?	FW 4W
Gland type of protection: (d,e)	?	?	d

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	⊗	-EQ
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗	-CLR
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	⊗	LABLE
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	X	

	B Installation				
1	Type of cable is appropriate, cables are undamaged	all	X	⊗	OV
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	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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D. required.
- Provide blue cable sheath + IS. labelling to J/P-JB

Reviewed by: N.GREEN
Date: 8/9/11
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

GAS CONDITIONING

Device ID or tag: -(JB)	Asset: TCV-02B (JIP JBOX)
Circuit ID: -	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) JUNCTION BOXES	Type of protection: (d,e, i, n, p, etc) Ex d
Manufacturer: GOVAN	Gas group: (IIA/B/C) IIB
Full model number: FW 4W	Temp class: (T1-T6) T6
Serial number:	Certificate number: AUSEX 157
IP Class 65	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)	-		

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	⊗	CCT -EQ
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	⊗	I.D
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	X	

	B Installation				
1	Type of cable is appropriate, cables are undamaged	all	X	⊗	-UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	⊗	- CCT RESTING AGAINST PIPE
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	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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.O. required.
- Provide blue cable sheath + I.S. labelling to I/P - I.S.
- Reroute + support cable resting on process pipe.

Reviewed by: N. GREEN
Date: 8/9/11
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: PT-01B	Asset: GAS CONDITIONING SKID
Circuit ID: –	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) PRESSURE TRANSMITTER	Type of protection: (d,e, i, n, p etc) (Ex ia) ILLEGIBLE
Manufacturer: ROSE MOUNT	Gas group: (IIA/B/C) (IIC)
Full model number: 3051CG5A22A1AB417M5	Temp class: (T1-T6) (T5 (40°C))
Serial number: 0957563	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 PLUG	others ADAPTOR
Gland manufacturer:	?	NIL	?
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)	– CCT
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	(X)	– EQ
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)	PLUG
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)	– UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable label required
- Cable sheath damaged (ov), remediate with blue sheath.
- Replace existing Ex label illegible.

Reviewed by: N. GREEN
Date: 8/9/11
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: - (TT-013)	Asset: GAS CONDITIONING SKID
Circuit ID: –	Physical location: PIPE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) TEMP Tx.	Type of protection: (d,e, i, n, p etc) (Ex)
Manufacturer: ROSEMOUNT	Gas group: (IIA/B/C) (IIC)
Full model number: 444 R12U1A1 I7	Temp class: (T1-T6) (T6 40°C)
Serial number: AH12446	Certificate number: (AUS Ex 1224X)
IP Class	Test authority: (BAS, PTB, SAA etc)

ILLEGIBLE

Number of cables: 1	

For each cable entry	gland 1	gland 2 (ELBOW)	others ADAPTOR
Gland manufacturer:	CMA	CLIPSAL	CLIPSAL
Model:	–		E1285 NPT1
Gland type of protection: (d,e)			Ex d

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)	- CCT
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	(X)	- EG
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)	BLUE
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)	UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D. required.
- Provide 4mm outer sheath/remediate UV damaged cable.

Reviewed by: N.GREEN
Date: 8/9/11
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: - (2.50/ZSO-03B)	Asset: GAS CONDITIONING SKID SDV-03B
Circuit ID: -	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) VALVE LIMIT SWITCH	Type of protection: (d,e, i, n, p etc) Ex d
Manufacturer: BETTIS	Gas group: (IIA/B/C) IIB
Full model number: 3R - 021 AFC	Temp class: (T1-T6) T6
Serial number:	Certificate number: SAA? Ex 95 ?
IP Class	Test authority: (BAS, PTB, SAA etc)

Number of cables:	1

For each cable entry	gland 1	~~gland 2~~ PLUG	~~others~~ ADAPTOR
Gland manufacturer:	CMA	?	CMA
Model:	PWDM	?	FL275
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	⊗	- CCT
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗	- EQ
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	⊗	- UV PAINTED
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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	Date:

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D. required
- Verify equipment + accessory details to confirm AUS Ex compliance for flameproof installation.
- UV damaged cabling requiring remediation.

Reviewed by: N.GREEN
Date: 8/9/11
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: – (SVO/SVC-03B)	Asset: GAS CONDITIONING SKID SDV-03B
Circuit ID: –	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label – ILLEGIBLE BASED ON PREVIOUS SITES / SOLENOIDS

Apparatus type: (light, JB, Motor) SOLENOID VALVE	Type of protection: (d,e, i, n, p etc) (Ex e,s)
Manufacturer: (HERION)	Gas group: (IIA/B/C) (IIC)
Full model number:	Temp class: (T1-T6)
Serial number:	Certificate number: ABS Ex 198
IP Class (65)	Test authority: (BAS, PTB, SAA etc)

Number of cables:	2

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)	- CCT
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	(X)	- ENC.
4	There are no damage or evidence of unauthorised modifications	all	X	(X)	- PANEL
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)	PANEL
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cct I.D required.
- Equipment painted heavily hence illegible.
- Ex cert's expired 2001, due to age/condition suggest replacement.

