CBTA

Produced water

SP/TRN/TM102

Candidate's Name:
Candidates Signature: _____

Assessor's Name: _____

Assessor's Signature: _____

Date Completed: ☑ **CBT A** ☐ **Reassessment:** _____

For first time candidates, the entire CBTA is to be completed. For the purposes of re-assessment only the demonstrative section requires completion.

Written

Question	Answer	Assessor check
Draw a Process Flow Diagram (PFD) for produced water including the following vessels: Meg Regen TEG regen skids Flash drum V-601 T-613 interface (P-620) TEG contactors V, 311, V312 & V361 Iona Inlet Separator V-343 degasser T-342 Storage Tank T1 compressor suction scrubbers	See attached.	

Oral

Question	Assessor check
Where does produced water come from and where in the gas process and liquids handling is it removed?	Moisture comes from Regeneration of Meg and Teg, Moisture from processing wet gas. View GP/PS/PC01 3.1 pg 2 for details .
What are the injection guidelines for Specific Gravity & pH prior to injection?	Maximum 1.005 S.G, PH 4.5-9.0 GP/PS/PC01 3.8 pg 10
How could the following sources of produced water be contaminated by MEG or TEG? • V-656 flare knock out drum	V-656- When a large slug of MEG returns V-611 (rich meg tank degasser) can carry over meg into the flare header. V-656 pumps directly to V-343/ T-342 Produced water tank.

• V-601 flash drum • P-620 Interface	V-601- Overheads from Teg and Meg regen may carry over trace amounts of Meg or Teg but the main contamination will come from flooding TEG over the weir in the Teg regen flash drum. P-620 –MEG can find its way into the condensate tank T-613 if a slug of MEG floods over the weir in the Meg flash drums V-350/V-381. GP/PS/PC01 WI07- 3.1
How do we process contaminated produced water that doesn't meet the injection guidelines?	Pump some level from T-342 back across to T-612 to be processed back though the Meg regeneration circuit.
Scortron SGR-4330" is added to Produced Water, what does this achieve?	**3.6.1 Chemicals** Three chemicals are injected into the Produced Water before it is injected into the reservoir: Scale Inhibitor — To prevent scaling of the injection system and storage tank. Biocide — To prevent growth of SRB's (sulphate reducing bacteria) in the water, which generate hydrogen sulphide (H_2S), which is both corrosive and toxic.

	Oxygen Scavenger Injected to ensure there is no oxygen present in the produced water to stop the growth of aerobic organisms. **NOTE**: All three chemicals are combined into one product. SCORTRON SGR-4330

Demonstrative

Question	Assessor check
Collect a sample from T-342 & check the S.G.	
In the field line up for produced water injection to OBS1 and commence the injection from the DCS.	
In the field describe the produced water flow path from the list below. Meg regen Teg regen skids Flash drum V-601 T-613 interface (P-620) Teg contactors V,311,V312 & V361 Iona inlet Separator V-343 degasser T-342 storage tank T1 compressor suction scrubbers	

The candidate is assessed as being:

☑ Competent

☐ Not yet competent

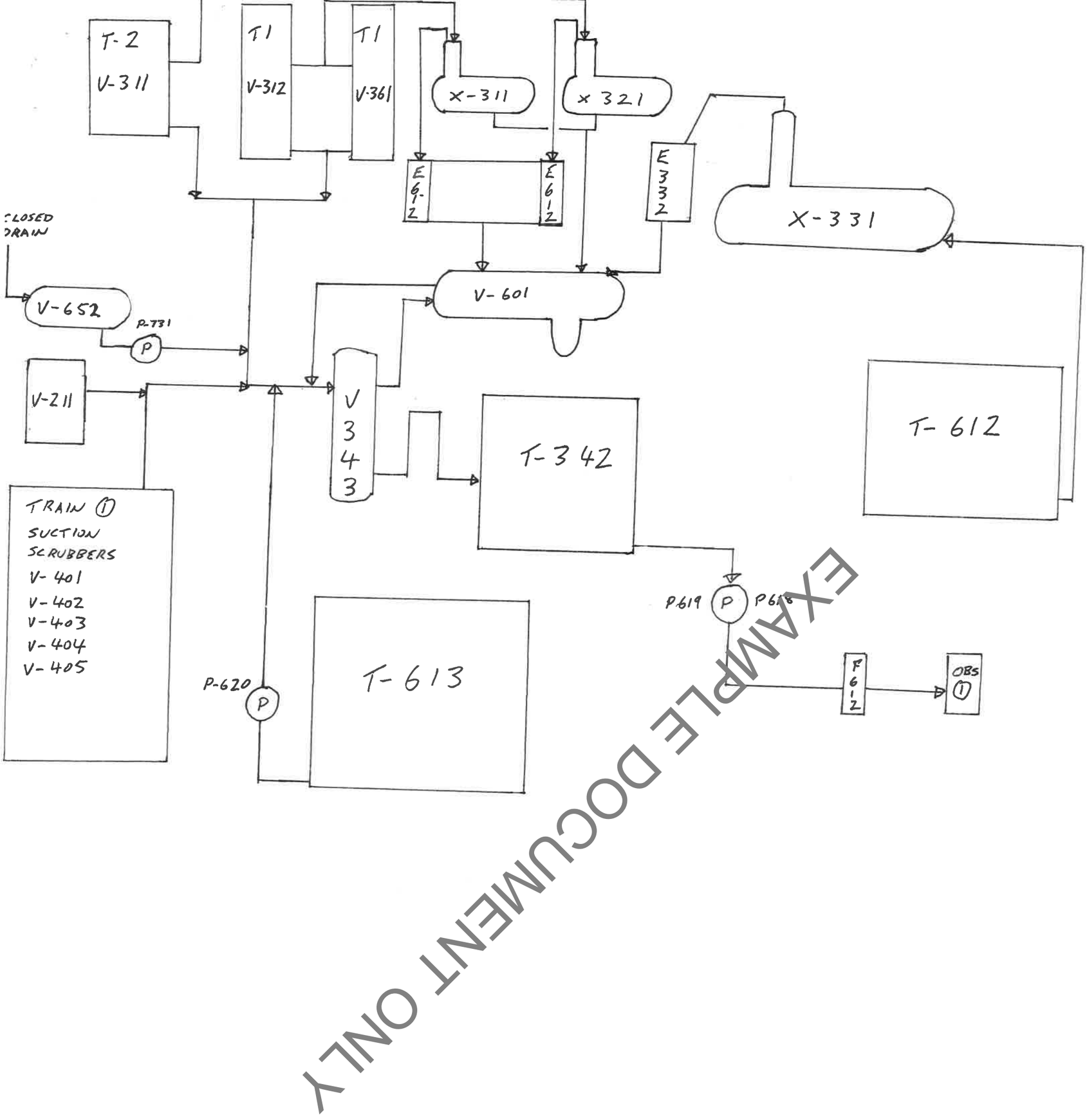
Areas requiring improvement:

