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<b>RFQ Number</b>	<b>NLM-QUO-25/067</b>
<b>Request for Quotation Date</b>	<b>05 June 2025</b>
<b>RFQ Closing Date</b>	<b>27 June 2025</b>
<b>RFQ Closing Time</b>	<b>17:00</b>
<b>Compulsory Site Briefing</b>	<b>Not compulsory but if more information required can be arranged</b>
<b>Contact Person</b>	<b>Catherine Matima</b>
<b>Quotation Validity</b>	<b>90 Days from the closing date</b>
<b>Submission Details</b>	<b>RFQ Response must be sent to:</b> <a href="mailto:catherine.matima@necsa.co.za">catherine.matima@necsa.co.za</a>
<b>RFQ Description</b>	To supply moisture traps as per the attached specification sheets

Dear Service Provider

Kindly provide a quotation for goods and or services as outlined in section 2 of this document.


## 1. Introduction

The South African Nuclear Energy Corporation Limited (Necsa) is a state-owned public company (SOC), registered in terms of the Companies Act, (Act No. 61 of 1973), registration number 2000/003735/06.

The Necsa Group engages in commercial business mainly through its wholly-owned commercial subsidiaries: NTP Radioisotopes SOC Ltd (NTP), which is responsible for a range of radiation-based products and services for healthcare, life sciences and industry, and Pelchem SOC Ltd (Pelchem), which supplies fluorine and fluorine-based products. Both subsidiaries, together with their subsidiaries, supply local and global markets, earning valuable foreign exchange for South Africa and are among the best in their field in their respective world markets.

Necsa's safety, health, environment and quality policies provides for top management commitment to compliance with regulatory requirements of ISO 14001, OHSAS 18001 and RD 0034 (Quality and Safety Management Requirements for Nuclear Installations), ISO 9001 and ISO 17025.

Necsa promotes the science, technology and engineering expertise of South Africa and improves the public understanding of these through regular communications at various forums and outreach programmes to the community. We are a proudly South African company continuously striving, and succeeding in many respects, to be at the edge of science, technology and engineering related to the safe use of nuclear knowledge to improve our world.

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For more information on Necsa, please visit: [www.Necsa.co.za](http://www.Necsa.co.za)

## 2. Background

Necsa plans to establish a plasma gasification demonstration facility in a laboratory on-site to volumetrically reduce solid, compressible, low-level nuclear waste. Two moisture traps are utilized within the facility, as follows:


1. The moisture trap, Y1511, is installed in the main process off-gas line from the wet scrubber, S1501, in the facility to remove any moisture, either in the form of water or scrubbing liquid, above the saturation level in the gas. The position of the moisture trap within the process is reflected in the attached Piping and Instrumentation Diagram (P&ID) [03], with detail given in the attached Specification Sheet [01].
2. The moisture trap, Y1701, is installed within the compressed air supply system, which supports and services the facility. Its function is to remove water from the incoming crude compressed air, before the air enters the purification system, Y1702. The position of the moisture trap within the compressed air supply system is reflected in the attached P&ID [04], with detail given in the attached Specification Sheet [02].

## 3. Scope of Work

Item Description	Quantity
To supply the required moisture traps, Y1511 and Y1701, as per the attached Specification Sheets, [01] and [02], respectively.	2 (i.e. one of each moisture trap)
All other equipment and components identified in Section 2 and/or shown in the P&IDs, [03] and [04], are outside the scope of work considered here.	

## 4. Attachments

Ref #	DOCUMENT NAME	DESCRIPTION
01	ENS-NWPVR-SPE-24004, Rev. 2	Specification Sheet for Moisture trap Y1511
02	ENS-NWPVR-SPE-24030, Rev. 1	Specification Sheet for Moisture trap Y1701
03	ENS-NWPVR-PID-24002, Rev. 3	NW PlasGas Demonstration Plant Subsystem 15
04	ENS-NWPVR-PID-24014, Rev. 2	NW PlasGas P&ID Diagram – Compressed Air Supply to Lab 150 & Lab 131

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## 5. Pricing

- All price quoted to include all applicable taxes.
- Price must be fixed and firm.
- Price should include additional cost elements such as freight, insurance until acceptance, duty where applicable, disbursements etc.
- Quotation must be completed in full, incomplete quote could result in a quote being disqualified.
- Payment will be according to Necsa's General Conditions of Purchase.

## 6. Evaluation

### 6.1. Phase 1- Functionality Evaluation / Technical Evaluation


Where functional or technical evaluation criterion is applicable, assessment will be performed in terms of the criterion listed below and the criterion may include Technical, Performance, Quality and Risk.

If the Bidder's response to the Technical criteria does not indicate that the Bidder can support an acceptable technical solution, the Bidder's response will be rejected and not evaluated further.

Together the Technical, Performance & Quality and Risk criteria make up the functionality criterion and a Bidder's Proposal will be evaluated for functionality out of a possible 100 points. Only RFQ responses achieving an evaluation score of greater than the set threshold points out of the possible 100 points will be selected to progress to the second stage.