Reviewed by: N.GREEN
Date: 8/9/11
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:	-(LSH-01)	Asset:	GAS CONDITIONING SKID FC-1
Circuit ID:	GC15	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	LOW LEVEL SWITCH	Type of protection: (d,e, i, n, p etc)	?
Manufacturer:	MAGNATROL	Gas group: (IIA/B/C)	?
Full model number:	D75-1B20-BNW ✓	Temp class: (T1-T6)	?
Serial number:	–	Certificate number:	NOT SAA APPROVED
IP Class	–	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1 x1	gland 2	others NOMOT x1
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	⊗	EQUIP.
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗	– PAINTED!
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	⊗	PAINTED.
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	✗
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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment I.D. required.
- Device heavily painted potentially compromising method of protection.
- N:l AUS. certification detail available to evaluate.

Reviewed by: N. GREEN
Date: 8/9/11
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:	PS -02 A (PS-01A)	Asset:	WRH 1A
Circuit ID:	H37A	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	PRESSURE SWITCH	Type of protection: (d,e, i, n, p etc)	Ex d
Manufacturer:	UNITED ELECTRIC	Gas group: (IIA/B/C)	IIC
Full model number:	J 120 - 702	Temp class: (T1-T6)	T5
Serial number:		Certificate number:	AUS Ex 542 - 2
IP Class	66	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	gland 2	~~others~~
Gland manufacturer:	CMA		ADAPTOR CUPRAL
Model:	FWPM		FILES
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

EA

	B Installation			
1	Type of cable is appropriate, cables are undamaged	all	X	(X)
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	(X)
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

UV

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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/4	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment enscribed incorrectly. Provide equipment I.D (PSO1A) and remove existing scribe (PSOLA).
- UV damaged cable sheath required remediation
- Verify compound filled barrier type gland is installed to cabling.

Reviewed by: N.GREEN
Date: 8/9/4
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: (PS - 02 A)	Asset: NBH IA
Circuit ID: 430A	Physical location: PINE CREEK
Area classification :	Environment: (hot?)

Data from Label

Apparatus type: (light, JB, Motor) PRESSURE SWITCH	Type of protection: (d,e, i, n, p etc) Ex d
Manufacturer: UNITED ELECTRIC	Gas group: (IIA/B/C) IIB
Full model number: J120 - 702	Temp class: (T1-T6) T6
Serial number:	Certificate number: AUS. Ex 5472 - 1
IP Class 66	Test authority: (BAS, PTB, SAA etc)

Number of cables:	1

For each cable entry	gland 1	gland 2	~~others~~ ADAPTOR
Gland manufacturer:	CMA		CMPSA
Model:	FWPM		
Gland type of protection: (d,e)			

Ex 4920

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)	EQ
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)	UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	(X)	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment ID required.
- OV damaged cable sheath requires remediation.
- Verify compound barrier type gland is installed to cabling.

Reviewed by: N.GREEN
Date: 8/9/11
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:	- (SV-V4A/SV-V5A)	Asset:	WBH - IA - Pilot GAS VALVES.
Circuit ID:	H34A / H35A (H36A/H35A)	Physical location:	PINE CK.
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	SOLENOID VALVES	Type of protection: (d,e, i, n, p etc)	? (Ex e, s)
Manufacturer:	HERION	Gas group: (IIA/B/C)	? (IIC)
Full model number:	970806	Temp class: (T1-T6)	?
Serial number:	852506 / 838998	Certificate number:	AUS Ex 198 OLP 118
IP Class		Test authority: (BAS, PTB, SAA etc)	

Number of cables:	2

For each cable entry	gland 1	gland 2	others ADAPTOR
Gland manufacturer:	CMA		-
Model:	EWPM		-
Gland type of protection: (d,e)	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)	EQ. ID tie vertical install plan
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)	UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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	⊗	TOP GLAND ENTRY.
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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment labels required
- Cable I.O seem incorrect, review as per P&ID.
- Top entry cable gland installation not recommended. suggest to rotate 180° vertically for bottom entry.

