

E-310

GAS CHILLER

Quality Control Documentation



MANUFACTURED AND CERTIFIED BY
THERMO DESIGN
ENGINEERING LTD.

EDMONTON ALBERTA CANADA

UNIT NAME

TAG NUMBER

GAS CHILLER 1-310

CR. NUMBER

SERIAL NUMBER

Ⓐ NUMBER

N-99622 1622

M.A.W.P.

AT TEMP.

M.D.M.T.

AT PRESSURE

200 150 49 200

YEAR BUILT

CORR. ALL.

DRAWING NUMBER

1998 6.0625 IN 9998-0850-209

DIAMETER

LENGTH

CAPACITY

WEIGHT

24/42 INCL 30-01012 293 GWT 21700 LB

SHELL MATL.

HEAD MATL.

TECHT. MATL.

COIL MATL.

SA-110-70N SA-350-110 SA-350-110 SA-170

SHELL THK.

HEAD MIN. THK.


TBSHT. THK.

COIL THK.

0.375 IN 0.375 IN 0.375 IN 0.4 IN

Ken Can you please
stamp these first

CTC

W RT-2		MANUFACTURED AND CERTIFIED BY			
		 THERMO DESIGN ENGINEERING LTD.			
		EDMONTON		ALBERTA	CANADA
UNIT NAME			TAG NUMBER		
GAS CHILLER			E-310		
CR. NUMBER	SERIAL NUMBER	A NUMBER			
N-9968.21	#1622				
M.A.W.P.	AT TEMP.	M.D.M.T.	AT PRESSURE		
SS - 260 PSIG TS - 1300 PSIG	150°F	-49°F	SS - 260 PSIG TS - 1300 PSIG		
YEAR BUILT	CORR. ALL	DRAWING NUMBER			
1998	0.0625 IN	9097-0850-209			
DIAMETER	LENGTH	CAPACITY	WEIGHT		
24/42 IN OD	30'-0" TS/TS	293 CU FT	21,700 LBS		
SHELL MATL.	HEAD MATL.	TBSHT. MATL.	COIL MATL.		
SA-516-70N	SA-350-LF2 SA-350-LF2	SA-516-70N SA-516-70N	SA-179		
SHELL THK.	HEAD MIN. THK.	TBSHT. THK.	COIL THK.		
0.375 IN 0.500 IN	600# BLD FLG 600# BLD FLG	2.375 IN 2.375 IN	14 BWG		



TO: THERMO DESIGN ENGINEERING LTD

BOX 5557 STATION L
EDMONTON ALTA
T6C 4E9

Account # 19971

Date: 98/03/25

Journal # 18826

Attn: JASON HARGREAVES

Re: THERMO DESIGN ENGINEERING LTD

DESIGN REGISTRATION

C.R.N.

N9968-21

Drawings / Documents	Description		
GAS CHILLER 9097-0850-209 SHT 1&2 R1 REGISTERED		MDMT	MAWT
		-----	-----
	Shellside	-49 F	150 F
	Tubeside	-49 F	150 F
			MAWP

			260 psi
			1300 psi
	Note: Heat transfer area = 2540 sq. ft.		
	Code of Compliance: ASME Sec VIII Div 1, 95 Ed., A96.		

Remarks: This design has been registered as noted above. An invoice for survey will follow in the amount of \$ 446.00

CRN issued in accordance with the ACI Policies on Reciprocal Recognition of Design Review for Registration. ALberta issued CRN N9968.2 on March 17, 1998.