The quotations will be evaluated according to the following selection criteria (based on information requested above):

Item	Requirement	Weight	Points	Criteria
1	ISO 9001: 2015 (or latest) accredited  <b>Supplier must provide evidence (ISO 9001 certificate)</b>	25	25	ISO 9001 accreditation of supplier of the required products.  <b>OR</b> ISO 9001 accreditation of OEM and OEM letter listing local supplier as authorised supplier and service agent
2	<b>Supplier must provide letter referencing after sales service and maintenance</b>	25	25	Supplier have a service and repair workshop Supplier holds critical spares as stock items

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Item	Requirement	Weight	Points	Criteria
			15	Supplier have a service and repair workshop
			10	Supplier outsources service and repair
3	Supplier lead-time <b>Supplier must specify lead-time</b>	25	25	Product available within 4 weeks of issue of Purchase Order
			15	Product available within 6 weeks of issue of Purchase Order
			10	Product available within 8 weeks of issue of Purchase Order
4	<b>Suitability of Product</b>	25	25	Supplier adequately demonstrates how the recommended product meets the user's requirements or specifications
<b>Total</b>		<b>100</b>		


6.2. **Phase 2 - Evaluation In Terms Of Preferential Procurement Policy Framework Act, 2022**

This bid will be evaluated and adjudicated according to the 80/20 point system, in terms of which a maximum of 80 points will be awarded for price and 20 points will be allocated based on the specific goals (B-BBEE status level).

	POINTS
<b>PRICE</b>	<b>80</b>
<b>SPECIFIC GOALS ( B-BBEE status level)</b>	<b>20</b>
<b>Total points for Price and SPECIFIC GOALS</b>	<b>100</b>

Preference goal  
B-BBEE status level contributor

B-BBEE Status Level of Contributor	Number of points (80/20 system)
------------------------------------	---------------------------------

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1	20
2	18
3	14
4	12
5	8
6	6
7	4
8	2
Non-compliant contributor	0

## 7. Required Documentation

- Tax Clearance Certificate (Tax pin issued by SARS)
- Declaration of interest (SBD 4)
- BEE Certificate / Applicable Affidavit if classified as EME
- Letter of Good Standing (COID) only if Applicable due to the nature of work required
- Any other document or certification that might have been requested on this RFQ


## 8. Important

- 8.1. Quotation must be submitted on or before the RFQ closing date and time stated above.
- 8.2. Orders above R 30 000 will be evaluated according to the PPPFA 80/20-point system and a functionality scorecard where applicable and the ones above R 1 Million will be subjected to the tender process.
- 8.3. This RFQ is subjected to the Necsa's General Conditions of Purchase, Preferential Procurement Policy Framework Act 2000 and the Preferential Procurement Regulations, 2022, the General Conditions of Contract (GCC) and, if applicable, any other legislation or special conditions of contract.
- 8.4. Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for specific goals are not claimed.
- 8.5. The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to specific goals, in any manner required by the purchaser.
- 8.6. For a Bidder to obtain clarity on any matter arising from or referred to in this document, please refer queries, in writing, to the contact details provided above. Under no circumstances may any other employee within Necsa be approached for any

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information. Any such action might result in a disqualification of a response submitted in competition to this RFQ.

- 8.7. No goods and/or services should be delivered to Necsa without an official Necsa Purchase order.
- 8.8. Necsa reserves the right to; cancel or reject any quote and not to award the RFQ to the lowest Bidder or award parts of the RFQ to different Bidders, or not to award the RFQ at all.
- 8.9. The supplier shall under no circumstances offer, promise or make any gift, payment, loan, reward, inducement, benefit or other advantage, which may be construed as being made to solicit any favour, to any Necsa employee or its representatives. Such an act shall constitute a material breach of the Agreement and the Necsa shall be entitled to terminate the Agreement forthwith, without prejudice to any of its rights
- 8.10. By responding to this request, it shall be construed that: the bidder, hereby acknowledge to be fully conversant with the details and conditions set out in the Necsa's General Conditions of Purchase, Preferential Procurement Policy Framework Act 2000 and the Preferential Procurement Regulations, 2022, the General Conditions of Contract (GCC), Technical Information and Specifications attached, and hereby agree to supply, render services or perform works in accordance therewith.

ENGINEERING SERVICES DEPARTMENT				 <small>South African Nuclear Energy Corporation Ltd. Limited</small>	
SPECIFICATION SHEET FOR MOISTURE TRAP Y1701				PAGE	1 of 2
Project	NW PlasGas Demonstration Facility	Unit Tag Number	Y1701		
Datasheet Document No.	ENS-NWPVR-SPE-24030	Revision	1		
GENERAL INFORMATION					
Description	Moisture trap Y1701 is installed on the crude compressed air supply line, 40-17-APCG-074 [4], from Necsa Utility Services to the NW PlasGas Demonstration Facility, upstream of the air purification system Y1702. Its function is to remove moisture that is present in the compressed air, in order to prevent equipment damage downstream.				
Plant Location	Necsa, Pelindaba, North-West Province.				
Equipment Location	NW PlasGas Demonstration Facility - Outside Laboratory 150, Building V-H2.				
Safety Classification	Non-classified (N) and Non-classified (C).				
Quality Classification	Non-classified (N) and Non-classified (C).				
Fluid	Crude compressed air - undried and unfiltered.				
Fluid state	Gas				
Solid content	Possible solid particulates.				
Corrosive due to	N/A.				
FLUID PROPERTIES					
PARAMETERS	UNITS	MINIMUM	NORMAL	MAXIMUM	
Operating temperature <sup>[2]</sup>	°C	-2,6	20	40	
Operating pressure <sup>[3]</sup>	kPa (g)	100	500	750	
Volume flow rate <sup>[3]</sup>	m <sup>3</sup> /h	-	95,26	-	
Moisture content (gram of water per cubic meter of dry air) <sup>[1]</sup>	g/m <sup>3</sup>	-	-	66,81	
Density <sup>[1]</sup>	kg/m <sup>3</sup>	2,09	6,98	10,78	
Viscosity <sup>[1]</sup>	Pa.s	1,75 x 10 <sup>-5</sup>	1,88 x 10 <sup>-5</sup>	2,6 x 10 <sup>-5</sup>	
Specific heat capacity (C <sub>p</sub> ) <sup>[1]</sup>	kJ/kg.K	1,027	1,023	1,021	
Allowable pressure drop	kPa	5			
MECHANICAL REQUIREMENTS					
Pipeline Size	40 NB, SCH 40				
Material of Construction					
Body Material	CS, ASTM A105				
Process Connections					
Outlet	Size:	40 NB	Rating:	150#	Flange Spec: CS, ASTM A105, ASME B16.5
Input	Size:	40 NB	Rating:	150#	Flange Spec: CS, ASTM A105, ASME B16.5