For first time candidates only:

Department Manager's name: _____

Department Manager's signature: _____

Date: _____



P-618
PRODUCED WATER
INJECTION PUMP
DRIVER 45 kW
RATING 120 L/MIN AT HEAD 1158 m

P-619
PRODUCED WATER
INJECTION PUMP
RATING 168 L/MIN AT HEAD 1427m
DRIVER 55 kW

F-611/612
WATER INJECTION FILTER
SIZE TAN/TAN 1500 x ID 600
DESIGN 14750 kPa(g) AT 60°C
RATING 26500 L/hr
VESSEL TRIM XXX-SW-C9A-310
FILTER ELEMENTS 10(micro m)

D-618A/B, D-619A/B
PRODUCED WATER PUMPS
PULSATION DAMPERS

P-763
P-616 LUBE
OIL PUMP
DRIVER 1.1kW

P-764
P-619 LUBE
OIL PUMP
DRIVER 1.1kW

W-OBS-1
WATER DISPOSAL
WELLHEAD
(IONA) API 5000

W-OBS-2
WATER DISPOSAL
WELLHEAD
(IONA) API 5000

NOTES:
1. PULSATION DAMPER
2. INSTRUMENT VALVING NOT SHOWN
3. COMMISSIONING STRAINER
4. 'DELETED' REV 10
5. FILTERS LOCATED CLOSE TO RELEVANT DISPOSAL WELL
6. 2-1/16" API5000 MANUAL GATE VALVE
7. 2" API LP
8. HIGH POINT VENT
9. LOW POINT DRAIN
10. DISCONNECTED AND BLANKED.
11. F612 & W-OBS-2 (NOT IN USE)
12. CURRENTLY BLANKED (NOT IN USE). OTWAY PW PUMP PSVs
13. AIR TO UV 6182 DISCONNECTED

				11	10/12	PSV SETPOINT CORRECTION (EC0289). OTWAY CONNECTION FIELD CHECK	MP		LLW		LLW		LLW		SIGNATURE
				10	08/11	GENERAL REVISION	PMD		OP		LLW		LLW		
				9	05/06	CASAN PROJECT - RE-ASBUILT	BH		KLM		NPS		CH		DATE
				14	22/06/16	AS BUILT- GENERAL VALVE NUMBERING	SJ		MP		HM		SP		
				13	11/15	VALVE G-063 NUMBERED AND LOCKED OPEN. G-039 LOCKED OPEN. VALVES NUMBERED	MP		MB		HM		SP		
				12	01/14	PULSATION DAMPER NUMBERS ADDED	MP		LLW		LLW		LLW		
[CAD] A1				No	DATE	REVISION	ORIGINATOR		DESIGN CHECKED		ENGINEER CHECKED		PROJECT APPROVED		CLIENT APPROVED
JOB DIRECTORY	FILE NAME	DRAWING No.	REFERENCE DRAWINGS												
	PB-612-14														

IONA GAS PLANT
PRODUCED WATER INJECTION
PIPING & INSTRUMENTATION DIAGRAM

SCALE	ORG NO.	REV
NTS	UGS-PB-612	14