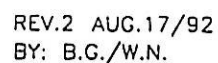


V-320

LOW TEMPERATURE SEPARATOR

Quality Control Documentation



AUTHORIZED INSPECTOR TO BE GIVEN TRAVEL SHEET PRIOR TO CONSTRUCTION
SO THAT HE CAN INDICATE HOLD POINTS. HOLD POINTS ESTABLISHED

20F2.

VESEL TITLE
54"ODx18'-0" 6/5.
LOW TEMPERATURE
SEPARATOR

SERIAL NUMBER
#1614

TAG NO.
V-320

C.R. NUMBER

JOB: CODE
CTC

[illegible]



THERMO DESIGN ENGINEERING LTD.

TRAVEL SHEET

REV.2 AUG.17/92
BY: B.G./W.N.AUTHORIZED INSPECTOR TO BE GIVEN TRAVEL SHEET PRIOR TO CONSTRUCTION
SO THAT HE CAN INDICATE HOLD POINTS. HOLD POINTS ESTABLISHED

RH 97-12-12

VESSEL TITLE 54"ODx18'-0"S/S. LOW TEMPERATURE SEPARATOR		SERIAL NUMBER #1614		TAG NO. V-320		A.T. HOLD POINTS	(A) NUMBER	
		C.R. NUMBER		JOB CODE CTC			DATE, FUNCTION COMPLETED AND INSPECTORS INITIALS	
NO.	FUNCTION		COMMENTS		T. D. E.		AUTHORIZED INSPECTOR	
1	APPROVED DRAWINGS				98.01.08 (C)		LH98.3-25	
2	MAT. CHECKED AGAINST DWG.				98.01.08 (C)		LH98.2-3	
3	MILL TEST CHECKED				98.01.08 (C)		LH98.3-25	
4	IMPACT TESTS							
5	VESSEL LAYOUT				98.02.02 (C)			
6	FIT UP	SHELL & HEADS			98.02.02 (C)			
7		NOZZL'S & FITTINGS			98.02.02 (C)			
8	INTERNAL INSPECTION				α	98.02.03 (C)	LH98.2-3	
9	WELD SIZE					98.02.03 (C)		
10	WELDERS I.D.					98.02.03 (C)	LH98.2-3	
11	RADIOGRAPHS		FULL			98		
12	OTHER N.D.E.							
13	RELEASE FOR P.W.H.T.		STRESS RELIEVE 2 1/4 HRS @ 1150°F		α	98.02.03 (C)	LH98.2-3	
14	P.W.H.T. CHART CHECKED					98.02.05 (C)		
15	EXTERNAL INSPECTION					98.02.05 (C)	LH98.2-5	
16	HYDROSTATIC TEST		1950 PSIG.		α	98.02.05 (C)	LH98.2-5	
17	HYDRO GAUGES		TH-116, TH-117			98.02.05 (C)		
18	DATA REPORT					98.03.25 (C)	LH98.3-25	
19	NAME PLATES					98.03.25 (C)	LH98.3-25	

RT-PROGRESS

XC-1R

XL-1

XCB1

XC-2

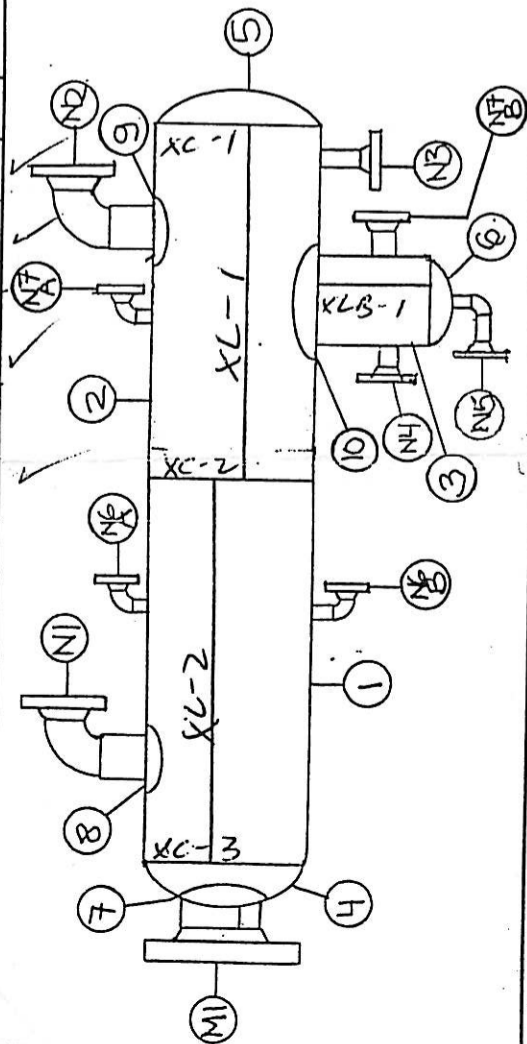
XL-2

XCB-1

XC-3R

XL-3

PART	SPECIFICATION	HEAT NO.	THK.
SHELLS	✓ 1 SA 516-70N	64790-50211	2.250"
	✓ 2 SA 516-70N	48474-91770	2.250"
	✓ 3 SA 516-70N	229718-2441657-10.250"	
HEADS	✓ 4 SA 516-70N	22788-019034-1	2.185"
	✓ 5 SA 516-70N	48469-87923	2.191"
	✓ 6 SA 516-70N	72778-017701-2	0.709"
PADS	✓ 7 SA 516-70N	42333-0482644	1.750"
	✓ 8 SA 516-70N	42331-048240-1	2.000"
	✓ 9 SA 516-70N	42331-048240-1	2.000"
NOZZLES	✓ 10 SA 516-70N	42331-048240-1	2.000"
	✓ M1 SA 516-70N	22/9720-23834695	0.875"
	✓ N1 SA 333-6	J633023	8" SCH. 8-XHY
	✓ N2 SA 333-6	J633023	8" SCH. 8-XHY
	✓ N3 SA 333-6	61272	2"-160 Sch
	✓ N4 SA 333-6	66397	1 1/2" SCH 160



CTC

W
RT-1
H-T.

MANUFACTURED AND CERTIFIED BY

THERMO DESIGN
ENGINEERING LTD.

EDMONTON

ALBERTA

CANADA

UNIT NAME

TAG NUMBER

LOW TEMPERATURE SEPARATOR

V-320.

CR. NUMBER

SERIAL NUMBER

④ NUMBER

N-9963.21

#1614

M.A.W.P.

AT TEMP.

M.D.M.T.

AT PRESSURE

1300 PSIG

150°F

-49°F

1300 PSIG.

YEAR BUILT

CORR. ALL

DRAWING NUMBER

1998

0.0625 IN

9097-0850-201

DIAMETER

LENGTH

CAPACITY

WEIGHT

54 IN OD

18-0 S/S

267 CU FT

35500 LBS

SHELL MATL.

HEAD MATL.

TBSHT. MATL.

COIL MATL.

SA-516-70N

SA-516-70N
SA-516-70N

SHELL THK.

HEAD MIN. THK.

TBSHT. THK.

COIL THK.

2.250 IN

2.185 IN
2.191 IN



MANUFACTURED AND CERTIFIED BY
**THERMO DESIGN
ENGINEERING LTD.**

EDMONTON

ALBERTA

CANADA

UNIT NAME

TAG NUMBER

LOW TEMPERATURE SEPARATOR V-320

CR. NUMBER

SERIAL NUMBER

Ⓐ NUMBER

N-996721 1612

M.A.W.P.

AT TEMP.

M.D.M.T.

AT PRESSURE

1300PSIG 150 F -49 F 1300PSIG

YEAR BUILT

CORR. ALL.

DRAWING NUMBER

1978 3.0625IN 9097-0850-201

DIAMETER

LENGTH

CAPACITY

WEIGHT

54 IN OD 18-0 S/S 267 CU FT 35500 LBS

SHELL MATL.

HEAD MATL.

TBSHT. MATL.

COIL MATL.

SA-516-70N SA-516-70N

SHELL THK.

HEAD MIN. THK.

TBSHT. THK.

COIL THK.

2.250IN 2.187IN



TO: THERMO DESIGN ENGINEERING LTD
 BOX 5557 STATION L
 EDMONTON ALTA
 T6C 4E9

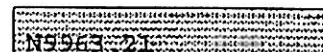
Account # 19971

Date: 98/03/12
 Journal # 18733

Attn: JASON HARGREAVES
 Re: THERMO DESIGN ENGINEERING LTD

DESIGN REGISTRATION

C.R.N.



Drawings / Documents	Description
LOW TEMP SEPARATOR 9097-0850-201 REV 0 (Sheets 1 & 2)	<div> <div>REGISTERED</div> <div> MDMT -49 F MAWT 150 F MAWP 1300 psi </div> </div> <p>Code of Compliance: ASME Sec VIII Div 1, 95 Ed., A96.</p>

Remarks: This design has been registered as noted above. An invoice for survey will follow in the amount of \$ 322.00

CRN issued in accordance with the ACI Policies on Reciprocal Recognition of Design Review for Registration. Alberta issued CRN N9963.2 on Feb. 6, 1998.

cb
 Encl:
 cc:

Yours truly,

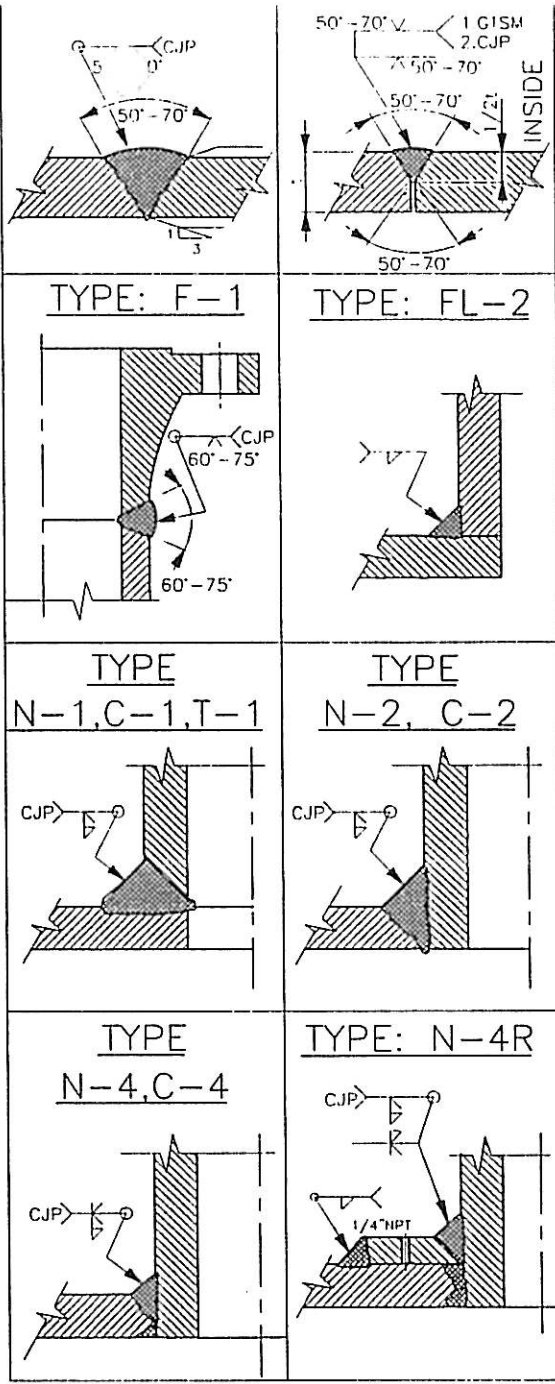
R. TUAZON
 Design Surveyor

Ministry of
 Municipal Affairs
 and Housing

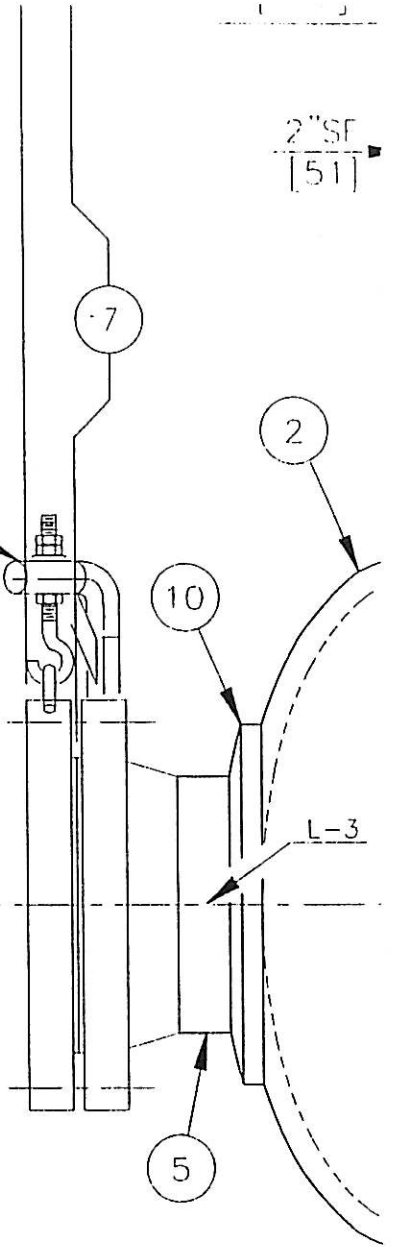
Boiler and Elevator
 Safety Branch

3rd Floor
 750 Pacific Boulevard South - Unit 300
 Vancouver BC V6B 5E7

Telephone: (604) 660-6254
 Facsimile: (604) 775-2345



DAVIT FOR 20" OD - 500# BL
SEE TYP. TDE DRAWING
No.: 9097-0850-201-



ALBERTA BOILERS SAFETY ASSOCIATION
PROVINCE OF ALBERTA
SAFETY CODES ACT

REG. No. **N-9963.2**

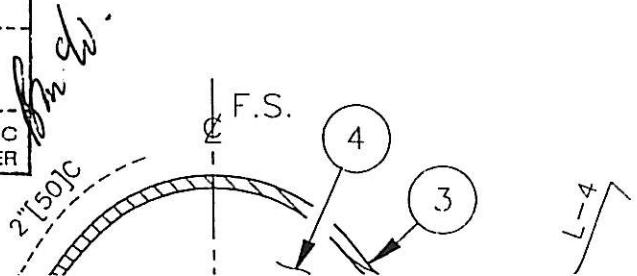
DWG. No. **9097-0850-201 SHT. 1 of 2 Rev. 0**