Reviewed by: N. GREEN
Date: 8/9/11.
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:	I/P -03 ~~A B~~	Asset:	HEATER 1A
Circuit ID:	H44	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	OUTDOOR

Data from Label

Apparatus type: (light, JB, Motor)	CURRENT TO PRESSURE CONVERTER	Type of protection: (d,e, i, n, p etc)	~~class II Div 1~~ ia
Manufacturer:	MASONEILAN	Gas group: (IIA/B/C)	~~IIB~~ IIC
Full model number:	8005 A	Temp class: (T1-T6)	T5
Serial number:	080061 - 211	Certificate number:	~~NOT SAA APPROVED~~
IP Class		Test authority: (BAS, PTB, SAA etc)	FM

NO BARRIER? Yes @ RMS PANEL.

Ex 94

Number of cables:	(1)

For each cable entry

	~~gland 1~~ ADAPTOR	~~gland 2~~ ADAPTOR/JBOX	~~others~~ GLAND TO JBOX.
Gland manufacturer:	NOT LEGIBLE	CMP	CMA
Model:	BRASS /CS-RUSTED	FW 4W	FWDM
Gland type of protection: (d,e)		Exd IIB T6 IP65 ADJ Bx157	

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)	GQ.
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)	- BLUE?
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	*	- CLEARANCE! - LABELS etc.
14	Entity calculation/documentation is available	i	X	X	

	B Installation				
1	Type of cable is appropriate, cables are undamaged	all	X	(X)	UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment label required
- I.S. circuit installation
  - Required blue cable sleath, labelling, segregation from non-I.S., panel labelled I.S. where barrier installed within H1A-CP-001.
- UV damaged cable requires remediation

Reviewed by: N. GREEN
Date: 8/9/11
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:	SV 9 A	Asset:	W.B. HEATER 1A
Circuit ID:	H 46	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	OUTDOOR

Data from Label

Apparatus type: (light, JB, Motor)	SOLENOID	Type of protection: (d,e, i, n, p etc)	
Manufacturer:	ASCO	Gas group: (IIA/B/C)	I / II A & B
Full model number:	FA 8003 5	Temp class: (T1-T6)	T5
Serial number:	FAB8320A187	Certificate number:	
IP Class		Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1 (JB)	gland 2	others JB
Gland manufacturer:	CMA	CLIPSAL	GOUAN
Model:	FWDM		FW 4W
Gland type of protection: (d,e)	Exd	ExD	Exd - AUSEx 15 7 II B T6 IP65

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 - EQ
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 - UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	X - ID.
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment label required
- Cable sheath requires remediation due to UV damage.
- N:1 AUS. Ex certification detail available. suggest replacement due to age and condition.
- Cable ID to be verified with cable schedule.

Reviewed by: N. GREEN
Date: 8/9/11
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:	(SV 10A) SV8A ?	Asset:	W.B. HEATER 1A
Circuit ID:	H 45	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	OUTDOOR

Data from Label

Apparatus type: (light, JB, Motor) SOLENOID	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 (JB)	gland 2	others JB
Gland manufacturer:	CMA	CLIPSAL	HOVAN
Model:	FW PM		FW 4W
Gland type of protection: (d,e)	EXD	EXD	EXD AUSEX 157 IIB T5 IP 65

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) GQ
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) UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN Supervisor	Client (write): Inspector
Date: 8/9/21	Date:

Device ID or tag

Action required to make device compliant:

- Equipment label required
- Remediate cable sheath due to UV damage
- Nil AUS Ex certification detail available. Suggest replacement due to age and condition.

Reviewed by: N. GREEN
Date: 8/9/21
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:	N/A	Asset:	WBH 1A
Circuit ID:	?	Physical location:	PINE CREEK.
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	CABLES	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:	2

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
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 (Exposed + not terminated)
2	Sealing of ducts and/or conduits is satisfactory	all	X	X
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN Supervisor	Client (write): Inspector
Date: 8/9/11	Date:

Device ID or tag

Action required to make device compliant:

- Unterminated cabling (x2 dekoron) exists within cable tray above fuel gas lines. Terminate/earth cables within suitably rated enclosure or remove completely.

Reviewed by: N. GREEN
Date: 8/9/11
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

General

Device ID or tag:	(PS - 013)	Asset:	WBH 18
Circuit ID:	-	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	PRESSURE SWITCH	Type of protection: (d,e, i, n, p etc)	Ex d
Manufacturer:	UNITED ELECTRIC	Gas group: (IIA/B/C)	IIB
Full model number:	J 120 - 702	Temp class: (T1-T6)	T6
Serial number:		Certificate number:	AUS Ex 542-2
IP Class	66	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	gland 2	~~others~~ ADAPTOR
Gland manufacturer:	CMA		CORIM
Model:	FWPM		
Gland type of protection: (d,e)			d AUS Ex 1245U

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)	- EQ
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	X	- CCT
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)	OV
2	Sealing of ducts and/or conduits is satisfactory	all	X	X	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	Date:

Device ID or tag

Action required to make device compliant:

- Equipment + cable ID required.
- UV damaged cable requires remediation.
- Verify compound filled barrier type gland is installed to cabling.