ENGINEERING SERVICES DEPARTMENT			
SPECIFICATION SHEET FOR MOISTURE TRAP Y1701			
			PAGE
			2 of 2
<b>Project</b>	NW PlasGas Demonstration Facility	<b>Unit Tag Number</b>	Y1701
<b>Datasheet Document No.</b>	ENS-NWPVR-SPE-24030	<b>Revision</b>	1
<b>DESIGN REQUIREMENTS</b>			
<b>Moisture Trap Type</b>	Centrifugal separation		
<b>Water removal efficiency</b>	Minimum 80% removal of bulk water.		
<b>Drain Type</b>	Mechanical float auto-drain		
<b>REFERENCE DRAWINGS / DOCUMENTS</b>			
[1] Perry, R. H., & Green, D. W. (1997). Perry's Chemical Engineers Handbook 7th Edition. McGraw-Hill Company.			
[2] SHEQ-2011-REP-01017, 2011 : Pelindaba Site, Site Description.			
[3] ENS-NWPVR-REP-24004: Pipe Diameter Verification Report (NW PlasGas Demonstration Facility)			
[4] ENS-NWPVR-PID-24014: P&ID for Compressed Air Supply to Lab 150 and Lab 131			
	<b>NAME</b>	<b>SIGNATURE &amp; DATE</b>	
<b>Compiled by</b>	L. Dlamini (Process Engineer)	 <small>Signed by: L. Dlamini (Process Engineer) 24/03/2025 10:00:00 (UTC+02:00)</small>	
<b>Process</b>	B. Khumalo (Senior Process Engineer)	 <small>Signed by: B. Khumalo (Senior Process Engineer) 24/03/2025 10:00:00 (UTC+02:00)</small>	
<b>Mechanical</b>	S. Masango (Mechanical Engineer)	 <small>Signed by: S. Masango (Mechanical Engineer) 24/03/2025 10:00:00 (UTC+02:00)</small>	
<b>Mechanical</b>	S. Mngoma (Chief Mechanical Engineer)	 <small>Signed by: S. Mngoma (Chief Mechanical Engineer) 24/03/2025 10:00:00 (UTC+02:00)</small>	
<b>Instrumentation</b>	G. Manuel (Chief C&I Engineer)	 <small>Signed by: G. Manuel (Chief C&amp;I Engineer) 24/03/2025 10:00:00 (UTC+02:00)</small>	
<b>Electrical</b>	W. Van Den Berg (Chief Electrical Engineer)	 <small>Signed by: W. Van Den Berg (Chief Electrical Engineer) 24/03/2025 10:00:00 (UTC+02:00)</small>	
<b>Approved by</b>	K. Moodley (Chief Process Engineer)	 <small>Signed by: K. Moodley (Chief Process Engineer) 24/03/2025 10:00:00 (UTC+02:00)</small>	

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## ENGINEERING SERVICES DEPARTMENT



## MOISTURE TRAP Y1511 SPECIFICATION SHEET

Project	NW PlasGas & CWOPG Project	Unit Tag Number	Y1511
Datasheet Document No.	ENS-NWPVR-SPE-24004	Revision	2
Description	Moisture trap Y1511 is installed on the process off-gas line, downstream of the wet scrubber S1501 for the Low-Level Waste Plasma Gasification (NW PlasGas) and the Uranium Contaminated Waste Oil Plasma Gasification (CWOPG) Demonstration Facilities <sup>[1]</sup> . Its function is to remove any moisture, either in the form of water or as scrubbing liquid, above the saturation level in the gas.		
Plant location	Necsa, Pelindaba, North-West Province.		
Equipment location	Merged NW PlasGas & CWOPG Facilities - Inside secondary enclosure Y1410 in Laboratory-150, Building V-H2 <sup>[Note 6]</sup>		
Safety Classification	SC-2(C) and SC-3(N)		
Quality Classification	QC-2(C) and QC-3(N)		
Fluid state	Gas		
Solid content	Possible solid uranium compound particulates.		
Corrosive due to	Hydrogen Chloride (HCl) and Hydrogen Fluoride (HF) gases - produced at maximum rates of 10 g/h <sup>[2]</sup> and 0,2 g/h <sup>[9]</sup> , respectively.		