Design Press kPa	Design Temp. °C
8963	-45/66

ACCEPTED

FEB 06 1998

Date _____ Signed *[Signature]* **DJORDJE SRNIC**
DESIGN SURVEY ENGINEER





TAQA NORTH DATA				
EQUIP NO.: 603VS018	RAMS ID TAG NO.: NEW	PRN: N/A	NAT'L BOARD #: N/A	CATEGORY:
PLANT/FIELD: CHINCHAGA GAS PLANT		LSD: C-032-H / 094-H-08	LOCATION: GAS PLANT	
EQUIP. NAME : LOW TEMP SEPARATOR		CLASS : VS	TYPE: SEPARATOR	
SERVICE: <input checked="" type="checkbox"/> Sweet <input type="checkbox"/> Sour	H2S: N/A PPM	FLUID: GLYCOL/GAS	S/D REQT.: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial	
OPERATING PRESSURE: 3200 <input checked="" type="checkbox"/> kPa <input type="checkbox"/> PSI		OPERATING TEMPERATURE: -1 <input checked="" type="checkbox"/> °C <input type="checkbox"/> °F		
OPERATING STATUS: <input checked="" type="checkbox"/> IN SERVICE <input type="checkbox"/> Not In Service		M/WAY(16"AND ABOVE): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No SIZE: 32"		

MANUFACTURING DATA				
MFG.: THERMO DESIGN LTD	DWG. NO.: 9097-0850-201	SERIAL NO.: 1614	YR. BUILT: 1998	STAMP: U,W
CRN: N9963.21	CODE/DIV.: ASME VIII DIV 1	PARA.: N/A	SUPPORT: <input type="checkbox"/> Skirt <input checked="" type="checkbox"/> Saddles <input type="checkbox"/> Nozzles	
MAWP: 8963 <input checked="" type="checkbox"/> kPa <input type="checkbox"/> PSI	@ TEMP: 66 <input checked="" type="checkbox"/> °C <input type="checkbox"/> °F	MDMT: -45 <input checked="" type="checkbox"/> °C <input type="checkbox"/> °F	VOLUME: 267 <input type="checkbox"/> M ³ <input type="checkbox"/> FT ³	
FLANGE RATING: 150/600#	PWHT: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	RADIOGRAPHY: <input checked="" type="checkbox"/> RT1 <input type="checkbox"/> RT2 <input type="checkbox"/> RT3 <input type="checkbox"/> RT4	<input type="checkbox"/> Spot <input type="checkbox"/> Full <input type="checkbox"/> N/A	
SIZE : 1372 <input checked="" type="checkbox"/> mm. <input type="checkbox"/> inch.	<input type="checkbox"/> ID <input checked="" type="checkbox"/> OD	LENGTH: 5486 <input checked="" type="checkbox"/> mm. <input type="checkbox"/> inch.	HEIGHT: N/A <input type="checkbox"/> mm <input type="checkbox"/> inch.	
INSULATION TYPE: <input type="checkbox"/> Fiberglass <input type="checkbox"/> Wool <input checked="" type="checkbox"/> Low Temp <input type="checkbox"/> Asbestos Other:			INSULATION THK: 40 <input checked="" type="checkbox"/> mm <input type="checkbox"/> inch.	
SECTION	MATERIAL	NOMINAL mm	C.A. mm	
SHELL	SA-516-70N	57.2 MM	1.6 MM	
HEAD	SA-516-70N	55.5 MM / 55.7 MM	1.6 MM	
COMMENTS:				

TUBING DATA				
MAWP: N/A <input type="checkbox"/> kPa <input type="checkbox"/> PSI	@ TEMP: N/A <input type="checkbox"/> °C <input type="checkbox"/> °F	TEMA CLASS: N/A	TYPE: N/A	
TUBE SIZE: N/A mm. <input type="checkbox"/> ID <input type="checkbox"/> OD	NUMBER (QTY OF TUBES): N/A	GAUGE (BWG): N/A	JOINT: <input type="checkbox"/> Welded <input type="checkbox"/> Rolled	
SECTION	MATERIAL	NOMINAL mm	C.A. mm	
N/A	N/A	N/A	N/A	

TRAY/PACKING DATA		
TRAY TYPE: N/A	NUMBER (# OF TRAYS): N/A	PACKING TYPE: N/A
MATERIAL: N/A	MANUFACTURER: N/A	

COATING/LINING/CLADDING DATA			
AREA	TYPE	MATERIAL	YR. APPLIED
EXTERNAL:	EPOXY	N/A	N/A
INTERNAL:	N/A	N/A	N/A
LINING:	N/A	N/A	N/A
CLADDING:	N/A	N/A	N/A

PRESSURE RELIEF DEVICES DATA		<input type="checkbox"/> PSV not located	<input type="checkbox"/> No PSV
EQUIP. NO.	TAG NO.	SET	CAPACITY
603SVVS118	N/A	8963 <input checked="" type="checkbox"/> kPa <input type="checkbox"/> PSI	3408
N/A	N/A	N/A <input type="checkbox"/> kPa <input type="checkbox"/> PSI	N/A
N/A	N/A	N/A <input type="checkbox"/> kPa <input type="checkbox"/> PSI	N/A

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by Provisions of the ASME Code Rules, Section VIII, Division 1

CTC, PG. 1 OF 2

1. Manufactured and certified by THERMO DESIGN ENGINEERING LTD., 1624 - 70 AVENUE, EDMONTON, ALBERTA CANADA T6P 1P5
(Name and address of manufacturer)

2. Manufactured for Chauvco Res. Ltd. c/o Tartan Eng. Ltd., 1700, 800 - 6th Avenue S.W., Calgary, AB T2P 3G3
(Name and address of purchaser)

3. Location of installation Chinchaga Gas Plant, British Columbia, LSD: C-32-H/94-H-8
(Name and address)

4. Type Horizontal #1614 N-9963.21 9097-0850-201/Rev.0 1998
(Horiz. or vert. tank) (Mfg's serial No.) (CRN) (Drawing no.) (Nat'l Bd. No.) (Year built)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1
1995
Year

to 1996
Addenda (Date)

6. Shell: SA-516-70N 2.250" 0.0625" 49.50"ID 18'-0" S/S
Mat'l. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft. & in.) Length (overall) (ft. & in.)

7. Seams: Dbt"V" Full 100 1150 2.25H Dbt"V" Full 2
Long. (Welded, Dbt., Sngl., Lap, Butt) R.T. (Spot or Full) Eff. (%) H.T. Temp (F) Time (hr) Girth (welded, Dbt., Sngl., Lap, Butt) R.T. (Spot, Partial, or Full) No. of Courses

8. Heads: (a) Mat'l. SA-516-70N (b) Mat'l. SA-516-70N
(Spec No., Grade) (Spec No., Grade)

	Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	End	2.185"	0.0625"			2:1				Concave
(b)	End	2.191"	0.0625"			2:1				Concave

If removable, bolts used (describe other fastenings) N/A
(Mat'l., Spec. No., Gr., Size, No.)

9. MAWP 1300 psi at max. temp. 150 ° F
Min. design metal temp. -49 ° F at 1300 psi. Hydro., pneu., or comb. test pressure 1950 psi.

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Mat'l.	Nom. Thk.	Reinforcement Mat'l.	How Attached	Location
M1	1	20"	RFWN	SA-516-70N	0.875"	SA-516-70N	UW-16.1(e)	Head
N1	1	8"	RFWN	SA-333-6	600#Sch.XHY	SA-516-70N	UW-16.1(e)	Shell
N2	1	8"	RFWN	SA-333-6	600#Sch.XHY	SA-516-70N	UW-16.1(e)	Shell
N3	1	2"	RFWN	SA-333-6	600#Sch.160	N/A	UW-16.1(e)	Shell

11. Supports: Skirt No Lugs No Legs No Other Saddles Attached Welded
(Yes or no) (No.) (No.) (Describe) (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of this report:

(Name of part, item number, Mfg's name and identifying stamp)
54"OD x 18'-0" S/S, Low Temperature Separator "V-320"
Capacity: 267 Cu Ft.
Impact Test: As Per UG-84 See Attached U-4 Form

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1. "U" Certificate of Authorization No. 22,145 expires August 22, 19 99.
Date 98-03-25 Co. Name THERMO DESIGN ENGINEERING LTD. Signed B. Williams
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by THERMO DESIGN ENGINEERING LTD. at EDMONTON, ALBERTA CANADA T6P 1P5.
I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of AB and employed by Alberta Boilers' Safety Association in Edmonton have inspected the component described in this Manufacturer's Data Report on March 25, 1998, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.
Date 98-3-25 Signed R. Hujas Commissions 39R
(Authorized Inspector) (Nat'l Board (incl. endorsements) State, Prov. and No.)

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET
As Required by the Provisions of the ASME Code Rules, Section III, Division 1

CTC, PG. 2 OF 2

1. Manufactured and certified by THERMO DESIGN ENGINEERING LTD., 1624 - 70 AVENUE, EDMONTON, ALBERTA CANADA T6P 1P5
(Name and address of Manufacturer)

2. Manufactured for Chauvco Res. Ltd. c/o Tartan Eng. Ltd., 1700, 800 - 6th Avenue S.W., Calgary, AB T2P 3G3
(Name and address of Purchaser)

3. Location of Installation Chinchaga Gas Plant, British Columbia, LSD: C-32-H/94-H-8
(Name and address)

4. Type: Horizontal Separator #1614
(Horiz., vert., or sphere) (Tank separator, heat exch., etc) (Mfg's serial No.)

N-9963.21 9097-0850-201/Rev.0 1998
(CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)

Data Report Item Number	Remarks									
10 - Nozzles	N4	1	1 1/2"	RFWN	SA-333-6	600#SCH.160	N/A	UW-16.1(c)	Boot Shell	
	N5	1	1 1/2"	RFWN	SA-333-6	600#Sch.160	N/A	UW-16.1(c)	Boot Head	
	N6A/B	2	1 1/2"	RFWN	SA-333-6	600#Sch.160	N/A	UW-16.1(e)	Shell	
	N7A/B	2	1 1/2"	RFWN	SA-333-6	600#Sch.160	N/A	UW-16.1(e/c)	Shell/Boot Shell	
	C1A/B	2	1/2"	LG CPLG	SA-350-LF2	6000#	N/A	UW-16.1(c)	Boot Shell	
	C2A/B	2	1"	LG CPLG	SA-350-LF2	6000#	N/A	UW-16.1(c)	Shell	
	C3A/B	2	3/4"	LG CPLG	SA-350-LF2	6000#	N/A	UW-16.1(c)	Shell	
	C4A/B	2	3/4"	LG CPLG	SA-350-LF2	6000#	N/A	UW-16.1(c)	Shell/Boot Shell	
	C5	1	3/4"	LG CPLG	SA-350-LF2	6000#	N/A	UW-16.1(c)	Shell	
	C6	1	3/4"	LG CPLG	SA-350-LF2	6000#	N/A	UW-16.1(c)	Shell	
	C7	1	3/4"	LG CPLG	SA-350-LF2	6000#	N/A	UW-16.1(c)	Shell	

12 - Remarks

Boot

Shell: SA-516-70N, 0.750"Thk., 0.0625" Corr.All., 16.50"ID, 2'-4"LG,
LS & CS: Sgl"V", RT: Full, 100% Eff., PWHT:2.25Hr @ 1150F, No.of Courses:1

Head: SA-516-70N, Min Thk.:0.709", 0.0625" Corr. All., 2:1, Concave

Registered Drawing No.: 9097-0850-201/Rev.0 (Sheet 1 & 2) (Alberta & British Columbia)

PSV: On Piping

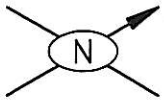
Certificate of Authorization: Type U No. 22,145 Expires August 22, 19 99

Date 28.03.25 Name THERMO DESIGN ENGINEERING LTD. Signed Bilwanie
(Manufacturer) (Representative)

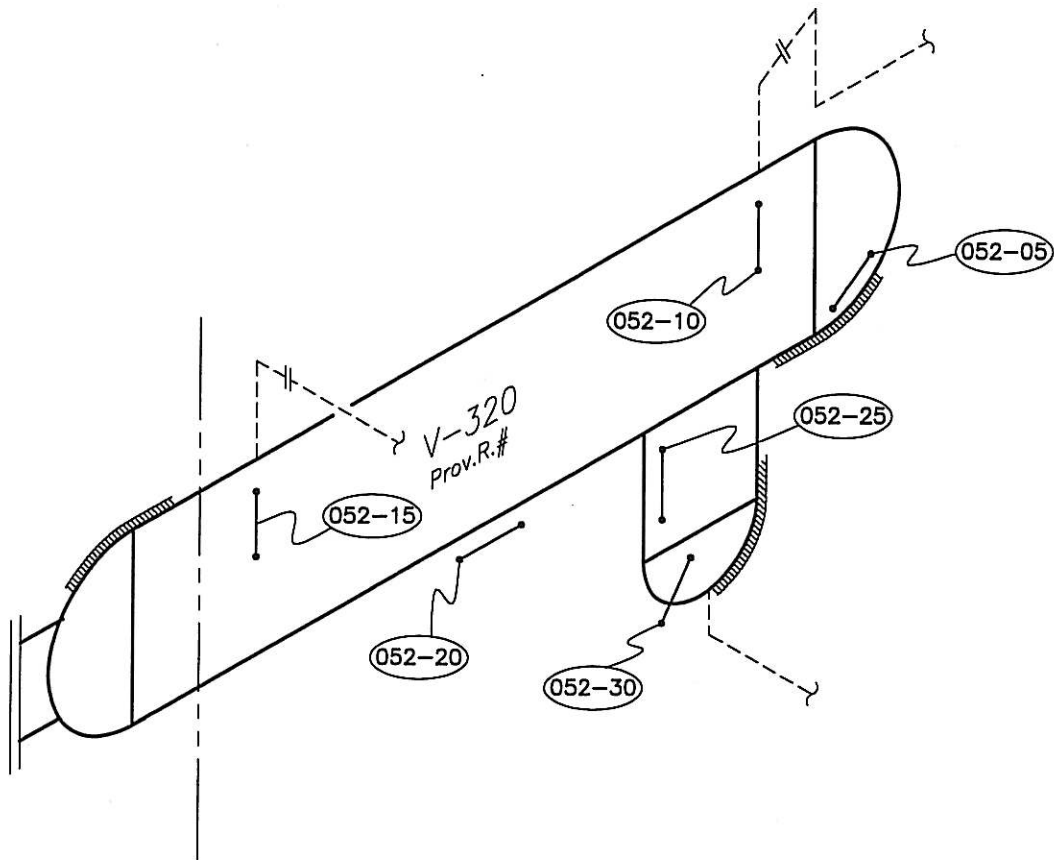
Da 8-3-25 Name R. Hajad Commission 39R.
(Authorized Inspector) (Nat'l Board (incl. endorsements) State, Province and No.)