Reviewed by: N. GREEN
Date: 8/9/11
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:	(PS - 02 A/B)	Asset:	WBH - 1B
Circuit ID:	-	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	PRESSURE SWITCH	Type of protection: (d,e, i, n, p etc)	Ex d
Manufacturer:	UNITED ELECTRIC	Gas group: (IIA/B/C)	IIB
Full model number:	J120 - 702	Temp class: (T1-T6)	T6
Serial number:		Certificate number:	AUS Ex 542-1X
IP Class		Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	gland 2	others ~~ETHER~~ ADAPTOR.
Gland manufacturer:	CMA		CHAPSAL
Model:	FWDM		F1255.
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	- CLT
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	X	- EQ.
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	DV
2	Sealing of ducts and/or conduits is satisfactory	all	X	X	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D. required
- UV damaged cable sheath requires remediation.
- Verify compound barrier filled type gland is installed to cabling.

Reviewed by: N.GREEN
Date: 8/9/11
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:	– (SV-V5B / SV-V4B)	Asset:	WBH 1B
Circuit ID:	H35B / H36B	Physical location:	PINE CREEK.
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	SOLENOID VALVE	Type of protection: (d,e, i, n, p etc)	Ex m, e
Manufacturer:	LUCIFER	Gas group: (IIA/B/C)	IIC
Full model number:	821003	Temp class: (T1-T6)	T5
Serial number: Cert. Date:	8704 / 8804	Certificate number:	AUS Ex 321-1
IP Class		Test authority: (BAS, PTB, SAA etc)	

Number of cables:	1

For each cable entry	gland 1	gland 2	others (36B)
Gland manufacturer:	CMA		ADAPTOR
Model:	FWPM		
Gland type of protection: (d,e)	d		DIP

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)	EO
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	(X)	IP for vertical intake gland
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)	UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	X	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment labels required.
- Top entry for cable gland not recommended. Suggest 180° rotation.
- SV-V4B (cable H36B) has DIP adaptor between cable gland + solenoid housing. Remove if adaptor is not consistent with cable installation method of protection.

Reviewed by: N. GREEN
Date: 8/9/11
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:	I/P 03B	Asset:	HEATER 1B
Circuit ID:	H44B	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	OUTDOOR

Data from Label

Apparatus type: (light, JB, Motor)	PRESSURE CONVERTER	Type of protection: (d,e, i, n, p etc)	ia
Manufacturer:	MASONEILAN	Gas group: (IIA/B/C)	IIC
Full model number:	8005	Temp class: (T1-T6)	T5
Serial number:	80061 – 211	Certificate number:	Ex 94
IP Class		Test authority: (BAS, PTB, SAA etc)	SAA

Number of cables:	1

For each cable entry

	~~gland~~ 1 ADAPTOR	~~gland 2~~ ADAPTOR/SB	others GLAND TO JB
Gland manufacturer:	NOT LEGIBLE	GOWAN	CMA
Model:	BRASS + RUSTY CS.	FW44	HNPM
Gland type of protection: (d,e)		Ex d IIB T6 IP65 AUS Ex152	

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)	JB LABEL.
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)	I.S.
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		Internal	External	
1	Type of cable is appropriate, cables are undamaged	all	X	(X)	OV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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
N. GREEN Date: 8/9/11	Date:

Device ID or tag

Action required to make device compliant:

- JB label required.
- I.S. INSTALLATION REQUIRED FOLLOWING.
  - BLUE CABLE SHEATH
  - LABELLING TO JB + MAIN CONTROL PANEL HIB-CP-001
  - SEGREGATION + MECHANICAL PROTECTION FROM NON-I.S. CCTS.
- Remediate UV damaged cable.