## FLUID PROPERTY DATA

	Units	NW PLASGAS		CWOPG	
PARAMETERS	UNITS	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
Fluid description		Scrubber off-gas containing CO <sub>2</sub> , HCl, O <sub>2</sub> and N <sub>2</sub> <sup>[3]</sup> , with traces of moisture. <sup>Note 1</sup>		Scrubber off-gas containing CO <sub>2</sub> , HCl, HF O <sub>2</sub> and N <sub>2</sub> <sup>[9]</sup> , with traces of moisture. <sup>Note 1</sup>	
Operating temperature	°C	35 <sup>[3]</sup>		45 <sup>[6]</sup>	
Operating pressure	kPa (g)	-9,3 <sup>[10]</sup>		-9,7 <sup>[11]</sup>	
Mass flow rate	kg/h	12,63 <sup>[2]</sup>	48 <sup>[2]</sup>	15,14 <sup>[9]</sup>	44,68 <sup>[9]</sup>
Volume flow rate	m <sup>3</sup> /h	11,08	42,11	12,51	17,9
Moisture content	kg/h	0,11 <sup>[Note 3]</sup>		0,13 <sup>[Note 3]</sup>	
Density	kg/m <sup>3</sup>	1,14 <sup>[5]</sup>		1,21	
Viscosity	cP	1,73E-04 <sup>[Note 5]</sup>		1,76E-04 <sup>[Note 5]</sup>	
Specific heat capacity (C <sub>p</sub> )	kJ/kg.K	1,96E-01 <sup>[Note 4]</sup>		1,95E-01 <sup>[Note 4]</sup>	
Allowable pressure drop	kPa	1 <sup>[11]</sup>			

## MECHANICAL &amp; ELECTRICAL PROPERTIES

Pipeline Size	100 NB, SCH 40								
Material of Construction									
Body Material	SS, ASTM A182-F304/304L								
Process Connections									
Inlet	Size	4"	Rating	150#	Flange Spec.	SS, ASTM A182-F304/304L, ASME B16.5			
Outlet	Size	4"	Rating	150#	Flange Spec.	SS, ASTM A182-F304/304L, ASME B16.5			
Moisture Trap Type	Electronically operated								
Electrical Supply	kW	Supplier to advise		Volts	Supplier to advise	Phase	Supplier to advise	Hz	Supplier to advise

## REFERENCE DRAWINGS AND DOCUMENTS

- [1] ENS-NWPVR-PID-24002, P&ID Diagram - NW PlasGas Demonstration Plant Subsystem 15
- [2] ENS-NWPVR-CLC-24011, Mass Balance Calculations for the NW PlasGas Demonstration Facility
- [3] ENS-NWPVR-REP-24017, Energy Balance Report for the NW PlasGas Demonstration Facility
- [4] ENS-NWPVR-SPE-24020, Scrubber S1501 Specification Sheet
- [5] ENS-NWPVR-CLC-24005, NW PlasGas Line Sizing Calculations
- [6] AC-ENGBKG-SPE-21001: Properties of Liquid and Gas Mixtures
- [7] Perry, R.H., & Green, D.W. (1997). Perry's Chemical Engineers Handbook, 7th Edition, McGraw-Hill Company
- [8] ENS-OWPVR-CLC-24002, Mass Balance & Energy Balance Calculations for the Basic Engineering Design of the Uranium Contaminated Waste Oil Plasma Gasification.
- [9] ENS-OWPVR-CLC-24006, Scrubber Design for the Uranium Contaminated Waste Oil Plasma Gasification Project
- [10] ENS-NWPVR-CLC-24018, Pressure Balance across the NW PlasGas Facility
- [11] ENS-OWPVR-CLC-25010, Pressure Balance across the Uranium Contaminated Waste Oil Plasma Gasification Demonstration Facility

## NOTES

Note 1: The composition of the exhaust scrubber off-gas changes over time due to chemical reactions which take place in the scrubber. For the NW PlasGas Facility, the as composition (% w/w) is 1.35% CO<sub>2</sub>, 0.08% HCl, 51,86% O<sub>2</sub> and 46,71% N<sub>2</sub> at the minimum flow rate, and 74,03% CO<sub>2</sub>, 0.02% HCl, 13,65% O<sub>2</sub> and 12,3% N<sub>2</sub> at the maximum flow rate. For the CWOPG Facility the, gas composition (%w/w) is 10.3% CO<sub>2</sub>, 0.01% HCl, <0.01% HF, 56.7% O<sub>2</sub> and 33.0% N<sub>2</sub> at the start of the process, and 69.6% CO<sub>2</sub>, Traces of HCl, Traces of HF, 19.2% O<sub>2</sub> and 11.2% N<sub>2</sub> at the end of the process.

Note 2: Moisture trap to be supplied complete with integrated automatic drain valve, which does not allow release of off-gas during drainage, only moisture.

Note 3: Conservatively estimated to be 1% of water present in feed gas to wet scrubber, taking note that the scrubber also contains an integrated demister to prevent liquid entrainment in the off-gas stream.

Note 4: Mixture specific heat capacity estimated by weighted average calculation. Pure component specific heat capacities estimated from Table 2 in [3].

Note 5: Mixture viscosity estimated using the equation in [6] section 4.2. Pure component viscosities estimated using nomograph given in [7] Fig 2-32, page 2-321, with nomograph coordinates from [7] Table 2-364, page 2-320, (HCl / HF contributions assumed to be negligible).

Note 6: The NW PlasGas and CWOPG Facilities will not be operated simultaneously. Therefore this moisture trap will only be servicing one of the facilities at a time.