TESTING INC.



P&ID. # _____
REF. # _____



VESSEL DATA

P.E. No. V-320 Serial No. 1614 Prov. Reg. No. A C.R.N. N9963.21
MFR. THERMO DESIGN Code/Div. _____ Para _____ Code Stamp U
Yr. Bld. 1998 Yr. Inst. _____ Size 54"Ø x 18' Service _____ PWHT YES
RT RT-1 Insulated YES

Nominal Thickness & Material

Head: 2.185" (55.0mm) Mat'l: SA 516 70N C.A. 0.625" (1.6mm) Reason _____
Head: 2.191" (55.7mm) SA 516 70N Reason _____
Shell: 2.250" (57.2mm) SA 516 70N Reason _____
Shell: _____ Reason _____

Chan Hd: _____

Chan Sh: _____

Boot Hd: .750" SA 516 70NBoot Sh: .709" SA 516 70NMAWP Shell Side 1300PSI @ Temp. -49/150°F

MAWP Tube Side _____ @ Temp. _____

COMMENTS: _____

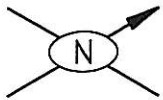
PIONEER NATURAL RESOURCES CANADA INC.
CHINCHAGA GAS PLANT
LSD C-32-H / 94-H-8

LOW TEMPERATURE SEPARATOR

TECH.: J.O.	REV. DATE:	DWG DATE: 99/08
CAD: WO	REVISION:	DRAWING: 052

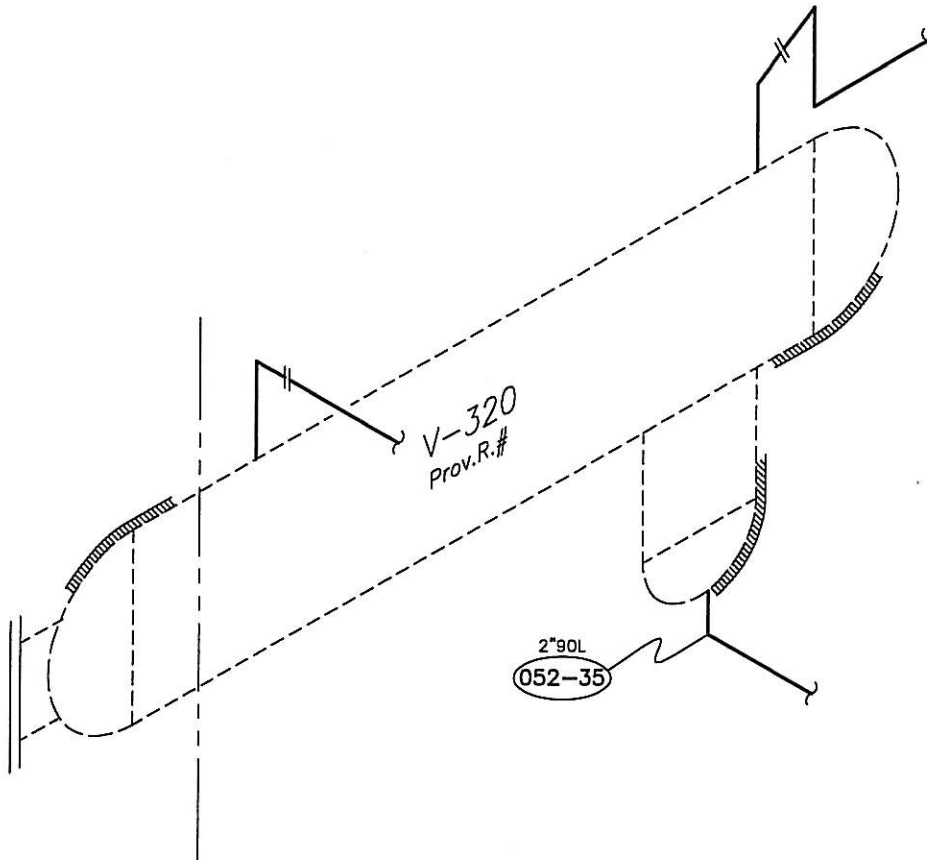


TESTING INC.



P&ID # _____

REF. # _____



PIPING DATA

THICKNESS MEASUREMENT LOCATION:	SIZE	PROC.	LINE #	SPEC.	SCH.	NOM.THK.	API * CORR. ALLW. ** CALCULATED CORR.ALLW.	MIN.THK.	CAL.THK.	FLG. RATING
052-35	2"				160	8.7mm	* 1.6mm	6.0mm		

COMMENTS: _____

PIONEER NATURAL RESOURCES CANADA INC.
CHINCHAGA GAS PLANT
LSD C-32-H \ 94-H-8

LOW TEMPERATURE SEPARATOR

TECH.: JO	REV.DATE:	DWG.DATE: 99/12
CAD: WO	REVISION:	DRAWING: 052A

PIONEER NATURAL RESOURCES CANADA INC.
CHINCHAGA GAS PLANT

RIVEST TESTING INC.

Item Desc.: C-32-H/94-H-8 / LOW TEMPERATURE SEPARATOR

Equip. No.: V-320

Ser. No.: 1614

Prov. Reg.: N/A

Pt.Desc.: N.HEAD

Point No.: 052-05

Nominal: 55.700

Mths. Rem. To Min. Nom:

Good For Continued Service: YES

Corr. Allowance: 1.600

Min. Cal. Wall Thk.:

Additional Assessment Of Data: YES

Min. Nominal: 54.100

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	58.800	____.____
	2	58.800	____.____
	3	58.500	____.____
	4	58.800	____.____
	5	58.800	____.____
	6	58.200	____.____

Data Evaluation

Lowest Reading : 58.200

Average - Low 3 : 58.500

Thk.Remaining Above Min. : 4.100

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :

Pt.Desc.: N.UPPER SHELL

Point No.: 052-10

Nominal: 57.200

Mths. Rem. To Min. Nom:

Good For Continued Service: YES

Corr. Allowance: 1.600

Min. Cal. Wall Thk.:

Additional Assessment Of Data: YES

Min. Nominal: 55.600

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	60.000	____.____
	2	60.100	____.____
	3	60.000	____.____
	4	60.100	____.____
	5	60.100	____.____
	6	60.000	____.____

Data Evaluation

Lowest Reading : 60.000

Average - Low 3 : 60.000

Thk.Remaining Above Min. : 4.400

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :

PIONEER NATURAL RESOURCES CANADA INC.
CHINCHAGA GAS PLANT

RIVEST TESTING INC.

Item Desc.: C-32-H/94-H-8 / LOW TEMPERATURE SEPARATOR

Equip. No.: V-320

Ser. No.: 1614

Prov. Reg.: N/A

Pt.Desc.: S.UPPER SHELL

Point No.: 052-15

Nominal: 57.200

Mths. Rem. To Min. Nom:

Good For Continued Service: YES

Corr. Allowance: 1.600

Min. Cal. Wall Thk.:

Additional Assessment Of Data: YES

Min. Nominal: 55.600

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	59.800	____.____
	2	59.600	____.____
	3	59.600	____.____
	4	59.500	____.____
	5	59.400	____.____
	6	59.500	____.____

Data Evaluation

Lowest Reading : 59.400

Average - Low 3 : 59.467

Thk.Remaining Above Min. : 3.800

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :

Pt.Desc.: CTR.BTM.SHELL

Point No.: 052-20

Nominal: 57.200

Mths. Rem. To Min. Nom:

Good For Continued Service: YES

Corr. Allowance: 1.600

Min. Cal. Wall Thk.:

Additional Assessment Of Data: YES

Min. Nominal: 55.600

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	59.600	____.____
	2	59.600	____.____
	3	59.600	____.____
	4	59.600	____.____
	5	59.600	____.____
	6	59.600	____.____

Data Evaluation

Lowest Reading : 59.600

Average - Low 3 : 59.600

Thk.Remaining Above Min. : 4.000

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :

PIONEER NATURAL RESOURCES CANADA INC.
CHINCHAGA GAS PLANT

RIVEST TESTING INC.

Item Desc.: C-32-H/94-H-8 / LOW TEMPERATURE SEPARATOR

Equip. No.: V-320

Ser. No.: 1614

Prov. Reg.: N/A

Pt.Desc.: BOOT SHELL

Point No.: 052-25

Nominal: 18.000

Mths. Rem. To Min. Nom:

Good For Continued Service: YES

Corr. Allowance: N/S

Min. Cal. Wall Thk.:

Additional Assessment Of Data: YES

Min. Nominal: 18.000

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	19.500	____.____
	2	19.500	____.____
	3	19.400	____.____
	4	19.500	____.____
	5	19.400	____.____
	6	19.500	____.____

Data Evaluation

Lowest Reading : 19.400

Average - Low 3 : 19.433

Thk.Remaining Above Min. : 1.400

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :

Pt.Desc.: BOOT HEAD

Point No.: 052-30

Nominal: 19.100

Mths. Rem. To Min. Nom:

Good For Continued Service: NO

Corr. Allowance: N/S

Min. Cal. Wall Thk.:

Additional Assessment Of Data: YES

Min. Nominal: 19.100

Suggested Max Insp. Interval In Mths.: 0

Survey Dates:

1999-12

Data Readings	1	20.300	____.____
	2	18.800	____.____
	3	18.500	____.____

Data Evaluation

Lowest Reading : 18.500

Average - Low 3 : 19.200

Thk.Remaining Above Min. : -0.600

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :

PIONEER NATURAL RESOURCES CANADA INC.
CHINCHAGA GAS PLANT

RIVEST TESTING INC.

Item Desc.: C-32-H/94-H-8 / LOW TEMPERATURE SEPARATOR

Equip. No.: V-320

Ser. No.: 1614

Prov. Reg.: N/A

Pt.Desc.: PIPING - 2"90L T-B

Point No.: 052-35

Nominal: 8.700 Mths. Rem. To Min. Nom:

Corr. Allowance: 2.700 Min. Cal. Wall Thk.:

Min. Nominal: 6.000

Good For Continued Service: YES

Additional Assessment Of Data: YES

Suggested Max Insp. Interval In Mths.: 12

Survey Dates: 1999-12

Data Readings	1	8.200	____.____
	2	8.100	____.____
	3	7.500	____.____
	4	7.700	____.____
	5	8.300	____.____

Data Evaluation

Lowest Reading : 7.500

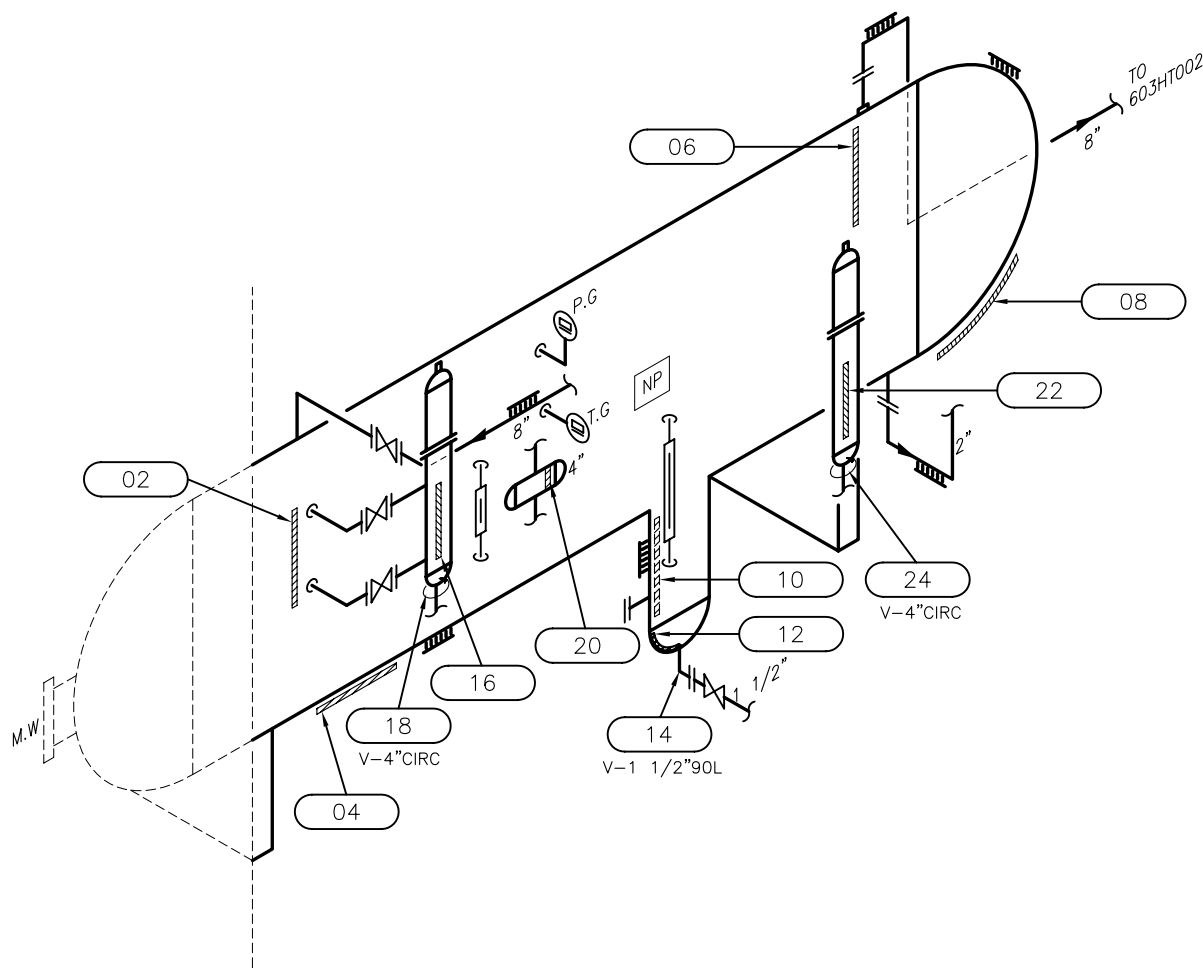
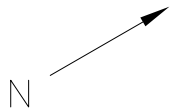
Average - Low 3 : 7.767

Thk.Remaining Above Min. : 1.500

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :



Integrity Testing
SERVICES

P.E. No.: N/S Yr. Bit.: 1998
OIP# 603VS018 Manway: YES
Serial No.: 1614 Size: 1372mm x 5486mm
P.R.N. (A) N/S Service: SWEET
C.R.N.: N9963.21 PWHT: YES
Code/Div.: ASME VIII DIV. 1 RT: 1
Para: N/S Insulated: LOW TEMP
C. Stamp: UW N.B. No: N/S
Manufacturer: THERMO DESIGN LTD.