Reviewed by: N. GREEN
Date: 8/9/11
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:	-(SV - V8 ~~A~~/B)	Asset:	W.B. HEATER 1B
Circuit ID:	H 46B	Physical location:	PINE CREEK
Area classification :	ZONE 2	Environment: (hot?)	OUT DOOR

Data from Label

Apparatus type: (light, JB, Motor)	SOLENOID	Type of protection: (d,e, i, n, p etc)	Ex C ?
Manufacturer:	~~IYCO~~ ASCO	Gas group: (IIA/B/C)	II 2 GD
Full model number:	~~E79U~~ FA 80033	Temp class: (T1-T6)	
Serial number:	567077A	Certificate number:	NOT SAA APPROVED
IP Class		Test authority: (BAS, PTB, SAA etc)	

Number of cables:	

For each cable entry	gland 1 (~~3~~5)	~~gland~~ 2 (ADAPTOR)	others JB
Gland manufacturer:	CMA	CLIPSAL	~~JB~~ COVAN
Model:		NFP1	FW.4W
Gland type of protection: (d,e)		d	Ex d

Ex 159 Exd IIB T6

Inspection → **Circle as checked** IP65

	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)	EQ
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	(X)	
4	There are no damage or evidence of unauthorised modifications	all	X	(X)	CRACKED ADAPTOR.
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)	UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment label required.
- UV damaged cable sheath required remediation.
- N:1 AUS Ex certification detail available. Suggest replacement due to age and condition.
- Replace cracked adaptor at solenoid.

Reviewed by: N. GREEN
Date: 8/9/11
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:	(SV - V93 A/B)	Asset:	W.B. HEATER 1B
Circuit ID:	H45 B	Physical location:	PINE CREEK
Area classification :	ZONE 2 T1	Environment: (hot?)	OUTDOOR

Data from Label

Apparatus type: (light, JB, Motor)	SOLENOID	Type of protection: (d,e, i, n, p etc)	Ex e
Manufacturer:	~~TYCO~~ ASCO.	Gas group: (IIA/B/C)	II 2 G D
Full model number:	~~E79U~~	Temp class: (T1-T6)	UNKNOWN
Serial number:		Certificate number:	NOT SAA APPROVED
IP Class		Test authority: (BAS, PTB, SAA etc)	

Number of cables:	

For each cable entry	gland 1	gland 2 (JB)	others JB
Gland manufacturer:	CLIPSAL	CMA	GOUAN
Model:	NEPI		FW 4L
Gland type of protection: (d,e)	Ex d	Ex d	EXD

NOTE CRACKED + REASS ✓ — IIB T6 IP65

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)	EQ
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	(X)	ADAPTOR
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)	UV
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	Date:

Device ID or tag

Action required to make device compliant:

- Equipment label required
- Remediate cable sheath due to UV damage.
- Nil Aus Ex certification detail available. Suggest replacement due to age and condition.
- Replace cracked adaptor at solenoid.

Reviewed by: N. GREEN
Date: 8/9/11
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:	N/A ?	Asset:	WRH 1B
Circuit ID:		Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	CABLES	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:	2

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	
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)	exposed cables
2	Sealing of ducts and/or conduits is satisfactory	all	X	X	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	X	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Unterminated cabling (x 2 dekoron) exists within cable tray above fuel gas lines. Terminate / earth cables within suitably rated enclosure or remove completely.

Reviewed by: N. GREEN
Date: 8/9/11
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:	– (JB)	Asset:	METER RUN
Circuit ID:	–	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	JUNCTION BOX	Type of protection: (d,e, i, n, p etc)	Ex d
Manufacturer:	GOVAN	Gas group: (IIA/B/C)	IIA IIB
Full model number:	F7	Temp class: (T1-T6)	T6
Serial number:		Certificate number:	AUS Ex 401
IP Class	65	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	12 TWELVE

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	CMA META		
Model:	FWPM DEXIPX6D		
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	Ⓧ	– EQ
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	Ⓧ	– CCT
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	IS?
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	X	IS?
14	Entity calculation/documentation is available	i	X	X	

	B Installation				
1	Type of cable is appropriate, cables are undamaged	all	X	Ⓧ	UV
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: (circled) List action required

Contractor (write): Inspector N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment + circuit I.O. required.
- UV damaged cabling require remediation.
- I.S. circuits connected to I/R require identification via blue sheath, labels, segregation etc..

Reviewed by: N. GREEN
Date: 8/9/11
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: (PT-02)	Asset: METER SKID
Circuit ID: GMS3	Physical location: PINE CREEK
Area classification :	Environment: (hot?) OUTDOOR

Data from Label

Apparatus type: (light, JB, Motor) PRESSURE TRANSMITTER	Type of protection: (d,e, i, n, p etc) Ex ia
Manufacturer: ROSEMOUNT	Gas group: (IIA/B/C) IIC
Full model number: 1144-9-1200-422-17 (3051)	Temp class: (T1-T6) T5(40°C) T4(60°C)
Serial number: 04598 08	Certificate number: AUS Ex 122X
IP Class	Test authority: (BAS, PTB, SAA etc)

NOT READABLE

MODEL # 3051 PG SA22 A1A M5 17 L404

Number of cables:	1

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	NA	ADAPTAFLEX	PLUG
Model:	NO MARKING/PANI		
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) EQ.
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) BLUE
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) OV
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment ID required
- Blue cable sheath required.
- UV damaged cabling requires remediation.