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## ENGINEERING SERVICES DEPARTMENT



## MOISTURE TRAP Y1511 SPECIFICATION SHEET

<b>Project</b>	NW PlasGas & CWOPG Project	<b>Unit Tag Number</b>	Y1511
<b>Datasheet Document No.</b>	ENS-NWPVR-SPE-24004	<b>Revision</b>	2

	Name	Signature & Date
<b>Compiled by</b>	B Khumalo (Senior Process Engineer)	 Signed by: Bheke Khumalo, Bheke.Khumalo@necsa.co.za 26/03/2025 09:11:16(UTC+02:00) — eScriFlow
<b>Checked</b>	M Mokgohloa (Mechanical Engineer)	 Signed by: Mkhale Mokgohloa, Mkhale.Mokgohloa@necsa.co.za 26/03/2025 10:06:47(UTC+02:00) — eScriFlow
<b>Checked</b>	M Correia (Senior Process Engineer)	 Signed by: Michelle Correia, mcorreia204@gmail.com 26/03/2025 18:17:17(UTC+04:00) — eScriFlow
<b>Checked</b>	G Manuel (Chief C&I Engineer)	 Signed by: Grant Manuel, grant.manuel@necsa.co.za 31/03/2025 10:06:46(UTC+02:00) — eScriFlow
<b>Checked</b>	S Mngoma (Chief Mechanical Engineer)	 Signed by: Sibongile Mngoma, Sibongile.Mngoma@necsa.co.za 31/03/2025 10:17:34(UTC+02:00) — eScriFlow
<b>Checked</b>	W van den Berg (Chief Electrical Engineer)	 Signed by: Willem Van Den Berg, willem.vandenberg@necsa.co.za 07/04/2025 13:20:58(UTC+02:00) — eScriFlow
<b>Approved</b>	K Moodley (Chief Process Engineer)	 Signed by: Kameene Moodley, kameene.moodley@necsa.co.za 07/04/2025 14:11:55(UTC+02:00) — eScriFlow

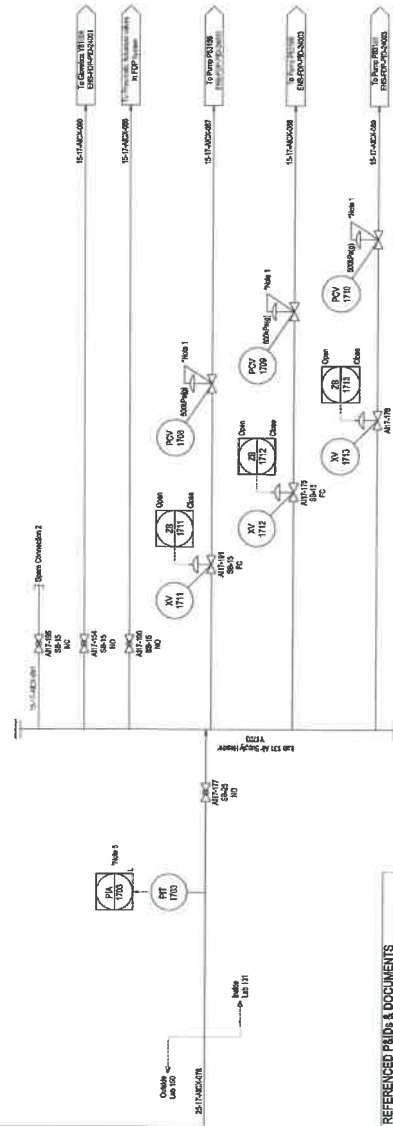
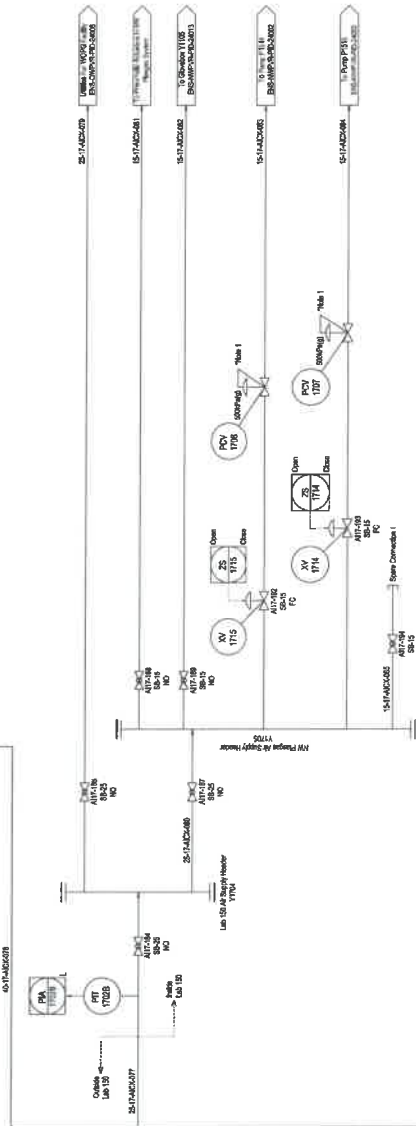
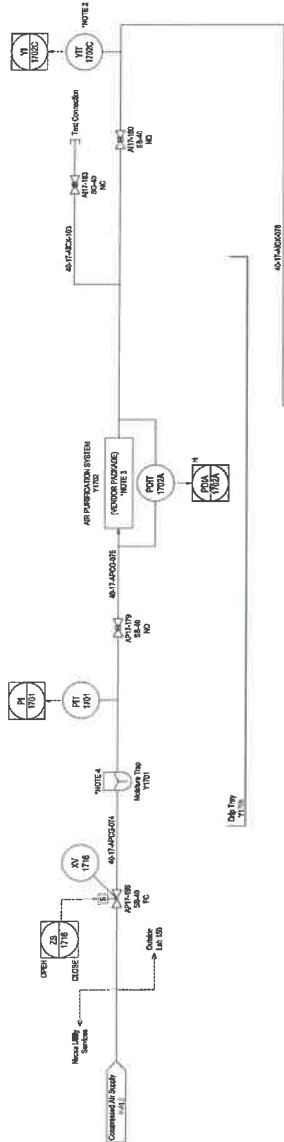
  