Design & Materials Data

HEAD	SHELL
Material: <u>SA-516-70N</u>	Material: <u>SA-516-70N</u>
Nom.: <u>55.5mm/55.7mm</u>	Nom.: <u>57.2mm</u>
C.A.: <u>1.6mm</u>	C.A.: <u>1.6mm</u>
BOOT HEAD	BOOT SHELL
Material: _____	Material: _____
Nom.: _____	Nom.: _____
C.A.: _____	C.A.: _____
CHANNEL HEAD	CHANNEL SHELL
Material: _____	Material: _____
Nom.: _____	Nom.: _____
C.A.: _____	C.A.: _____
MAWP Shell Side: <u>8963 KPA</u>	⊙ Temp.: <u>66°C</u>
MAWP Tube Side: _____	⊙ Temp.: _____

CLIENT

TAQA NORTH

FACILITY

CHINCHAGA GAS PLANT

LSD C-032-H/094-H-08

ITEM

LOW TEMP. SEPARATOR

Comments: _____

BY: M.T.

DATE: 2008/04

DWG.# 038

TAQA North

Unit: N-603

FACILITY:	CHINCHAGA GAS PLANT	MANUFACTURER:	THERMO DESIGN ENGINEER
LSD:	C-032-H/094-H-08	DESIGN PRESSURE:	8963 kPa / 1300 psi
ITEM DESC.:	LOW TEMPERATURE SEPARATOR	DESIGN TEMP.:	66 C / 151 F
EQUIP / OIP#:	603VS018	RECOMMENDED NEXT INSP. DATE:	04/2004
PROV. REG. #:	N/S	RECOMMENDED RETIREMENT DATE:	12/2398
SERIAL #:	1614	REM. LIFE (from last survey 04/2008):	390.70 yrs.
CRN.:	N9963.21	TOTAL CAUTION / ACTION TML:	2

Item # (038)

TML No.: 2 UPPER SOUTH SH

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 57.80 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 57.60 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey	Prev. Survey Date mm/yyyy	Prev. Survey	Last Survey Date mm/yyyy	Last Survey	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
2.01	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.80	0.000	0.000	04/2013	08/2741	NO
2.02	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.80	0.000	0.000	04/2013	08/2741	NO
2.03	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.80	0.000	0.000	04/2013	08/2741	NO
2.04	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.80	0.000	0.000	04/2013	08/2741	NO
2.05	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.60	0.000	0.000	04/2013	12/2674	NO
2.06	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	58.00	0.000	0.000	04/2013	04/2808	NO

TML No.: 4 BTM SH S-N

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 57.83 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 57.80 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey	Prev. Survey Date mm/yyyy	Prev. Survey	Last Survey Date mm/yyyy	Last Survey	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
4.01	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.80	0.000	0.000	04/2013	08/2741	NO
4.02	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.80	0.000	0.000	04/2013	08/2741	NO
4.03	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.80	0.000	0.000	04/2013	08/2741	NO
4.04	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.90	0.000	0.000	04/2013	12/2774	NO
4.05	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.90	0.000	0.000	04/2013	12/2774	NO
4.06	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	57.80	0.000	0.000	04/2013	08/2741	NO

(*) and GREEN Represent 25% of the TMLs, which have the earliest retirement dates.

BLUE (Caution TML) Corrosion Rate greater than 0.250mm/yr. or TML Remaining Life is less than 1.00 year.

RED (Action TML) TML with negative life.

If Baseline Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.

TAQA North

Unit: N-603

FACILITY:	CHINCHAGA GAS PLANT	MANUFACTURER:	THERMO DESIGN ENGINEER
LSD:	C-032-H/094-H-08	DESIGN PRESSURE:	8963 kPa / 1300 psi
ITEM DESC.:	LOW TEMPERATURE SEPARATOR	DESIGN TEMP.:	66 C / 151 F
EQUIP / OIP#:	603VS018	RECOMMENDED NEXT INSP. DATE:	04/2004
PROV. REG. #:	N/S	RECOMMENDED RETIREMENT DATE:	12/2398
SERIAL #:	1614	REM. LIFE (from last survey 04/2008):	390.70 yrs.
CRN.:	N9963.21	TOTAL CAUTION / ACTION TML:	2

Item # (038)

TML No.: 6 UPPER NORTH SH

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 58.28 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 58.20 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Last Survey Date mm/yyyy	Last Survey Date mm/yyyy	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
6.01	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	58.20	0.000	0.000	04/2013	12/2874	NO
6.02	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	58.40	0.000	0.000	04/2013	08/2941	NO
6.03	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	58.40	0.000	0.000	04/2013	08/2941	NO
6.04	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	58.20	0.000	0.000	04/2013	12/2874	NO
6.05	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	58.30	0.000	0.000	04/2013	04/2908	NO
6.06	57.20	1.60	55.60	01/1998	57.20	N/A	N/A	04/2008	58.20	0.000	0.000	04/2013	12/2874	NO

TML No.: 8 NORTH BTM HD T-B

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 56.68 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 56.30 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Last Survey Date mm/yyyy	Last Survey Date mm/yyyy	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
8.01	55.70	1.60	54.10	01/1998	55.70	N/A	N/A	04/2008	56.80	0.000	0.000	04/2013	04/2908	NO
8.02	55.70	1.60	54.10	01/1998	55.70	N/A	N/A	04/2008	56.80	0.000	0.000	04/2013	04/2908	NO
8.03	55.70	1.60	54.10	01/1998	55.70	N/A	N/A	04/2008	56.80	0.000	0.000	04/2013	04/2908	NO
8.04	55.70	1.60	54.10	01/1998	55.70	N/A	N/A	04/2008	56.30	0.000	0.000	04/2013	08/2741	NO
8.05	55.70	1.60	54.10	01/1998	55.70	N/A	N/A	04/2008	56.70	0.000	0.000	04/2013	12/2874	NO
8.06	55.70	1.60	54.10	01/1998	55.70	N/A	N/A	04/2008	56.70	0.000	0.000	04/2013	12/2874	NO

(*) and GREEN Represent 25% of the TMLs, which have the earliest retirement dates.

BLUE (Caution TML) Corrosion Rate greater than 0.250mm/yr. or TML Remaining Life is less than 1.00 year.

RED (Action TML) TML with negative life.

If Baseline Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.

TAQA North

Unit: N-603

FACILITY:	CHINCHAGA GAS PLANT	MANUFACTURER:	THERMO DESIGN ENGINEER
LSD:	C-032-H/094-H-08	DESIGN PRESSURE:	8963 kPa / 1300 psi
ITEM DESC.:	LOW TEMPERATURE SEPARATOR	DESIGN TEMP.:	66 C / 151 F
EQUIP / OIP#:	603VS018	RECOMMENDED NEXT INSP. DATE:	04/2004
PROV. REG. #:	N/S	RECOMMENDED RETIREMENT DATE:	12/2398
SERIAL #:	1614	REM. LIFE (from last survey 04/2008):	390.70 yrs.
CRN.:	N9963.21	TOTAL CAUTION / ACTION TML:	2

Item # (038)

TML No.: 10 BOOT SIDE SH T-B

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 18.83 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 18.60 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Last Survey Date mm/yyyy	Last Survey Date mm/yyyy	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
10.01	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	18.90	0.000	0.000	04/2013	04/4008	NO
10.02	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	18.70	0.000	0.000	04/2013	04/4008	NO
10.03	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	18.90	0.000	0.000	04/2013	04/4008	NO
10.04	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	18.90	0.000	0.000	04/2013	04/4008	NO
10.05	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	19.00	0.000	0.000	04/2013	04/4008	NO
10.06	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	18.60	0.000	0.000	04/2013	04/4008	NO

TML No.: 12 BOOT HD T-B

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 18.62 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 17.40 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Last Survey Date mm/yyyy	Last Survey Date mm/yyyy	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
12.01	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	19.50	0.000	0.000	04/2013	04/4008	NO
12.02	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	19.30	0.000	0.000	04/2013	04/4008	NO
12.03	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	19.20	0.000	0.000	04/2013	04/4008	NO
12.04	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	17.40	0.000	0.000	04/2013	04/4008	NO
12.05	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	17.80	0.000	0.000	04/2013	04/4008	NO
12.06	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	18.50	0.000	0.000	04/2013	04/4008	NO

(*) and GREEN Represent 25% of the TMLs, which have the earliest retirement dates.

BLUE (Caution TML) Corrosion Rate greater than 0.250mm/yr. or TML Remaining Life is less than 1.00 year.

RED (Action TML) TML with negative life.

If Baseline Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.

TAQA North

Unit: N-603

FACILITY:	CHINCHAGA GAS PLANT	MANUFACTURER:	THERMO DESIGN ENGINEER
LSD:	C-032-H/094-H-08	DESIGN PRESSURE:	8963 kPa / 1300 psi
ITEM DESC.:	LOW TEMPERATURE SEPARATOR	DESIGN TEMP.:	66 C / 151 F
EQUIP / OIP#:	603VS018	RECOMMENDED NEXT INSP. DATE:	04/2004
PROV. REG. #:	N/S	RECOMMENDED RETIREMENT DATE:	12/2398
SERIAL #:	1614	REM. LIFE (from last survey 04/2008):	390.70 yrs.
CRN.:	N9963.21	TOTAL CAUTION / ACTION TML:	2

Item # (038)

TML No.: 14 NOZ 1.5"90L 150#

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 7.68 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 7.20 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Last Survey Date mm/yyyy	Last Survey Date mm/yyyy	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
14.01	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	7.20	0.000	0.000	04/2013	12/2574	NO *
14.02	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	7.60	0.000	0.000	04/2013	04/2708	NO
14.03	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	7.90	0.000	0.000	04/2013	04/2808	NO
14.04	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	8.00	0.000	0.000	04/2013	08/2841	NO

TML No.: 16 4"FLOAT B/S 600#

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 8.78 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 8.10 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Last Survey Date mm/yyyy	Last Survey Date mm/yyyy	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
16.01	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.60	0.000	0.000	04/2013	04/2708	NO
16.02	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	8.60	0.000	0.000	04/2013	12/2374	NO *
16.03	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	8.80	0.000	0.000	04/2013	08/2441	NO *
16.04	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	8.70	0.000	0.000	04/2013	04/2408	NO *
16.05	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	8.90	0.000	0.000	04/2013	12/2474	NO *
16.06	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	8.10	0.000	0.048	04/2013	09/2020	NO *

(*) and GREEN Represent 25% of the TMLs, which have the earliest retirement dates.

BLUE (Caution TML) Corrosion Rate greater than 0.250mm/yr. or TML Remaining Life is less than 1.00 year.

RED (Action TML) TML with negative life.

If Baseline Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.

CALCULATE PRESSURE VESSEL TMIN or DESIGN PRESSURE

FACILITY: Chinchaga Gas Plant--C-32-H/94-H-08
DESCRIPTION: Low Temperature Separator
ITEM NO.: #038
TML: #20
MATERIAL: NS-USE SA106B
PRN #: SN--1614--603VS018
RT: 1
TYPE: Shell

PRESSURE VESSEL TMIN CALCS (Cylindrical shells INSIDE RADIUS)

$t = PR/SE - 0.6P$ Minimum Required Thickness, inches

P=	1300	Design Pressure, psi
R=	2.043	INSIDE Radius of shell, inches
S=	17100	Maximum Allowable Stress, psi
E=	1.00	Joint Efficiency
T=	100°F	
t=	0.163	inches, per ASME Sect 8 UG-27(c)1
t=	4.14	mm

$$t = 0.163" + C/A \ 0.0625" = 0.2255"$$

TAQA North

Unit: N-603

FACILITY:	CHINCHAGA GAS PLANT	MANUFACTURER:	THERMO DESIGN ENGINEER
LSD:	C-032-H/094-H-08	DESIGN PRESSURE:	8963 kPa / 1300 psi
ITEM DESC.:	LOW TEMPERATURE SEPARATOR	DESIGN TEMP.:	66 C / 151 F
EQUIP / OIP#:	603VS018	RECOMMENDED NEXT INSP. DATE:	04/2004
PROV. REG. #:	N/S	RECOMMENDED RETIREMENT DATE:	12/2398
SERIAL #:	1614	REM. LIFE (from last survey 04/2008):	390.70 yrs.
CRN.:	N9963.21	TOTAL CAUTION / ACTION TML:	2

Item # (038)

TML No.: 18 4"FLOAT B/H 600#

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 9.18 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 8.90 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Last Survey Date mm/yyyy	Last Survey Date mm/yyyy	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/ Caution Required Item	
18.01	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.30	0.000	0.000	04/2013	04/2608	NO	*
18.02	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.30	0.000	0.000	04/2013	04/2608	NO	*
18.03	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.30	0.000	0.000	04/2013	04/2608	NO	*
18.04	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.20	0.000	0.000	04/2013	12/2574	NO	*
18.05	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	8.90	0.000	0.000	04/2013	12/2474	NO	*
18.06	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.10	0.000	0.000	04/2013	08/2541	NO	*

TML No.: 20 4"CIRC T-B

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 7.63 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 6.80 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Last Survey Date mm/yyyy	Last Survey Date mm/yyyy	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/ Caution Required Item	
20.01	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.10	0.000	0.000	04/2013	08/2541	NO	*
20.02	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	7.80	0.000	0.079	03/2010	01/2012	NO	*
20.03	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	6.80	0.000	0.175	04/2004	04/2004	ACTION	*
20.04	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	6.80	0.000	0.175	04/2004	04/2004	ACTION	*

(*) and GREEN Represent 25% of the TMLs, which have the earliest retirement dates.

BLUE (Caution TML) Corrosion Rate greater than 0.250mm/yr. or TML Remaining Life is less than 1.00 year.

RED (Action TML) TML with negative life.

If Baseline Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.