Reviewed by: N.GREEN
Date: 8/9/11
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:	-(FT-01)	Asset:	METER RUN
Circuit ID:	GMS2	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	OUT DOOR

Data from Label

Apparatus type: (light, JB, Motor)	FLOW TRANSMITTER	Type of protection: (d,e, i, n, p etc)	Ex ia (is)
Manufacturer:	ROSE MOUNT	Gas group: (IIA/B/C)	IIC
Full model number:	3051 PD2A22A1AM5T7 L4	Temp class: (T1-T6)	T5 (40°C) T4 (60°C)
Serial number:	0459795	Certificate number:	AUS Ex 1249X – FROM PHOTO
IP Class		Test authority: (BAS, PTB, SAA etc)	

Number of cables:	(3)

For each cable entry	gland 1 (ADAPTOR)	gland 2 (GLAND)	others
Gland manufacturer:	/	CMA	PLUG
Model:		IP x 6D FWPM	=
Gland type of protection: (d,e)	Ex 492X – EXD	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	X
2	Equipment ID or circuit ID is correct	all	X	(X) (EQ)
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) (BLUE)
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) (UV)
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment I.D. required.
- Blue cable sheath required.
- UV damaged cabling requires remediation.

Reviewed by: N-GREEN
Date: 8/9/11
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:	FT-02	Asset:	METER RUN
Circuit ID:	GMS3	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	OUTDOOR

Data from Label

Apparatus type: (light, JB, Motor)	FLOW TRANSMITTER	Type of protection: (d,e, i, n, p, etc)	Ex iCa
Manufacturer:	ROSE MOUNT	Gas group: (IIA/B/C)	IIC
Full model number:	3051 DP *	Temp class: (T1-T6)	T5 (40°C) T4 (60°C)
Serial number:	0459794	Certificate number:	AUS Ex ~~122~~ X 124
IP Class		Test authority: (BAS, PTB, SAA etc)	

i, GY

* MODEL # 3051 PD2A 22A1AM5 J7 L4 Q4

Number of cables:	1

For each cable entry

	ADAPTOR ~~gland 1~~	gland 2	others
Gland manufacturer:	CLIPSAL ✓	CMA	PLUG
Model:		FWPM	-
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	Ⓧ EQ
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	Ⓧ BLUE
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	Ⓧ
14	Entity calculation/documentation is available	i	X	X

	B Installation			
1	Type of cable is appropriate, cables are undamaged	all	X	Ⓧ UV
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	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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment I.O. required.
- Blue cable sheath required
- UV damaged cabling requires remediation.

Reviewed by: N. GREEN
Date: 8/9/11
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:	TIT-02	Asset:	METER RUN.
Circuit ID:	—	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	TEMPERATURE INDICATOR TRANSMITTER	Type of protection: (d,e, i, n, p etc)	Ex i ia IIC
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	IIC
Full model number:	~~444-RL2-VI-AI-I4~~	Temp class: (T1-T6)	T6(40°C) T5(70°C)
Serial number:	01170770	Certificate number:	AUS Ex 02~~22~~ x 3794X
IP Class	IP 66	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	+3144-p D2A1 17M5F5

For each cable entry	ADAPT gland 1	gland 2	others
Gland manufacturer:	ROSEMOUNT	ALCO	
Model:	0044400282	FCPW 203	
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	⊗	- CCT
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗	- EQ
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	⊗	BLUE
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	⊗	
14	Entity calculation/documentation is available	i	X	X	

	B Installation				
1	Type of cable is appropriate, cables are undamaged	all	X	⊗	- UV DAMAGE
2	Sealing of ducts and/or conduits is satisfactory	all	X	⊗	- EXPOSED ARMOUR.
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	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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	Date:

Device ID or tag

Action required to make device compliant:

- Circuit I.D. reqmed, Equipment I.D. reqmed.
- UV damaged cabling requires remediation, due sheathing reqmed.
- Re-terminate cabling for exposed armour @ gland.

Reviewed by: N.GREEN
Date: 8/9/11
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:	TT-03	Asset:	SEPARATOR OUTLET
Circuit ID:	N/A	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	OUTDOOR

Data from Label

Apparatus type: (light, JB, Motor)	TEMPERATURE TRANSMITTER	Type of protection: (d,e, i, n, p etc)	Ex ia ?
Manufacturer:	ROSEMOUNT	Gas group: (IIA/B/C)	IIC
Full model number:	444 - RL2 - VI - AI - I7	Temp class: (T1-T6)	T6(40°C) T5(70°C)
Serial number:		Certificate number:	AUS. Ex 122X ?
IP Class		Test authority: (BAS, PTB, SAA etc)	

FADED LABEL.