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## REFERENCES AND DOCUMENTS

DATE	SIGNATURE	DESIGNATION	NAME	FUNC.
10.11.2017		Senior Process Engineer	L.Dubini	PRPD
10.11.2017		Chief Electrical Engineer	B.Khumalo	REVIEW
10.11.2017		Chief Electrical Engineer	G.Munel	REVIEW
10.11.2017		Chief Mechanical Engineer	W.van den Berg	REVIEW
10.11.2017		Chief Process Engineer	S.Mngoma	REVIEW
10.11.2017		Chief Process Engineer	K.Mondy	APRD

COMPONENT	REV	DESCRIPTION	PRP'D	DATE
1	1	1.000	1.000	1.000
2	1	2.000	2.000	2.000
3	1	3.000	3.000	3.000
4	1	4.000	4.000	4.000
5	1	5.000	5.000	5.000
6	1	6.000	6.000	6.000
7	1	7.000	7.000	7.000
8	1	8.000	8.000	8.000
9	1	9.000	9.000	9.000
10	1	10.000	10.000	10.000
11	1	11.000	11.000	11.000
12	1	12.000	12.000	12.000
13	1	13.000	13.000	13.000
14	1	14.000	14.000	14.000
15	1	15.000	15.000	15.000
16	1	16.000	16.000	16.000
17	1	17.000	17.000	17.000
18	1	18.000	18.000	18.000
19	1	19.000	19.000	19.000
20	1	20.000	20.000	20.000
21	1	21.000	21.000	21.000
22	1	22.000	22.000	22.000
23	1	23.000	23.000	23.000
24	1	24.000	24.000	24.000
25	1	25.000	25.000	25.000
26	1	26.000	26.000	26.000
27	1	27.000	27.000	27.000
28	1	28.000	28.000	28.000
29	1	29.000	29.000	29.000
30	1	30.000	30.000	30.000
31	1	31.000	31.000	31.000
32	1	32.000	32.000	32.000
33	1	33.000	33.000	33.000
34	1	34.000	34.000	34.000
35	1	35.000	35.000	35.000
36	1	36.000	36.000	36.000
37	1	37.000	37.000	37.000
38	1	38.000	38.000	38.000
39	1	39.000	39.000	39.000
40	1	40.000	40.000	40.000
41	1	41.000	41.000	41.000
42	1	42.000	42.000	42.000
43	1	43.000	43.000	43.000
44	1	44.000	44.000	44.000
45	1	45.000	45.000	45.000
46	1	46.000	46.000	46.000
47	1	47.000	47.000	47.000
48	1	48.000	48.000	48.000
49	1	49.000	49.000	49.000
50	1	50.000	50.000	50.000
51	1	51.000	51.000	51.000
52	1	52.000	52.000	52.000
53	1	53.000	53.000	53.000
54	1	54.000	54.000	54.000
55	1	55.000	55.000	55.000
56	1	56.000	56.000	56.000
57	1	57.000	57.000	57.000
58	1	58.000	58.000	58.000
59	1	59.000	59.000	59.000
60	1	60.000	60.000	60.000
61	1	61.000	61.000	61.000
62	1	62.000	62.000	62.000
63	1	63.000	63.000	63.000
64	1	64.000	64.000	64.000
65	1	65.000	65.000	65.000
66	1	66.000	66.000	66.000
67	1	67.000	67.000	67.000
68	1	68.000	68.000	68.000
69	1	69.000	69.000	69.000
70	1	70.000	70.000	70.000
71	1	71.000	71.000	71.000
72	1	72.000	72.000	72.000
73	1	73.000	73.000	73.000
74	1	74.000	74.000	74.000
75	1	75.000	75.000	75.000
76	1	76.000	76.000	76.000
77	1	77.000	77.000	77.000
78	1	78.000	78.000	78.000
79	1	79.000	79.000	79.000
80	1	80.000	80.000	80.000
81	1	81.000	81.000	81.000
82	1	82.000	82.000	82.000
83	1	83.000	83.000	83.000
84	1	84.000	84.000	84.000
85	1	85.000	85.000	85.000
86	1	86.000	86.000	86.000
87	1	87.000	87.000	87.000
88	1	88.000	88.000	88.000
89	1	89.000	89.000	89.000
90	1	90.000	90.000	90.000
91	1	91.000	91.000	91.000
92	1	92.000	92.000	92.000
93	1	93.000	93.000	93.000
94	1	94.000	94.000	94.000
95	1	95.000	95.000	95.000
96	1	96.000	96.000	96.000
97	1	97.000	97.000	97.000
98	1	98.000	98.000	98.000
99	1	99.000	99.000	99.000
100	1	100.000	100.000	100.000

PROJECT	NW PLUGGAS		
TITLE	P&ID DIAGRAM		
DRG. No.	COMPRESSED AIR SUPPLY TO LAB 150 & LAB 151		
SHEET	1 OF 1	TEAM/CENTRE No.	-