TAQA North

Unit: N-603

FACILITY:	CHINCHAGA GAS PLANT	MANUFACTURER:	THERMO DESIGN ENGINEER
LSD:	C-032-H/094-H-08	DESIGN PRESSURE:	8963 kPa / 1300 psi
ITEM DESC.:	LOW TEMPERATURE SEPARATOR	DESIGN TEMP.:	66 C / 151 F
EQUIP / OIP#:	603VS018	RECOMMENDED NEXT INSP. DATE:	04/2004
PROV. REG. #:	N/S	RECOMMENDED RETIREMENT DATE:	12/2398
SERIAL #:	1614	REM. LIFE (from last survey 04/2008):	390.70 yrs.
CRN.:	N9963.21	TOTAL CAUTION / ACTION TML:	2

Item # (038)

TML No.: 22 4"FLOAT B/S 600#

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 9.45 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 9.30 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Last Survey Date mm/yyyy	Last Survey Date mm/yyyy	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
22.01	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.50	0.000	0.000	04/2013	12/2674	NO
22.02	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.50	0.000	0.000	04/2013	12/2674	NO
22.03	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.50	0.000	0.000	04/2013	12/2674	NO
22.04	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.40	0.000	0.000	04/2013	08/2641	NO
22.05	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.50	0.000	0.000	04/2013	12/2674	NO
22.06	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.30	0.000	0.000	04/2013	04/2608	NO *

TML No.: 24 4"FLOAT B/H 600#

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 9.25 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 9.10 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date mm/yyyy	B/L Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Prev. Survey Date mm/yyyy	Last Survey Date mm/yyyy	Last Survey Date mm/yyyy	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
24.01	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.20	0.000	0.000	04/2013	12/2574	NO *
24.02	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.40	0.000	0.000	04/2013	08/2641	NO
24.03	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.10	0.000	0.000	04/2013	08/2541	NO *
24.04	8.60	1.10	7.50	01/1998	8.60	N/A	N/A	04/2008	9.30	0.000	0.000	04/2013	04/2608	NO *

(*) and GREEN Represent 25% of the TMLs, which have the earliest retirement dates.

BLUE (Caution TML) Corrosion Rate greater than 0.250mm/yr. or TML Remaining Life is less than 1.00 year.

RED (Action TML) TML with negative life.

If Baseline Survey Thickness Measurement was not taken at the time of Manufacture, then Nominal Thickness is used as Baseline Thickness.

DETAIL VESSEL AND PIPING INSPECTION REPORT

(Imperial)

GENERAL PRESSURE VESSEL INFORMATION

Company:	Pioneer Natural Resources Canada Inc.	LSD:	BC	C-32-H/94-H-8
Area/Facility:	Chinchaga Gas Plant	Inspection Date	06-Feb-02	Interval: 2 yrs
Vessel Name:	Low Temp Separator	A No:	BC	MTL No: VSL182
Internal Coating Type:		Next External:	2/6/2003	Next Internal: Feb, 2004
Vessel Orientation:	Horizontal	Internal Coating Lining:	0	
Vessel Type:	Horizontal Vessel	Fluid Type:		
Tag No:	V-320	Serial Number:	1614	
Separator Type:	Two Phase	Business Unit:		
Direct Fired Vessel:	N/A	Fired Tube:		Cost Centre:
Current Status:	In Service	Flame Arrester Date Required:		Date
Thermal Insulation:	Yes	Asbestos:	No	

PRESSURE VESSEL NAMEPLATE INFORMATION

MTL Number:	VSL182	Volume:	267.000 F3	CRN Number:	H-9963-21	Registered:	Yes
Serial Number:	1614	Size:	54.000 in O.D. x 18 ft 0 in	Seam to Seam			
Drawing Number:	9097-0850-201	P & ID Number:					
Shell Material:	SA-516-70N	Bottom	Shell Thickness:	2.250 In			
		Top	Shell Thickness:	2.250 In			
Head Material:	SA-516-70N	End	Head Thickness:	2.191 In			
		End	Head Thickness:	2.191 In			
Tube Material:		Tube Size(OD):	In	Tube Thickness:	In		
Tubesheet Material:		Tubesheet Thickness:	In				
Channel Material:		Channel Type:		Channel Thickness:	In		
Design Pressure:	Shell: 1300 psi	Operating Pressure:	Shell: psi				
	Tube: psi		Tube: psi				
Design Temperature:	Shell: 150 F	Operating Temperature:	Shell: F				
	Tube: F		Tube: F				
RT (XRay):	RT1	Heat Treatment:	Yes				
Code Parameters:		Joint Efficiency:					
Manufacturer:	Thermo Design Engineering	Year Built:	1998				
Corrosion Allowance:	0.063	Manway:	No				

DETAIL VESSEL AND PIPING INSPECTION REPORT

(Imperial)

GENERAL PRESSURE VESSEL INFORMATION

Company:	Pioneer Natural Resources Canada Inc.	LSD:	BC	C-32-H/94-H-8
Area/Facility:	Chinchaga Gas Plant	Inspection Date	06-Feb-02	Interval: 2 yrs
Vessel Name:	Low Temp Separator	A No:	BC	MTL No: VSL182

VESSEL SHELL / HEADS / PIPING

External / Instrumentation Condition

The insulation and cladding were noted in good condition . The cladding had some minor paint peeling and minor surface rust. Penetration should be re-sealed with chaulking but the painted portion looks good. The pressure retaining welds were intact and revealed no signs of deterioration or visible cracking. The associated instrumentation appeared to be in good working order.

Internal Condition

No internal access

Nozzle Condition

The accessible nozzles were painted with minor flaking and surface rust. There was no evidence of corrosion noted.

Flange Condition

No access to manway flange (frozen and covered)

Internal Piping

Not Applicable

External Piping

The majority of the piping is insulated. The exposed piping was painted and considered in good condition.

Pipe Support Condition

The associated pipe supports were in good condition with no evidence of any mechanical damage or degradation.

Bolting Condition

The associated bolting and gaskets were in place and appeared to be tight.

Firetube Condition

Not Applicable

Demister Pad Condition

Not Applicable

Anode Condition

Not Applicable

Vessel Support

The skid, vessel pedestals and 4 bolts appear to be in good condition.

DETAIL VESSEL AND PIPING INSPECTION REPORT

(Imperial)

GENERAL PRESSURE VESSEL INFORMATION

Company:	Pioneer Natural Resources Canada Inc.	LSD:	BC	C-32-H/94-H-8
Area/Facility:	Chinchaga Gas Plant	Inspection Date	06-Feb-02	Interval: 2 yrs
Vessel Name:	Low Temp Separator	A No:	BC	MTL No: VSL182

VESSEL COATING INSPECTION

Type of Coating

Coating Manufactuer and Type

Location

Coating Condition

VESSEL NONDESTRUCTIVE TESTING

NDE Type	UT Survey			
Location of Test				
Contractors Name	Rivest	Qualifications		
Last UT Survey Date	Feb 3, 2002	Interval	2 yrs	Next UT Date: Feb 3, 2004
Survey By	MTL Testing Inc.			
Test Results				

VESSEL STATUS

Suitable for Further Service?	No	Repairs Required?	No
Owners Representative		Repairs Completed?	
Owners Date		Repairs Completed By	
		Repair Date	

Recommendations

Next internal inspection in 3 years
Next PSV servicing in 3 years
Repeat UT Survey in 3 years

Details of Repairs

DETAIL VESSEL AND PIPING INSPECTION REPORT

(Imperial)

GENERAL PRESSURE VESSEL INFORMATION


Company:	Pioneer Natural Resources Canada Inc.	LSD:	BC	C-32-H/94-H-8
Area/Facility:	Chinchaga Gas Plant	Inspection Date	06-Feb-02	Interval: 2 yrs
Vessel Name:	Low Temp Separator	A No:	BC	MTL No: VSL182

PSV DATA

Side	Set Pressure psi	CRN Number	Manufacturer PSV Number	Model Serial Number	Capacity	Size Inches	Set Date
Shellside	1300		Farris PNR3201	26-DA-13-120-LL 43478-2-A10	3204 SCFM	1 x	Dec/1999
Shellside	1000	W-15693	Crosby PNR4081	JOS 45/A SE-17092-5	25662 SCFM	2.5 x 4	Dec/1999

CURRENT VESSEL PROCESS CONDITIONS

Sweet Gas	LPG
-----------	-----

Name (Printed)	Signature	Date
Visual Inspector Paul Gorman API510		February 06, 2002
QA Supervisor: (Chief Inspector)		
QA Administrator:		
ABSA Inspector:		

EQUIPMENT NO: 603VS018

Page of

FACILITY: Chinchaga Gas Plant

PROV. REG. NO:

EQUIPMENT NAME: Low Temperature Separator

TAG NO:

SIZE: 1372mm OD x 5486mm L/H

MAWP: 8963 kPa @ 66/-45 °C

LSD : C-032-H / 094-H-08

MANWAY ☒ YES ☐ NO

SERVICE:

FLUID: Gas / Glycol

☐ SOUR ☒ SWEET ☐ CRYOGENIC

SCOPE OF INSPECTION

TYPE OF INSPECTION:

CLEANING:

ACCESS:

☐ PRECOMMISSIONING

☐ AE

☐ MT

☐ RT

☒ GOOD

☐ FULL

☒ INITIAL

☐ ET

☐ MFL

☒ UT

☐ FAIR

☐ PARTIAL

☐ REINSPECTION

☐ LT

☐ PT

☒ VT

☐ INADEQUATE

☒ EXTERNAL

☐ OTHER

PLEASE ADD PAGES AND SKETCHES AS NEEDED (TURN OVER FOR SKETCH)

OBSERVATIONS:

☒ EXTERNAL

1. LADDERS, STAIRWAYS, PLATFORMS AND WALKWAYS ☒

2. FOUNDATIONS AND SUPPORTS ☒

3. NOZZLES ☒

4. GROUNDING CONNECTIONS ☒ Directly grounded at the south saddle support

5. PROTECTIVE COATINGS AND INSULATION ☒

6. EXTERNAL METAL SURFACES ☐ N/A

7. FANS AND OTHER ANCILLARY EQUIPMENT ☐ N/A

8. PRESSURE RELIEF DEVICES ☒

9. NAME PLATE ☒

10. ULTRASONIC INSPECTION SURVEY ☒

11. INSPECTION REPORT COMPLETED ☒

12. NON CONFORMANCE COMPLETED ☐ N/A

13. OIP LABEL APPLIED ☒

14. PICTURE ON FILE ☒

COMMENTS

CHECKED BOX INDICATES ACCEPTANCE

RECOMMENDATIONS:

SUITABLE FOR

REMEDIAL ACTION

FURTHER SERVICE: ☒ YES ☐ NO

PRIORITY: ☐ HIGH ☐ MEDIUM ☐ LOW

INSPECTION PERFORMED BY: Mark Tomko

DATE OF INSPECTION 06 04 2008
(DD MONTH YYYY)

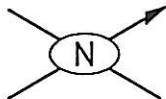
FOLLOW-UP INSPECTION REQ'D:

☐ YES ☒ NO

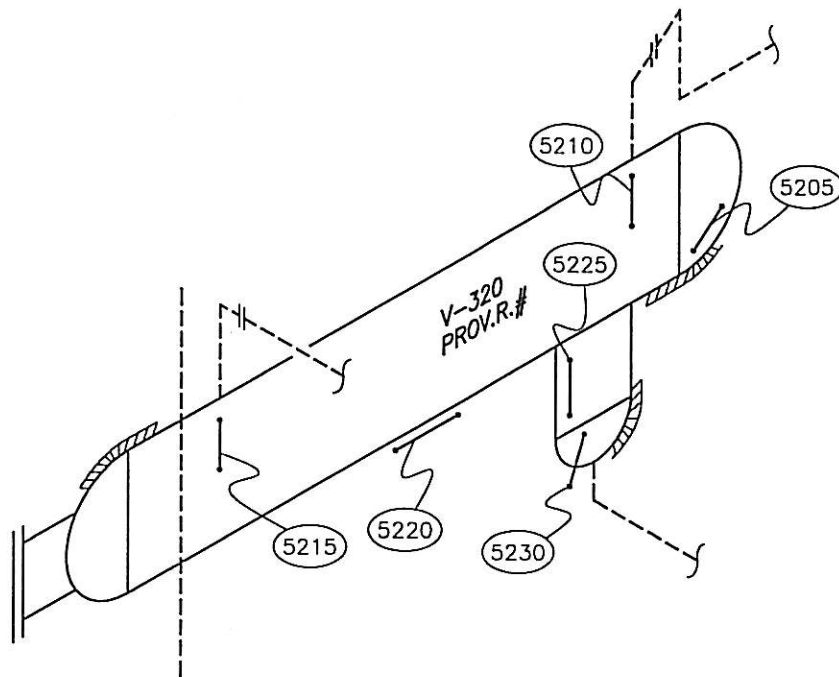
BY DATE:

(DD MONTH YYYY)

038



P&ID. # _____
REF. # _____



VESSEL DATA

Prov. Reg. No. _____ C.R.N. M 9963.21 P.E. No. V-320 Serial No. 1614
MFR. THERMO DESIGN Code/Div. _____ Para _____ Code Stamp U
Yr. Bld. 1998 Yr. Inst. _____ Size 54"ØX18' Vol.: _____ Service _____ PWHT YES

Nominal Thickness & Material

Head: 55.0mm Mat'l: SA 516-70N C.A.: 1.6mm
Head: 55.7mm SA 516-70N
Shell: 57.2mm SA 516-70N C.A.: _____
Shell: _____
Chan Hd: _____ C.A.: _____
Chan Sh: _____
Gas Boot Hd: 0.750" SA 516-70N C.A.: _____
Gas Boot Sh.: 0.709" SA 516-70N
Liq. Boot Hd: _____ C.A.: _____
Liq. Boot Sh.: _____

Insulated YES R.T. 1

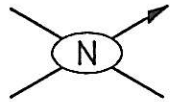
Repairs _____
COMMENTS _____

PIONEER NATURAL RESOURCES CANADA INC.
CHINCHAGA GAS PLANT
LSD C-32-H \ 94-H-8

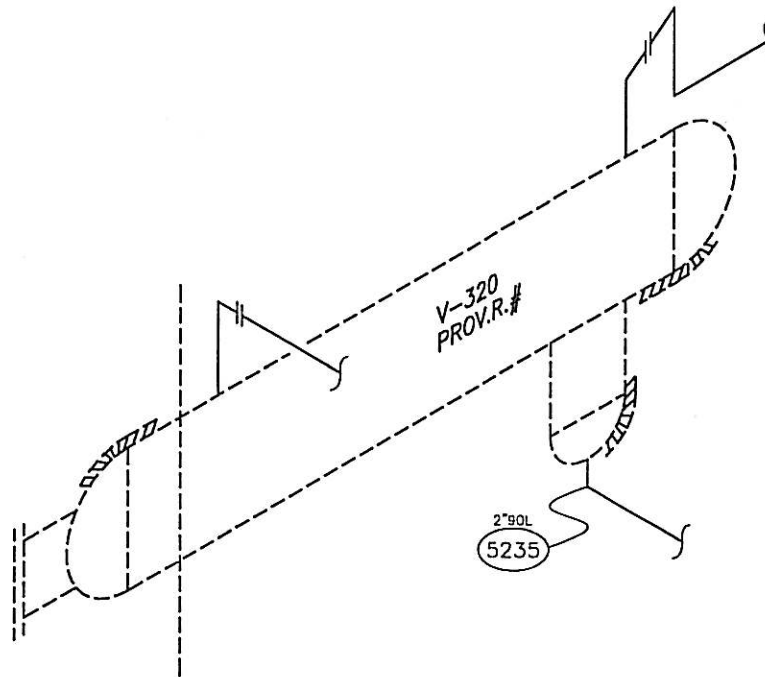
LOW TEMPERATURE SEPARATOR

MAWP Shell Side 1300psi @ Temp. -49/150°F
MAWP Tube Side _____ @ Temp. _____

TECH.: J.OLIVER	REV.DATE:	DWG DATE: 02/2002
CAD: MKM	REVISION:	DRAWING: 052



P&ID. # _____
REF. # _____



PIPING DATA

T.M.L.	SIZE	MAT'L	FLG. RATING	PROC.	LINE #	SPEC.	SCH.	CORR.ALL * ASTM				CODE
								NOM.	** DESIGN	MIN.	CAL.	
5235	2"						160	8.7mm	* 1.6mm	6.0mm		