NO LABELS

Number of cables:	

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	ADAPTE CLIPSAL ✓	CMA	
Model:	M235 NPTI	EWPM	
Gland type of protection: (d,e)	EXD AUSEX 432X		

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)	CCT.
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)	BLUE.
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)	- SUPPORT
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)	
3	Stopper boxes or barrier glands are properly filled	d	X		
4	Integrity of conduit system and interface with mixed system is maintained	all	X		
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)	
6	Fault loop impedance is satisfactory	power outlets	X		
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X		
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X		
9	Special certification conditions U,X or B have been complied with	all	X		
10	Cables/spare cores are terminated satisfactorily	all	X		
11	No obstructions adjacent to flameproof flanged joint	d	X	X	
12	Ducts, pipes and enclosures are in good condition	p	X	X	
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X	
14	Protective gas flow/pressure is adequate	p	X		
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X		
16	Pre-energising purge period is adequate	p	X		
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X		

18	Cables are installed and screens are earthed in accordance with the 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 N.GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Circuit I.D. required.
- Blue cable sheath required.
- Cable support required.
- UV damaged cabling required remediation.

Reviewed by: N. GREEN
Date: 8/9/11
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

PSH-A, PSH-B

Device ID or tag:	(PSH - 07 A/B)	Asset:	METER SKID
Circuit ID:	N/A	Physical location:	PINE CREEK
Area classification :		Environment: (hot?)	

Data from Label

Apparatus type: (light, JB, Motor)	HIGH PRESSURE SWITCH	Type of protection: (d,e, i, n, p etc)	
Manufacturer:	ALLEN BRADLEY	Gas group: (IIA/B/C)	
Full model number:	BUL. 836T-T256J	Temp class: (T1-T6)	
Serial number:	N/A	Certificate number:	NOT SAA APPROVED ✓ is ?
IP Class	IP 66	Test authority: (BAS, PTB, SAA etc)	

Number of cables:	

For each cable entry	gland 1 (PSH 07 B)	gland 2 (PSH07 A)	others
Gland manufacturer:	~~WG202~~ ALCO	NETH CMA	
Model:	WG202	EW.PM D	
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	⊗	- EQ
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	⊗	- CCT
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	I.S. ?
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	⊗	UV
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	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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Equipment I.D. (PSU-A, PSU-B) incorrect required alteration.
- Circuit I.D. required.
- UV damaged cable sheath requires remediation.

Reviewed by: N. GREEN
Date: 8/9/11
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: (PT-04)	Asset: SEPARATOR OUT
Circuit ID: —	Physical location: PINE CREEK
Area classification :	Environment: (hot?) OUTDOOR

Data from Label

Apparatus type: (light, JB, Motor) PRESSURE TRANSMITTER	Type of protection: (d,e, i, n, p etc) Ex ia
Manufacturer: ROSEMOUNT	Gas group: (IIA/B/C) IIC
Full model number: ~~3144-9-1200-422-17~~	Temp class: (T1-T6) T5(40°C) T4(60°C)
Serial number: RS0851678	Certificate number: AUS Ex ~~1220~~ 1249X
IP Class IP65	Test authority: (BAS, PTB, SAA etc)

Number of cables: 3	3051 1G3A2B21BB4K7M5T1C1 10455

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	ALCO		PLUG
Model:	FLPV 202		—
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)	- CCT
3	Enclosure, sealing gaskets or compounds are satisfactory	all	X	(X)	- EQ
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)	? NIL
13	Safety barriers/isolators installed as per certification and securely earthed where required	i	X	(X)	? BARRIER
14	Entity calculation/documentation is available	i	X	X	

	B Installation			
1	Type of cable is appropriate, cables are undamaged	all	X	(X)
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

18	Cables are installed and screens are earthed in accordance with the 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 N. GREEN. **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	Date:

Device ID or tag

Action required to make device compliant:

- Equipment + cable I.D. required.
- Nil evidence of I.S. barrier installed, hence flameproof installation likely.
- Replace uncertified plug.