FUNC.	NAME	DESIGNATION
REVIEW	D.Gimani	Process Engineer
REVIEW	G.Munali	Chief Engineer Control & Instrumentation
REVIEW	S.Mangana	Chief Mechanical Engineer
REVIEW	W.van den Berg	Chief Electrical Engineer
REVIEW	M.Cornelis	Senior Process Engineer
REVIEW	W.Lundqvist	Senior Process Engineer
APPROV	K.Moody	Chief Process Engineer

[illegible]

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REV	DESCRIPTION	PRIO	DATE	 <b>necsa</b> National e-Content Service Agency 100, 101 & 102, 103, 104 & 105, 106 & 107, 108 & 109, 110 & 111, 112 & 113, 114 & 115, 116 & 117, 118 & 119, 120 & 121, 122 & 123, 124 & 125, 126 & 127, 128 & 129, 130 & 131, 132 & 133, 134 & 135, 136 & 137, 138 & 139, 140 & 141, 142 & 143, 144 & 145, 146 & 147, 148 & 149, 150 & 151, 152 & 153, 154 & 155, 156 & 157, 158 & 159, 160 & 161, 162 & 163, 164 & 165, 166 & 167, 168 & 169, 170 & 171, 172 & 173, 174 & 175, 176 & 177, 178 & 179, 180 & 181, 182 & 183, 184 & 185, 186 & 187, 188 & 189, 190 & 191, 192 & 193, 194 & 195, 196 & 197, 198 & 199, 200 & 201, 202 & 203, 204 & 205, 206 & 207, 208 & 209, 210 & 211, 212 & 213, 214 & 215, 216 & 217, 218 & 219, 220 & 221, 222 & 223, 224 & 225, 226 & 227, 228 & 229, 230 & 231, 232 & 233, 234 & 235, 236 & 237, 238 & 239, 240 & 241, 242 & 243, 244 & 245, 246 & 247, 248 & 249, 250 & 251, 252 & 253, 254 & 255, 256 & 257, 258 & 259, 260 & 261, 262 & 263, 264 & 265, 266 & 267, 268 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& 633, 634 & 635, 636 & 637, 638 & 639, 640 & 641, 642 & 643, 644 & 645, 646 & 647, 648 & 649, 650 & 651, 652 & 653, 654 & 655, 656 & 657, 658 & 659, 660 & 661, 662 & 663, 664 & 665, 666 & 667, 668 & 669, 670 & 671, 672 & 673, 674 & 675, 676 & 677, 678 & 679, 680 & 681, 682 & 683, 684 & 685, 686 & 687, 688 & 689, 690 & 691, 692 & 693, 694 & 695, 696 & 697, 698 & 699, 700 & 701, 702 & 703, 704 & 705, 706 & 707, 708 & 709, 710 & 711, 712 & 713, 714 & 715, 716 & 717, 718 & 719, 720 & 721, 722 & 723, 724 & 725, 726 & 727, 728 & 729, 730 & 731, 732 & 733, 734 & 735, 736 & 737, 738 & 739, 740 & 741, 742 & 743, 744 & 745, 746 & 747, 748 & 749, 750 & 751, 752 & 753, 754 & 755, 756 & 757, 758 & 759, 760 & 761, 762 & 763, 764 & 765, 766 & 767, 768 & 769, 770 & 771, 772 & 773, 774 & 775, 776 & 777, 778 & 779, 780 & 781, 782 & 783, 784 & 785, 786 & 787, 788 & 789, 790 & 791, 792 & 793, 794 & 795, 796 & 797, 798 & 799, 800 & 801, 802 & 803, 804 & 805, 806 & 807, 808 & 809, 810 & 811, 812 & 813, 814 & 815, 816 & 817, 818 & 819, 820 & 821, 822 & 823, 824 & 825, 826 & 827, 828 & 829, 830 & 831, 832 & 833, 834 & 835, 836 & 837, 838 & 839, 840 & 841, 842 & 843, 844 & 845, 846 & 847, 848 & 849, 850 & 851, 852 & 853, 854 & 855, 856 & 857, 858 & 859, 860 & 861, 862 & 863, 864 & 865, 866 & 867, 868 & 869, 870 & 871, 872 & 873, 874 & 875, 876 & 877, 878 & 879, 880 & 881, 882 & 883, 884 & 885, 886 & 887, 888 & 889, 890 & 891, 892 & 893, 894 & 895, 896 & 897, 898 & 899, 900 & 901, 902 & 903, 904 & 905, 906 & 907, 908 & 909, 910 & 911, 912 & 913, 914 & 915, 916 & 917, 918 & 919, 920 & 921, 922 & 923, 924 & 925, 926 & 927, 928 & 929, 930 & 931, 932 & 933, 934 & 935, 936 & 937, 938 & 939, 940 & 941, 942 & 943, 944 & 945, 946 & 947, 948 & 949, 950 & 951, 952 & 953, 954 & 955, 956 & 957, 958 & 959, 960 & 961, 962 & 963, 964 & 965, 966 & 967, 968 & 969, 970 & 971, 972 & 973, 974 & 975, 976 & 977, 978 & 979, 980 & 981, 982 & 983, 984 & 985, 986 & 987, 988 & 989, 990 & 991, 992 & 993, 994 & 995, 996 & 997, 998 & 999, 1000 & 1001, 1002 & 1003, 1004 & 1005, 1006 & 1007, 1008 & 1009, 1010 & 1011, 1012 & 1013, 1014 & 1015, 1016 & 1017, 1018 & 1019, 1020 & 1021, 1022 & 1023, 1024 & 1025, 1026 & 1027, 1028 & 1029, 1030 & 1031, 1032 & 1033, 1034 & 1035, 1036 & 1037, 1038 & 1039, 1040 & 1041, 1042 & 1043, 1044 & 1045, 1046 & 1047, 1048 & 1049, 1050 & 1051, 1052 & 1053, 1054 & 1055, 1056 & 1057, 1058 & 1059, 1060 & 1061, 1062 & 1063, 1064 & 1065, 1066 & 1067, 1068 & 1069, 1070 & 1071, 1072 & 1073, 1074 & 1075, 1076 & 1077, 1078 & 1079, 1080 & 1081, 1082 & 1083, 1084 & 1085, 1086 & 1087, 1088 & 1089, 1090 & 1091, 1092 & 1093, 1094 & 1095, 1096 & 1097, 1098 & 1099, 1100 & 1101, 1102 & 1103, 1104 & 1105, 1106 & 1107, 1108 & 1109, 1110 & 1111, 1112 & 1113, 1114 & 1115, 1116 & 1117, 1118 & 1119, 1120 & 1121, 1122 & 1123, 1124 & 1125, 1126 & 1127, 1128 & 1129, 1130 & 1131, 1132 & 1133, 1134 & 1135, 1136 & 1137, 1138 & 1139, 1140 & 1141, 1142 & 1143, 1144 & 1145, 1146 & 1147, 1148 & 1149, 1150 & 1151, 1152 & 1153, 1154 & 1155, 1156 & 1157, 1158 & 1159, 1160 & 1161, 1162 & 1163, 1164 & 1165, 1166 & 1167, 1168 & 1169, 1170 & 1171, 1172 & 1173, 1174 & 1175, 1176 & 1177, 1178 & 1179, 1180 & 1181, 1182 & 1183, 1184 & 1185, 1186 & 1187, 1188 & 1189, 1190 & 1191, 1192 & 1193, 1194 & 1195, 1196 & 1197, 1198 & 1199, 1200 & 1201, 1202 & 1203, 1204 & 1205, 1206 & 1207, 1208 & 1209, 1210 & 1211, 1212 & 1213, 1214 & 1215, 1216 & 1217, 1218 & 1219, 1220 & 1221, 1222 & 1223, 1224 & 1225, 1226 & 1227, 1228 & 1229, 1230 & 1231, 1232 & 1233, 1234 & 1235, 1236 & 1237, 1238 & 1239, 1240 & 1241, 1242 & 1243, 1244 & 1245, 1246 & 1247, 1248 & 1249, 1250 & 1251, 1252 & 1253, 1254 & 1255, 1256 & 1257, 1258 & 1259, 1260 & 1261, 1262 & 1263, 1264 & 1265, 1266 & 1267, 1268 & 1269, 1270 & 1271, 1272 & 1273, 1274 & 1275, 1276 & 1277, 1278 & 1279, 1280 & 1281, 1282 & 1283, 1284 & 1285, 1286 & 1287, 1288 & 1289, 1290 & 1291, 1292 & 1293, 1294 & 1295, 1296 & 1297, 1298 & 1299, 1300 & 1301, 1302 & 1303, 1304 & 1305, 1306 & 1307, 1308 & 1309, 1310 & 1311, 1312 & 1313, 1314 & 1315, 1316 & 1317, 1318 & 1319, 1320 & 1321, 1322 & 1323, 1324 & 1325, 1326 & 1327, 1328 & 1329, 1330 & 1331, 1332 & 1333, 1334 & 1335, 1336 & 1337, 1338 & 1339, 1340 & 1341, 1342 & 1343, 1344 & 1345, 1346 & 1347, 1348 & 1349, 1350 & 1351, 1352 & 1353, 1354 & 1355, 1356 & 1357, 1358 & 1359, 1360 & 1361, 1362 & 1363, 1364 & 1365, 1366 & 1367, 1368 & 1369, 1370 & 1371, 1372 & 1373, 1374 & 1375, 1376 & 1377, 1378 & 1379, 1380 & 1381, 1382 & 1383, 1384 & 1385, 1386 & 1387, 1388 & 1389, 1390 & 1391, 1392 & 1393, 1394 & 1395, 1396 & 1397, 1398 & 1399, 1400 & 1401, 1402 & 1403, 1404 & 1405, 1406 & 1407, 1408 & 1409, 1410 & 1411, 1412 & 1413, 1414 & 1415, 1416 & 1417, 1418 & 1419, 1420 & 1421, 1422 & 1423, 1424 & 1425, 1426 & 1427, 1428 & 1429, 1430 & 1431, 1432 & 1433, 1434 & 1435, 1436 & 1437, 1438 & 1439, 1440 & 1441, 1442 & 1443, 1444 & 1445, 1446 & 1447, 1448 & 1449, 1450 & 1451, 1452 & 1453, 1454 & 1455, 1456 & 1457, 1458 & 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1921, 1922 & 1923, 1924 & 1925, 1926 & 1927, 1928 & 1929, 1930 & 1931, 1932 & 1933, 1934 & 1935, 1936 & 1937, 1938 & 1939, 1940 & 1941, 1942 & 1943, 1944 & 1945, 1946 & 1947, 1948 & 1949, 1950 & 1951, 1952 & 1953, 1954 & 1955, 1956 & 1957, 1958 & 1959, 1960 & 1961, 1962 & 1963, 1964 & 1965, 1966 & 1967, 1968 & 1969, 1970 & 1971, 1972 & 1973
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