COMMENTS: _____

PIONEER NATURAL RESOURCES CANADA INC.
CHINCHAGA GAS PLANT
LSD C-32-H \ 94-H-8

LOW TEMPERATURE SEPARATOR PIPING

TECH.: J.OLIVER	REV.DATE:	DWG DATE: 02/2002
CAD: MKM	REVISION:	DRAWING: 052A

Equip No V-320

Serial No 1614

Prov Reg No N/A

Description LOW TEMPERATURE SEPARATOR

052 - 005

TML Description: N. HEAD

T Nominal: 55.7

Min Nominal: 54.1

Corr Allowance: 1.6

Data Readings

Data Evaluations

Months Remaining to T Min: 92
 Min Calc'd Wall Thickness: N/A
 Thick Remain Above T Min: 3.2
 Short Term Corr Rate: N/A
 Long Term Corr Rate: N/A
 Months Remain to LFL: 46
 Lowest Value - Last Reading: 57.3

Comment:

	Dec-99	Feb-02
Point 1	58.8	57.3
Point 2	58.8	57.6
Point 3	58.5	57.8
Point 4	58.8	57.7
Point 5	58.8	57.6
Point 6	58.2	57.4
Point 7		
Point 8		
Point 9		
Point 10		
Point 11		
Point 12		
Average	58.7	57.6
Avg Low 3	58.5	57.4
Lowest	58.2	57.3

052 - 010

TML Description: N. UPPER SHELLS

T Nominal: 57.2

Min Nominal: 55.6

Corr Allowance: 1.6

Data Readings

Data Evaluations

Months Remaining to T Min: 999
 Min Calc'd Wall Thickness: N/A
 Thick Remain Above T Min: 4.4
 Short Term Corr Rate: N/A
 Long Term Corr Rate: N/A
 Months Remain to LFL: N/A
 Lowest Value - Last Reading: 60.0

Comment:

No Feb./02 readings, solid ice build-up.

	Dec-99
Point 1	60.0
Point 2	60.1
Point 3	60.0
Point 4	60.1
Point 5	60.1
Point 6	60.0
Point 7	
Point 8	
Point 9	
Point 10	
Point 11	
Point 12	
Average	60.1
Avg Low 3	60.0
Lowest	60.0

052 - 015

TML Description: S. UPPER SHELLS		
T Nominal:	57.2	
Min Nominal:	55.6	
Corr Allowance:	1.6	
<i>Data Readings</i>		
<i>Data Evaluations</i>		Dec-99
	Point 1	59.8
	Point 2	59.6
	Point 3	59.6
	Point 4	59.5
	Point 5	59.4
	Point 6	59.5
	Point 7	
	Point 8	
	Point 9	
	Point 10	
	Point 11	
Comment: <i>No Feb./02 readings, solid ice build-up.</i>	Point 12	
	Average	59.6
	Avg Low 3	59.5
	Lowest	59.4

052 - 020

TML Description: CTR. BTM. SHELL		
T Nominal:	57.2	
Min Nominal:	55.6	
Corr Allowance:	1.6	
<i>Data Readings</i>		
<i>Data Evaluations</i>		Dec-99 Feb-02
	Point 1	59.6 58.8
	Point 2	59.6 58.8
	Point 3	59.6 58.8
	Point 4	59.6 58.9
	Point 5	59.6 58.9
	Point 6	59.6 58.8
	Point 7	
	Point 8	
	Point 9	
	Point 10	
	Point 11	
Comment:	Point 12	
	Average	59.6 58.8
	Avg Low 3	59.6 58.8
	Lowest	59.6 58.8

TML Description: BOOT SHELL			
T Nominal: 18.0			
Min Nominal: 18.0			
Corr Allowance: N/A			
<i>Data Readings</i>			
<i>Data Evaluations</i>		Dec-99	Feb-02
Months Remaining to T Min: 95		Point 1	19.5 19.3
Min Calc'd Wall Thickness: N/A		Point 2	19.5 19.1
Thick Remain Above T Min: 1.1		Point 3	19.4 19.1
Short Term Corr Rate: N/A		Point 4	19.5 19.1
Long Term Corr Rate: N/A		Point 5	19.4 19.2
Months Remain to LFL: 95		Point 6	19.5 19.2
Lowest Value - Last Reading: 19.1		Point 7	
Comment:		Point 8	
		Point 9	
		Point 10	
		Point 11	
		Point 12	
		Average	19.5 19.2
		Avg Low 3	19.4 19.1
		Lowest	19.4 19.1

052 - 030

TML Description: BOOT HEAD			
T Nominal: 19.1			
Min Nominal: 19.1			
Corr Allowance: N/A			
<i>Data Readings</i>			
<i>Data Evaluations</i>		Dec-99	Feb-02
Months Remaining to T Min: N/A		Point 1	20.3 19.8
Min Calc'd Wall Thickness: N/A		Point 2	18.8 18.7
Thick Remain Above T Min: N/A		Point 3	18.5 18.4
Short Term Corr Rate: N/A		Point 4	
Long Term Corr Rate: N/A		Point 5	
Months Remain to LFL: N/A		Point 6	
Lowest Value - Last Reading: 18.4		Point 7	
Comment:		Point 8	
		Point 9	
		Point 10	
		Point 11	
		Point 12	
		Average	19.2 19.0
		Avg Low 3	19.2 19.0
		Lowest	18.5 18.4

TML Description: 2" 90' L T-B

T Nominal: 8.7

Min Nominal: 7.1

Corr Allowance: 1.6

*Data Readings**Data Evaluations*

Months Remaining to T Min: 999
 Min Calc'd Wall Thickness: N/A
 Thick Remain Above T Min: 0.4
 Short Term Corr Rate: N/A
 Long Term Corr Rate: N/A
 Months Remain to LFL: N/A
 Lowest Value - Last Reading: 7.5

Comment:

	Dec-99
Point 1	8.2
Point 2	8.1
Point 3	7.5
Point 4	7.7
Point 5	8.3
Point 6	
Point 7	
Point 8	
Point 9	
Point 10	
Point 11	
Point 12	
Average	8.0
Avg Low 3	7.8
Lowest	7.5

EQUIPMENT INTERNAL INSPECTION REPORT

Customer:	TAQA North	ITS Job No.:	1829
District:	Northern	Date:	14-Jul-2012
Facility:	Chinchaga Gas Plant	LSD:	C-32-H/94-H-08
Equip. Description:	Low Temperature Separator	Serial No.:	1614
Equip./OIP No.:	603VS018	PRN:	Not Stated

Equip. Type: ☐ Column ☐ Cooler ☐ Exchanger ☐ Furnace ☐ Heater ☐ Plate Exchanger ☐ Reboiler ☒ Vessel ☐ Other:

Head (1)	Head (2)	Shell	Boot Shell/Head
<input type="checkbox"/> Top <input checked="" type="checkbox"/> North <input type="checkbox"/> West	<input type="checkbox"/> Bottom <input checked="" type="checkbox"/> South <input type="checkbox"/> East	<input type="checkbox"/> Top <input type="checkbox"/> Bottom	<input type="checkbox"/> Not Applicable
<input type="checkbox"/> Flat <input type="checkbox"/> FLG <input checked="" type="checkbox"/> ELL <input type="checkbox"/> ECC <input type="checkbox"/> HEMI	<input type="checkbox"/> Flat <input type="checkbox"/> FLG <input checked="" type="checkbox"/> ELL <input type="checkbox"/> ECC <input type="checkbox"/> HEMI	<input checked="" type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Good Condition
		<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Internal Corrosion
<input checked="" type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Pitting: 0.050 in <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>
<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion
<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked
<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Blistered	<input type="checkbox"/> Blistered
<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked	<input type="checkbox"/> Scale	<input type="checkbox"/> Scale
<input type="checkbox"/> Blistered	<input type="checkbox"/> Blistered	<input type="checkbox"/> Coated	<input type="checkbox"/> Coated
<input type="checkbox"/> Scale	<input type="checkbox"/> Scale	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage
<input type="checkbox"/> Coated	<input type="checkbox"/> Coated	<input type="checkbox"/> Bulged/ Distorted/ Deformation	<input type="checkbox"/> Bulged/ Distorted/ Deformation
<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> See Comments	<input type="checkbox"/> See Comments
<input type="checkbox"/> Bulged/ Distorted/ Deformation	<input type="checkbox"/> Bulged/ Distorted/ Deformation		
<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> See Comments		

Channel Head	Internal Welds	Internal Nozzles	Drum
<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Good Condition	<input type="checkbox"/> Mud <input type="checkbox"/> Steam
<input type="checkbox"/> Good Condition	<input type="checkbox"/> Poor Quality	<input type="checkbox"/> Internal Corrosion	<input checked="" type="checkbox"/> Not Applicable
<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Internal Corrosion
<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Cracked	<input type="checkbox"/> Pitting: <small>(max depth)</small>
<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked	<input type="checkbox"/> Scale	<input type="checkbox"/> Wear/Erosion
<input type="checkbox"/> Blistered	<input type="checkbox"/> Scale	<input type="checkbox"/> Coated	<input type="checkbox"/> Cracked
<input type="checkbox"/> Scale	<input type="checkbox"/> Coated	<input type="checkbox"/> Plugged	<input type="checkbox"/> Blistered
<input type="checkbox"/> Coated	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Poor Welding	<input type="checkbox"/> Scale
<input type="checkbox"/> Mechanical Damage	<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> Leaking	<input type="checkbox"/> Coated
<input type="checkbox"/> Bulged/ Distorted/ Deformation		<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage
<input type="checkbox"/> See Comments		<input type="checkbox"/> See Comments	<input type="checkbox"/> Bulged/ Distorted/ Deformation
			<input type="checkbox"/> See Comments

Internal Protection	Vessel Internals	Heating Coil (A)	Heating Coil (B)
<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Adequate Cleaning	<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable
<input type="checkbox"/> Coating <input type="checkbox"/> Lining	<input type="checkbox"/> Vortex Breaker(s)/Deflection Plate(s) Damage	<input type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Good Condition		<input type="checkbox"/> Corrosion	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Blister(s)		<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Pitting: (max depth)
<input type="checkbox"/> Dis-bonded	<input type="checkbox"/> Weir(s)/ Baffle(s)/ Divider(s) Damage	<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked
<input type="checkbox"/> Chipped		<input type="checkbox"/> Scaled	<input type="checkbox"/> Scaled
<input type="checkbox"/> Holidays/Cracked	<input type="checkbox"/> Spray Nozzles Damaged/ Missing	<input type="checkbox"/> Worn	<input type="checkbox"/> Worn
<input type="checkbox"/> Mechanical Damage		<input type="checkbox"/> Loose	<input type="checkbox"/> Loose
<input type="checkbox"/> Missing	<input type="checkbox"/> Down-comer Corrosion	<input type="checkbox"/> Poor Installation	<input type="checkbox"/> Poor Installation
<input type="checkbox"/> See Comments		<input type="checkbox"/> See Comments	<input type="checkbox"/> See Comments
	<input type="checkbox"/> See Comments		

Demister Screen	Refractory	Manway	Trays
<input type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable
<input checked="" type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Dislodged	<input type="checkbox"/> Cracked (minor)	<input type="checkbox"/> Coating Damage	<input type="checkbox"/> Collapsed
<input type="checkbox"/> Broken	<input type="checkbox"/> Spalling	<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Distorted
<input type="checkbox"/> Missing	<input type="checkbox"/> Missing	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Loose
<input type="checkbox"/> Tie-downs Missing	<input type="checkbox"/> Damaged	<input type="checkbox"/> Seal Face Corrosion	<input type="checkbox"/> Missing
<input type="checkbox"/> Fouling	<input type="checkbox"/> Cracked (severe)	<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Wear
<input type="checkbox"/> Corrosion	<input type="checkbox"/> See Comments	<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> Corrosion
<input checked="" type="checkbox"/> See Comments			<input type="checkbox"/> Poor
			<input type="checkbox"/> Valve Caps Missing
			<input type="checkbox"/> See Comments

Tube Sheet	Firetube(s)	Tube Bundle	Tubes
<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable
<input type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Corrosion	<input type="checkbox"/> Corrosion	<input type="checkbox"/> Corrosion	<input type="checkbox"/> External Corrosion
<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Internal Corrosion
<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Pitting: (max depth)
<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked	<input type="checkbox"/> Wear/Erosion
<input type="checkbox"/> Damaged	<input type="checkbox"/> Scaled	<input type="checkbox"/> Damaged	<input type="checkbox"/> Cracked
<input type="checkbox"/> See Comments	<input type="checkbox"/> Coated	<input type="checkbox"/> Plugged	<input type="checkbox"/> Thinning
	<input type="checkbox"/> Heat Impinged	<input type="checkbox"/> Scaled	<input type="checkbox"/> Heat Impinged
	<input type="checkbox"/> Burner Misalignment	<input type="checkbox"/> See Comments	<input type="checkbox"/> Bulged/Distorted
	<input type="checkbox"/> Damaged Supports		<input type="checkbox"/> Leaking
	<input type="checkbox"/> Damaged Guides/ Tracks		<input type="checkbox"/> See Comments
	<input type="checkbox"/> See Comments		

Observations:

☒ **Vessel in Good Condition**

☐ **Based on API 510 Visual Internal Inspection this vessel is fit for service**

- The manway flange and cover plate sealing areas are in good condition. There are no concerns. The davit arm has two nuts but it is not double nutted.
- All internal welds (nozzles, Circ. and Long. welds, demister support bars, waterboot Circ. and Long. weld) are in good condition. There is no corrosion, erosion or preferential attack noted. The longitudinal weld in Can 1 (south one) is on the East side (3 O'clock) and the one in Can 2 is on the West side (9 O'clock). The inlet nozzle protrudes into the vessel and the flow is directed towards the south head. There are no issues of erosion noted on the south head.
- The heads have mill scale still present on the surfaces. There are no issues. The shell walls have slight surface roughening of approximately 0.005 inch.
- The waterboot has a coil inside of it. There is no corrosion, erosion or pitting noted on the coil. There are no concerns. There is minor debris found on the bottom head. Operations were notified and they vacuumed out.
- The front demister pad was cleaned and put back into service. The demister baffle plates were removed and another demister pad was installed and the demister support was modified to accommodate the rear demister pad.
- Measured from the South end of the waterboot (at the 6 O'clock position, bottom of vessel), there are isolated pitting at the 19 and 22 inch mark both at ¼ inch in diameter and 0.050 inch deep. At the 21 inch mark, there is a 0.020 inch deep isolated pit that is 3/16 inch in diameter. At the 48 inch mark, there is a ¼ inch diameter by 0.050 inch deep pit.
- Measured from the South end of the demister support bar at the 20.5 inch mark on the West side at the 9 O'clock position, there is a mechanical damage that is 0.040 inch deep x 1/8 inch wide x 1 ½ inch long.
- Measured from the can 1 to can 2 Circ. weld at the 21 inch mark on the West side at the 9 O'clock position, there is a mechanical damage that the deepest indication is 0.050 inch deep x 3/16 inch wide x 1 1/4 inch long. Just south of this, approximately 4 inches and 5 inches up towards the top of vessel, there is a fold of shell material caused by mechanical damage approximately 1 inch in length.
- There are fit-up marks present still in the cans at the can 1 to can 2 Circ. weld. There are no concerns.
- On the shell side of can 2 (north can) up at the 2 O'clock position, there is a buffed area and there are no concerns.
- The vortex breaker is intact by the north end of can 2. There are no concerns.