Reviewed by: N. GREEN
Date: 8/9/11
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:	LSH - 02	Asset:	SLOPS TANK
Circuit ID:	?	Physical location:	PINE CREEK
Area classification :	T3	Environment: (hot?)	OUT DOOR

Data from Label

Apparatus type: (light, JB, Motor)	HIGH LEVEL SWITCH	Type of protection: (d,e, i, n, p etc)	Ex d
Manufacturer:	BESTOBELL MOBREY	Gas group: (IIA/B/C)	II B
Full model number:	S-250 DA/F104	Temp class: (T1-T6)	T6
Serial number:	8805	Certificate number:	NOT SAA APPROVED
IP Class	66	Test authority: (BAS, PTB, SAA etc)	SAA

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Number of cables:	1

For each cable entry	gland 1	gland 2	others
Gland manufacturer:	PAINTED CMA		
Model:	OVER. FWDM		
Gland type of protection: (d,e)	d		

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

CCK.

	B Installation			
1	Type of cable is appropriate, cables are undamaged	all	X	(X)
2	Sealing of ducts and/or conduits is satisfactory	all	X	(X)
3	Stopper boxes or barrier glands are properly filled	d	X	
4	Integrity of conduit system and interface with mixed system is maintained	all	X	
5	Earthing and bonding connections are tight, in good condition and of sufficient cross section	all	X	(X)
6	Fault loop impedance is satisfactory	power outlets	X	
7	Insulation resistance is satisfactory (check only during initial inspection)	all	X	
8	Automatic electrical protective devices are set correctly and operate within permitted limits	all	X	
9	Special certification conditions U,X or B have been complied with	all	X	
10	Cables/spare cores are terminated satisfactorily	all	X	
11	No obstructions adjacent to flameproof flanged joint	d	X	X
12	Ducts, pipes and enclosures are in good condition	p	X	X
13	Protective gas is substantially free from contaminants (water, oil, dirt)	p	X	X
14	Protective gas flow/pressure is adequate	p	X	
15	Pressure and/or flow indicators, alarms and interlocks function correctly	p	X	
16	Pre-energising purge period is adequate	p	X	
17	Condition of spark/particle barriers of ducts exhausting the gas into hazardous area are satisfactory	p	X	

-UV) PAINT.
-support cable

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 N. GREEN **Supervisor**	**Client (write): Inspector**
Date: 8/9/11	**Date:**

Device ID or tag

Action required to make device compliant:

- Circuit I.D required.
- Cable support required.
- Flameproof device substantially painted potentially compromising flamepaths. Further inspection required.
- UV damaged cable sheath required remediation.

Reviewed by: N. GREEN
Date: 8/9/11
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 Register

Documentation in relation to this section is to be maintained by APA Group.

This Section contains the sample repair and examination report(s).

REPAIR AND EXAMINATION REPORT FOR ENCAPSULATED EQUIPMENT (EX 'm')

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:

Operator

Name:	Identification no.:
Company:	Company registration:

Condition upon receipt:……
Old repair label details:……
Reported fault (if any):……
Repair action:……
Parts replaced:……..
Test performed:……

Results:

Item	Description of check	Remarks
(a)	Cracks in compound	
(b)	Crazing	
(c)	Exposure of encapsulated parts	
(d)	Flaking	
(e)	Shrinking	
(f)	Swelling	
(g)	Decomposition	
(h)	Discoloration	
(i)	Failure of adhesion	
(j)	Change in hardness	

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:…../……./……

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
AD 1317-SVO-01/02	AD 1317-10-7000	ESV-01	Solenoid housing cracked at gland entry.
AD 1317-JB		Gas Conditioning Skid	Nil certification available for plugs.
AD 1317-PIT-01		Gas Conditioning Skid	Nil hazardous area certification available.
AD 1317-ZSC-02AL	AD 1317-10-7000	TCV-02A/B	Nil hazardous area certification available.
AD 1317-SVO/SVC-03A AD 1317-SVO/SVC-03B	AD 1317-10-7000	SDV-03A	Replace the equipment due to age and condition.
AD 1317-ZSC-02BL	AD 1317-10-7000	TCV-02A/B	Nil hazardous area certification available.
AD 1317-LSH-01	AD 1317-10-7000	FS-01	Replace the equipment due to age and condition.
AD 1317-SV-9A	AD 1317-10-7001	Water bath heater H-1A	Nil hazardous area certification available.
AD 1317-SV-10A	AD 1317-10-7001	H-1A/B fuel gas supply line	Nil hazardous area certification available.
AD 1317-SV-8B AD 1317-SV-9B	AD 1317-10-7001	Water bath heater H-1B	Nil hazardous area certification available.
AD 1317-PT-04	AD 1317-10-7002	KO-02 outlet (DN80)	Nil certification available for plugs.
AD 1317-LSH-02	AD 1317-10-7003	Slop tank SD-1	Flameproof device substantially painted and potentially compromising flame paths.