Recommendations:

- Put a second nut on the top of the support rod for manway cover plate to double nut it.

Pictures:



Photo 1: OIP and Nameplate



Photo 2: Overview

Pictures:



Photo 3: Overview (2)



Photo 4: Waterboot and Coil



Photo 5: Demister Screen



Photo 6: First One Facing Manway



Photo 7: Old One Being Replaced



Photo 8: New Demister (In Behind The Front Screen)

Pictures:



Photo 9: Demister Support Ring



Photo 10: Fit-Up Marks in Can 1 South of Circ. Weld



Photo 11: Vortex Breaker in Can 2 North End



Photo 12: Manway Cover Plate and Sealing Area



Photo 13: Davit Arm

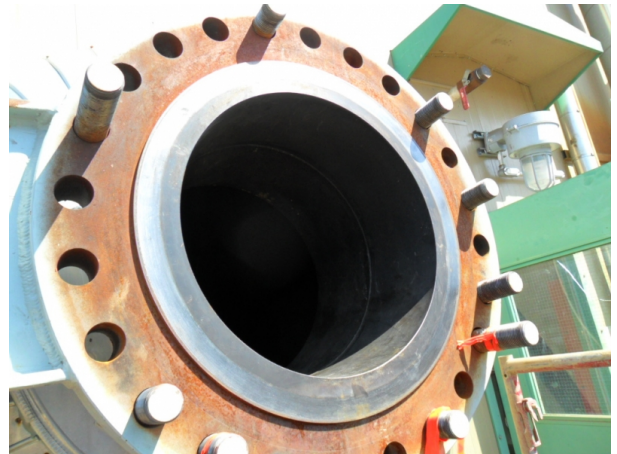


Photo 14: Manway Flange and Sealing Area

Pictures:



Photo 15: Outlet Nozzle



Photo 16: Inlet Nozzle

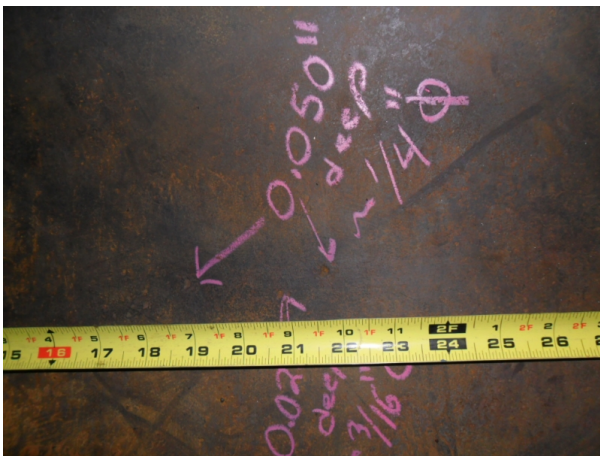


Photo 17: Pitting and Mechanical Gauges



Photo 18: Pitting and Mechanical Gauges (2)



Photo 19: Pitting and Mechanical Gauges (3)



Photo 20: Pitting and Mechanical Gauges (4)

Pictures:



Photo 21: Pitting and Mechanical Gauges (5)



Photo 22: Buffing Area on Shell in Can 2

Additional Comments:

None

Internal Inspection Performed By:

Print Name: Erwin Pederson

Signature:

Erwin Pederson

Certification No.:

API 510: 33075
IPV: 000406
PEI Class 2: 154

Report Reviewed:

[Signature]
Initial

RAM#		434023		EQUIP STATIC RECORD				JOB#		2636																	
Unique OUP #:		603VS018		Old OUP #:				LSD:		C-032-H/094-H-08																	
PLANT / FIELD:		Chinchaga Gas Plant		Down Hole Location:				RENTAL:																			
EQUIPMENT NAME:		Low Temperature Separator		Unique # of Compressor this equipment is related to:																							
VESSEL STATUS:		Active		PRIMARY LOCATION:		Gas Plant		Vessel Car-Sealed Out?																			
PHYSICAL LOCATION:						YEAR INSTALLED:																					
SERVICE:		Sweet		H2S		PROCESS FLUID:		Natural Gas, Wet		CYCLIC:																	
MANUFACTURER:		Thermo Design Engineering Ltd.		DWG.#		9097-0850-201		S N:		1614																	
PRN		for VESSEL or SHELL		CRN		N9963.21		YR. BUILT		1998																	
NB:		CODE/DIV.		ASME VIII DIV.1		PARA.		STAMP				U															
SHELL-TANK				RADIOGRAPHY:		RT1		JOINT EFF.		PWHT: Not Stated																	
MAWP		8963 kPa		AT		66 °C		MDMT		-45 °C		AT		8963 kPa													
DIA. OD		1371.6 mm		LENGTH:		5486.0 mm		HEIGHT:				VOLUME:		m³													
SECTION		MATERIAL		NOMINAL THICKNESS		C.A.																					
Shell		SA-516-70N		57.150		mm		1.588		mm																	
Head 1		SA-516-70N		55.502		mm		1.588		mm																	
Head 2		SA-516-70N		55.651		mm		1.588		mm																	
						mm				mm																	
						mm				mm																	
						mm				mm																	
						mm				mm																	
Heat Exchangers, Tubing, Channel, Line Heater coil														PRN		CRN		RADIOGRAPHY:									
MAWP				kPa		AT				°C		MDMT				°C		AT				kPa		S N:			
CODE/DIV.				PARA.				STAMP				TUBE/TUBE SHEET				TEMA CLASS											
DIA.				mm		LENGTH:				mm		TUBE SIZE				mm		# of Tubes									
SECTION		MATERIAL		NOMINAL THICKNESS		C.A.																					
										mm						mm											
																mm											
																mm											
																mm											
TUBING: PRN														CRN		TEMA CLASS		TYPE		S N:							
MAWP				kPa		AT				°C		TUBE SIZE				mm		GAUGE,BWG				TUBE/TUBE SHEET JT.					
# of Tubes		MATERIAL		NOMINAL THICKNESS		C.A.																					
																mm											
COIL:		PRN		CRN		COIL NAME:		HP, LP, FG, HS																			
MAWP				kPa		AT				°C		TUBE SIZE				mm		S N:									
# of Tubes		MATERIAL		NOMINAL THICKNESS		C.A.																					
																mm											

RAM#	434023	EQUIP STATIC RECORD		JOB#	2636
Unique OUP #: 603VS018		Old OUP #:		LSD: C-032-H/094-H-08	
TANK M/WAY OD FLANGE DIMENSIONS: X mm OR IF M/WAY IS ROUND, DIA. IS: mm					
TK. HEATED: TYPE OF HEAT: TK. SKIDDED or PORTABLE: GAS BLANKET: DOUBLE WALL:					
TK. CONSTRUCTION: TANK DYKED: DYKE MATERIAL: Leak Tag#:					
DYKE LINED: TYPE of LINER: Leak Test Co. Leak Test Date					
DYKE SHAPE: mm Width: mm Height: mm					
DYKE VOLUME: m³ TK. BASE SITTING ON: BETWEEN TK. AND BASE:					
TANKS INSIDE DYKE:					
P&ID #: SHUT DOWN:					
OPERATING PRESSURE: 3200 kPa OPERATING TEMP. -24 °C YEAR PUT IN SERVICE:					
VESSEL CONNECTIONS: NPT FLANGE LARGEST CONNECTION mm INSPECTION PORT: Man Way					
FLANGE ANSI: 300 FLG. FACE: SIZE of INSPECTION PORT: 812.8 mm					
VESSEL ORIENTATION: Horizontal TYPE OF VESSEL SUPPORT: Saddle IS BOTTLE (VB) BLOCKED:					
TRAY(VT): # of TRAYS MAT'L MFG.					
PACKING(VK): EXT. INSULATED: Full or Partially covered?					
INSULATION TYPE: CLADDING:					
TYPE of EXT. INSULATION: EXT. INSULATION THICKNESS: 40.0 mm CUI Susceptible:					
EXT. COATING: Epoxy INTERNAL COATING: INTER. LINING:					
PRESSURE RELIEF DATA					
PSV OUP#		SET PRESSURE	units	CODE: SV, SR, ST, SL or ESD PROTECTS - TANK, SHELL, TUBE (HA or HT), HP coil, LP coil, FG coil, HS coil (heat string coil in line heater), PL, PP, Channel A or B in HP	
603SVVS018		8963	kPa	Shell	
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
			kPa		
ITS PRINT NAME:		Erwin D. Pederson		ITS SIGNATURE: Erwin Pederson	
				DATE: data collected - yyyy-mm-dd 2014-May-05	

EQUIPMENT EXTERNAL INSPECTION REPORT

Customer:	TAQA North	ITS Job No.:	2636
District:	North Area	Date:	23-Mar-2014
Facility:	Chinchaga Gas Plant	LSD:	C-032-H/094-H-08
Equip. Description:	Low Temperature Separator	Serial No.:	1614
Equip./OIP No.:	603VS018	PRN:	Not Stated
Equip. Type: <input type="checkbox"/> Column <input type="checkbox"/> Cooler <input type="checkbox"/> Exchanger <input type="checkbox"/> Furnace <input type="checkbox"/> Heater <input type="checkbox"/> Plate Exchanger <input type="checkbox"/> Reboiler <input checked="" type="checkbox"/> Vessel <input type="checkbox"/> Other:			

Remedial Action	Service	Associated Components	Shell
<input type="checkbox"/> No Action Required	<input checked="" type="checkbox"/> Sweet <input type="checkbox"/> Sour	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N: Name Plate Secure	<input type="checkbox"/> Top <input type="checkbox"/> Bottom
<input type="checkbox"/> Paint/Coating Repairs	Access and Coverage	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N: Name Plate Legible	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Insulation Repairs	<input checked="" type="checkbox"/> External Inspection	External Grounding	<input type="checkbox"/> External Corrosion
<input type="checkbox"/> PSV Service Required	<input type="checkbox"/> Part. External Inspection	<input checked="" type="checkbox"/> Direct <input type="checkbox"/> Indirect <input type="checkbox"/> N	<input type="checkbox"/> Pitting: (max depth)
<input type="checkbox"/> Further Assessment Required	NDE Examination	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA: Ladders/ Handrail/ Walkway/ Grating in safe condition?	<input type="checkbox"/> Scale
<input type="checkbox"/> Condition Damage	<input type="checkbox"/> MT		<input type="checkbox"/> Blistered
<input type="checkbox"/> Does not comply with applicable code/safe operating requirement.	<input type="checkbox"/> UT		<input type="checkbox"/> Mechanical Damage
<input type="checkbox"/> Repairs Required	<input type="checkbox"/> RT	<input checked="" type="checkbox"/> See Attached Pictures	<input type="checkbox"/> Deformation/Distortion
	<input type="checkbox"/> BH	<input type="checkbox"/> Excessive Vibration	<input type="checkbox"/> Condensation/Sweating
<input type="checkbox"/> See Comments	<input type="checkbox"/> PT	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> NA: Pressure Gauge within MAWP	<input checked="" type="checkbox"/> No Access Insulated
	<input type="checkbox"/> Other		<input checked="" type="checkbox"/> No Access Ice Build Up
Status	<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA: Temp. Gauge within MDMT	<input type="checkbox"/> Weld(s) in Good Condition
<input checked="" type="checkbox"/> Operational; <input type="checkbox"/> Idle;		<input checked="" type="checkbox"/> Y <input type="checkbox"/> N Attached Piping and Instrumentation in Good Condition	<input type="checkbox"/> Weld(s) Corroded
<input type="checkbox"/> Shut In;			<input type="checkbox"/> Weld(s) Poor Quality
<input type="checkbox"/> Surplus/Boneyard;		<input type="checkbox"/> See Comments	<input type="checkbox"/> Weld(s) Cracked
<input type="checkbox"/> Other:			<input type="checkbox"/> See Comments

Head (1)	Head (2)	Nozzles
<input type="checkbox"/> Top <input checked="" type="checkbox"/> North <input type="checkbox"/> West	<input type="checkbox"/> Bottom <input checked="" type="checkbox"/> South <input type="checkbox"/> East	<input checked="" type="checkbox"/> RF <input type="checkbox"/> RTJ <input checked="" type="checkbox"/> NPT
<input type="checkbox"/> Flat <input type="checkbox"/> FLG <input checked="" type="checkbox"/> ELL <input type="checkbox"/> ECC <input type="checkbox"/> HEMI	<input type="checkbox"/> Flat <input type="checkbox"/> FLG <input checked="" type="checkbox"/> ELL <input type="checkbox"/> ECC <input type="checkbox"/> HEMI	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Good Condition	<input type="checkbox"/> Good Condition	<input type="checkbox"/> Fasteners Engaged
<input type="checkbox"/> External Corrosion	<input type="checkbox"/> External Corrosion	<input type="checkbox"/> Repad Weep Holes Clear
<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Nozzles are Gusseted
<input type="checkbox"/> Scale	<input type="checkbox"/> Scale	<input type="checkbox"/> External Corrosion
<input type="checkbox"/> Blistered	<input type="checkbox"/> Blistered	<input type="checkbox"/> Leaking/Weeping
<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Damaged/Cracked
<input type="checkbox"/> Deformation/Distortion	<input type="checkbox"/> Deformation/Distortion	<input type="checkbox"/> Bolts Missing/Loose
<input type="checkbox"/> Condensation/Sweating	<input type="checkbox"/> Condensation/Sweating	<input type="checkbox"/> Deflection/Distortion
<input type="checkbox"/> No Access	<input type="checkbox"/> No Access	<input type="checkbox"/> Partial Internal Inspection
<input checked="" type="checkbox"/> No Access Insulated	<input checked="" type="checkbox"/> No Access Insulated	<input checked="" type="checkbox"/> No Access Insulated
<input type="checkbox"/> No Access Ice Build Up	<input checked="" type="checkbox"/> No Access Ice Build Up	<input type="checkbox"/> Weld(s) in Good Condition
<input type="checkbox"/> External Protection Only	<input type="checkbox"/> External Protection Only	<input type="checkbox"/> Weld(s) Corroded
<input type="checkbox"/> See Comments	<input type="checkbox"/> See Comments	<input type="checkbox"/> Weld(s) Poor Quality
		<input type="checkbox"/> Weld(s) Cracked
		<input type="checkbox"/> See Comments

External Surface	Supports	Associated Piping	PRD 1	PRD 2
<input checked="" type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Good Condition	<input checked="" type="checkbox"/> Good Condition	Location: PIPING	Location: Not Applicable
<input type="checkbox"/> Painted <input type="checkbox"/> Full <input type="checkbox"/> Part.	<input checked="" type="checkbox"/> Anchor Bolts Secure	<input type="checkbox"/> Corrosion	PSV Tag No.: 603SVVS018	PSV Tag No.: Not Applicable
<input type="checkbox"/> Coated <input type="checkbox"/> Full <input type="checkbox"/> Part.	<input type="checkbox"/> Welded to Skid	<input type="checkbox"/> Pitting: (max depth)	<input checked="" type="checkbox"/> Service Date within Interval	<input type="checkbox"/> Service Date within Interval
<input checked="" type="checkbox"/> Insulated <input checked="" type="checkbox"/> Full <input type="checkbox"/> Part.	<input type="checkbox"/> Supported by Nozzle(s)	<input type="checkbox"/> Bolts Missing/ Loose/ Damaged	<input checked="" type="checkbox"/> Set Pressure within MAWP	<input type="checkbox"/> Set Pressure within MAWP
<input type="checkbox"/> Insulation Damaged	<input type="checkbox"/> Piping Supported	<input type="checkbox"/> Short Threaded	<input checked="" type="checkbox"/> Safety Seal Intact	<input type="checkbox"/> Safety Seal Intact
<input type="checkbox"/> Penetration Seals Broken	<input type="checkbox"/> Expansion Slots	<input type="checkbox"/> Valves leaking	<input checked="" type="checkbox"/> Service Seal Intact	<input type="checkbox"/> Service Seal Intact
<input type="checkbox"/> Corrosion Under Insulation (CUI)	<input type="checkbox"/> Bolts Missing/ Loose/ Damaged	<input type="checkbox"/> Connections Leaking	<input checked="" type="checkbox"/> Current Service Tag Attached	<input type="checkbox"/> Current Service Tag Attached
<input type="checkbox"/> Visible Moisture Contamination	<input type="checkbox"/> Short Threaded	<input checked="" type="checkbox"/> Piping and Valves Supported	<input type="checkbox"/> PSV inlet Gusseted	<input type="checkbox"/> PSV inlet Gusseted
<input type="checkbox"/> Paint Deterioration	<input type="checkbox"/> Deflected/Distorted	<input type="checkbox"/> Piping Deflected/ Distorted	<input type="checkbox"/> Inlet Block Valve	<input type="checkbox"/> Inlet Block Valve
<input type="checkbox"/> Coating Deterioration	<input type="checkbox"/> Poor Insulation		Locked Open <input type="checkbox"/> Y <input type="checkbox"/> N	Locked Open <input type="checkbox"/> Y <input type="checkbox"/> N
<input type="checkbox"/> Fireproofing Cracked	<input type="checkbox"/> Fire Proofing Cracked	<input checked="" type="checkbox"/> No Access Insulated	Sealed Open <input type="checkbox"/> Y <input type="checkbox"/> N	Sealed Open <input type="checkbox"/> Y <input type="checkbox"/> N
<input type="checkbox"/> External Protection Only	<input checked="" type="checkbox"/> Vessel is level	<input type="checkbox"/> See Comments	<input type="checkbox"/> Outlet Block Valve	<input type="checkbox"/> Outlet Block Valve
<input type="checkbox"/> See Comments	<input type="checkbox"/> See Comments		Locked Open <input type="checkbox"/> Y <input type="checkbox"/> N	Locked Open <input type="checkbox"/> Y <input type="checkbox"/> N
			Sealed Open <input type="checkbox"/> Y <input type="checkbox"/> N	Sealed Open <input type="checkbox"/> Y <input type="checkbox"/> N
			<input type="checkbox"/> See Comments	<input type="checkbox"/> See Comments

Observations:	
<input checked="" type="checkbox"/> Vessel in Good Condition	<input type="checkbox"/> Based on API 510 Visual External Inspection this vessel is fit for service

- Partial ut done as vessel has ice build-up.
- Manway davit arm is only single nutted.

Recommendations:

- Do ut at next turnaround.
- Double nut manway davit arm.

Non-Conformance Conditions and Corrective Actions:

Note: Reference any and all Non-Conformance Report (NCR) numbers and Corrective Action Report (CAR) numbers.

- None.

Recommended Inspection Intervals:

Recommended Maximum Inspection Interval:	60 Months	PRD 1 Recommended Service Interval:	40 Months	PRD 2 Not Applicable	Months
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Pictures:



Photo 1: TEMPERATURE GAUGE

External Inspection Performed By:

Print Name:

Erwin D. Pederson

Certification No.:

ABSA IPV PESL:
000406
API 510: 33075
API 570: 28183
PEI Class 2: 154

Signature:

Erwin Pederson

Report Reviewed:

[Signature]
Initial

Chief Inspector /
Client
Representative:

Name (Print)

Signature

Date:



Facility:	Chinchaga C-32-H/94-H-8		PRN:	PV69P8814 (BC)	Date of Inspection:	09-June-2017	
Equipment Type:	Low Temperature Separator			Field Tag #:	603VS018		
Service:	<input type="checkbox"/> Sour <input checked="" type="checkbox"/> Sweet <input checked="" type="checkbox"/> Cryogenic <input type="checkbox"/> Air <input type="checkbox"/> Steam			MAWP:	1300PSI @ 150F		
Fluid:	LNG			Manway	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Size of Manway	
Scope of Inspection:		Type of Inspection:		Cleaning:		Access:	
<input type="checkbox"/> Pre-commissioning		<input type="checkbox"/> AE	<input type="checkbox"/> MT	<input type="checkbox"/> RT	<input type="checkbox"/> Good		<input checked="" type="checkbox"/> Full
<input type="checkbox"/> Initial		<input type="checkbox"/> ET	<input type="checkbox"/> MFL	<input type="checkbox"/> UT	<input checked="" type="checkbox"/> Fair		<input type="checkbox"/> Partial
<input checked="" type="checkbox"/> Re-inspection		<input type="checkbox"/> LT	<input type="checkbox"/> PT	<input checked="" type="checkbox"/> VT	<input type="checkbox"/> Inadequate		<input type="checkbox"/> External
		<input type="checkbox"/> HT	<input type="checkbox"/> Other				
Note: Add pages and sketches as needed							
Observations:		<input checked="" type="checkbox"/> External		<input checked="" type="checkbox"/> Internal			
Internal:							
<ul style="list-style-type: none"> Minor pit observed roughly 36" from manway facing north@ 7 o'clock position. Pit #1, 0.5 mm measure depth, 5 mm wide. Pit #2 measured 0.5 mm deep, 13mm length, 7 mm wide. Manufacturing marks on the vessel shell in cluster. Measured depth 0.050"x1 1/4" long x 3/16" wide. Previous inspectors' markings still on vessel. No new growth detected compared to previous inspection. Pi#3 measured 0.5 mm deep, 6 mm length, 5 mm wide. Boot and coil appeared in visibly good condition without pitting. Boot bottom was not fully cleaned and unable to reach to scrap for proper inspection. Demister pad and diverter in good condition. Positioned properly and in clean condition. Pit#4 found on far side of demister pad from manway. Measured depth was 0.040"x 1/8" wide x 1 1/2" length. Previous inspectors' marks still on vessel shell. No new growth detected. Vessel shell appeared in good overall condition. Tide line exists but did not appear pitted or structurally changed from the remainder of the vessel shell. 							
External:							
<ul style="list-style-type: none"> Vessel is externally clad. All external welds appeared in good condition without cracking. 							
Recommendations:							
<ul style="list-style-type: none"> Continue to track pitting for growth in future inspections. 							
Suitable for further service:		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Remedial Action Priority Level:		<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low		
Inspection Performed By:		Darren Isaac		Click here to enter text.	Date of Report:	09-June-2017	
Signature:		William Rettman for Darren					
Follow Up Inspection Required:		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	By Date:	DD-Mon-YYYY			



Pictures:



Figure 1 OIP and Name Plate



Figure 2 Manway



Figure 3 Manway Cover



Figure 4 Vessel Internal Overview



Figure 5 Down comer Near Manway



Figure 6 Pit #1

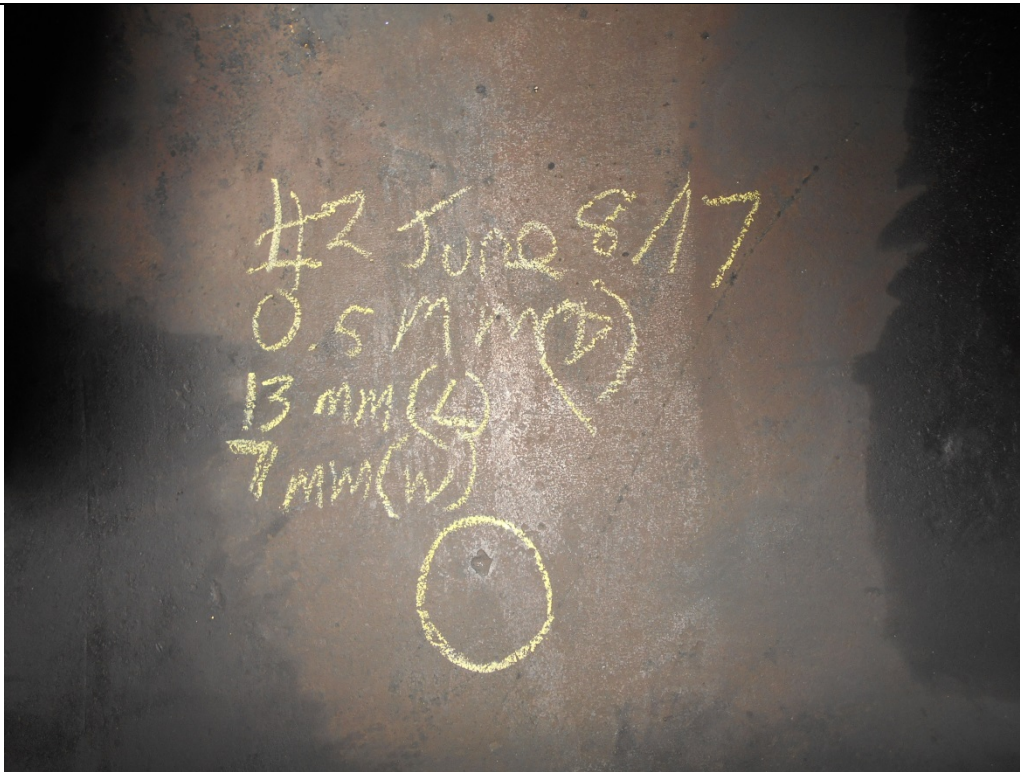


Figure 7 Pit #2



Figure 8 Pit #3



Figure 9 Pit #3 Shell Location



Figure 10 Boot and Coil



Figure 11 Demister Pad

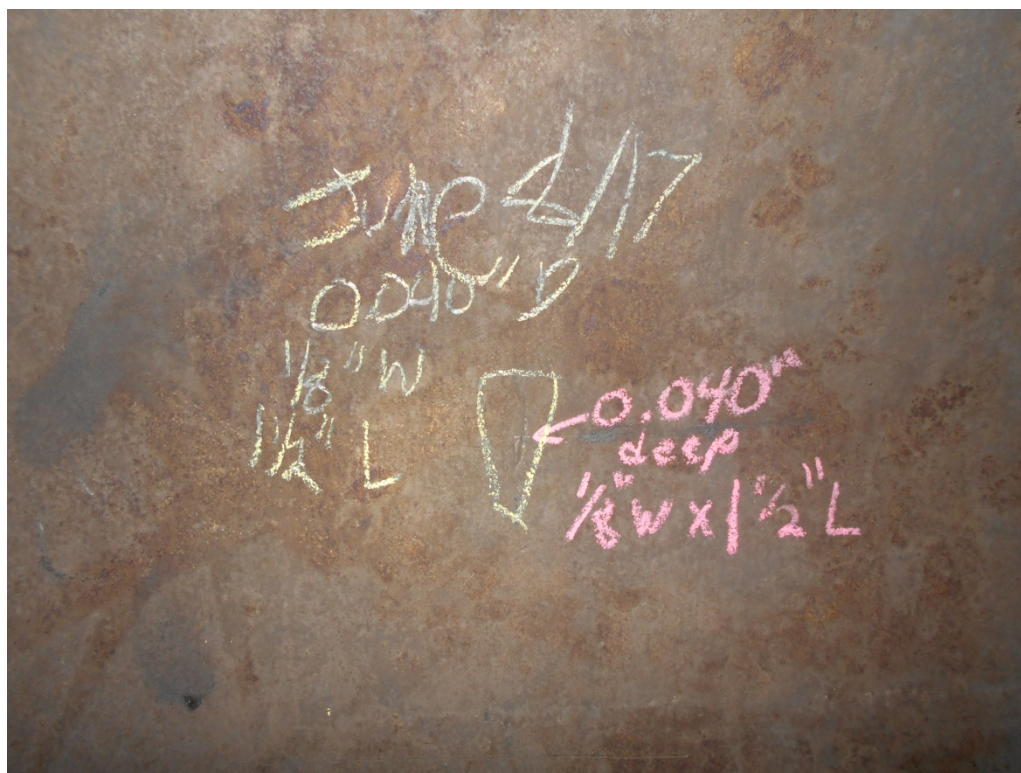


Figure 12 Pit #4



Figure 13 Shell and Tide Line