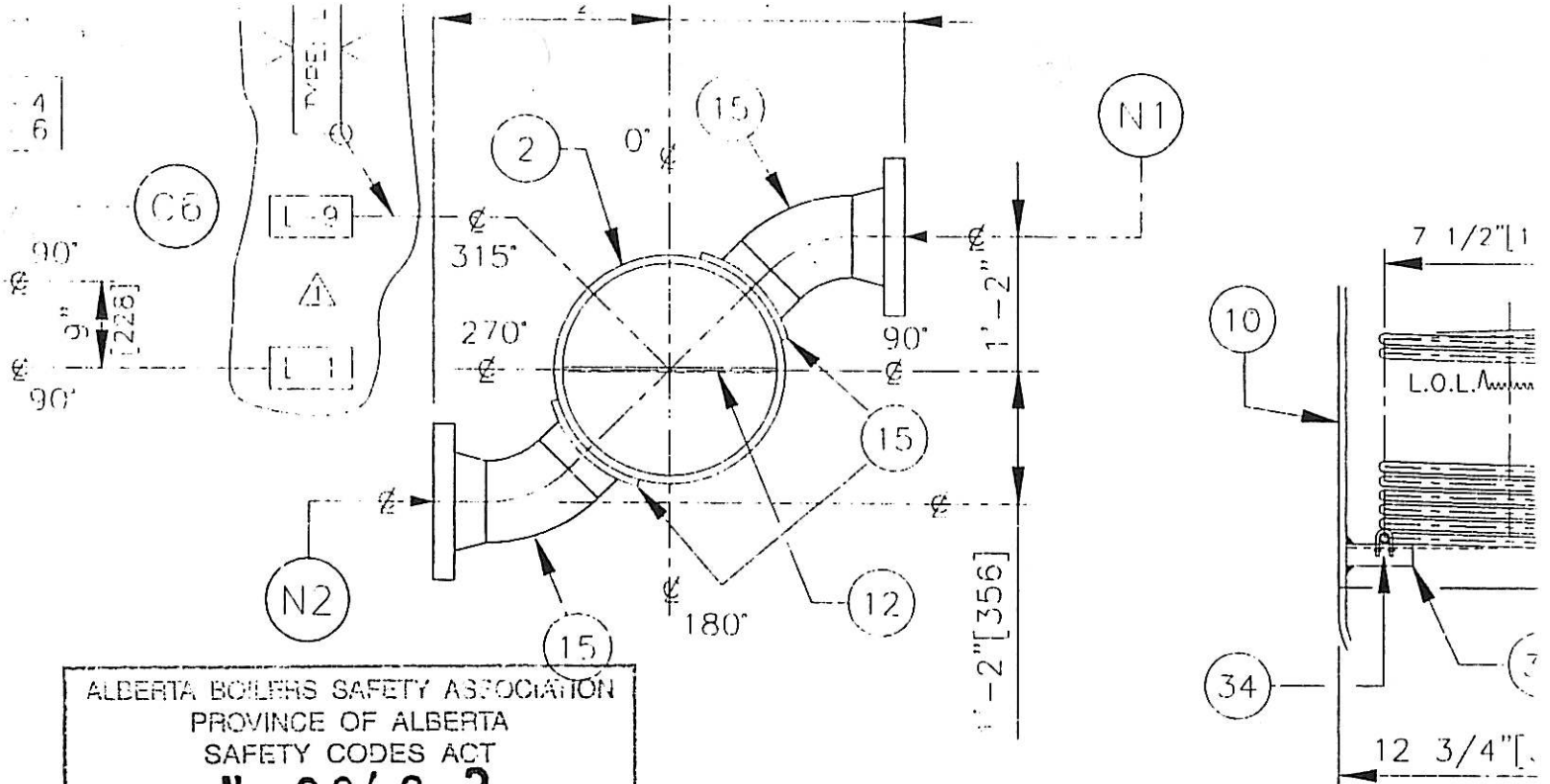
cb
Encl:
cc:

Yours truly,

R. TUAZON

Design Surveyor

Ministry of
Municipal Affairs
and HousingBoiler and Elevator
Safety Branch3rd Floor
750 Pacific Boulevard South - Unit 300
Vancouver BC V6B 5E7Telephone: (604) 680-6264
Facsimile: (604) 775-2345



ALBERTA BOILERS SAFETY ASSOCIATION
 PROVINCE OF ALBERTA
 SAFETY CODES ACT

REG. No. **N-9968.2**

DWG. No. **9097-0850-209 Rev. 1 St. 122**

	Design Press kPa	Design Temp. °C
SHELL SIDE	1792	-45/66
Tube side	8963	-45/66

ACCEPTED

MAR 17 1998

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

BC

* -- METHOD OF ATTACHMENT PER U

NOZZLE SCHEDULE

MARK	SIZE	QTY	TYPE	RATING	SCH	*	PROJ	MAT'L ITEM#	SERVICE
M1 A	24" [610]	2	RFWN	600#	22" I.D.	---	SHOWN	4,5,9,44,45	INSPECTION c/w DA
N1	8" [200]	1	RFWN	600#	XHY	C-1	SHOWN	13,14,15,19	GAS INLET
N2	3" [200]	1	RFWN	600#	XHY	C-1	SHOWN	13,14,15,19	GAS OUTLET
N3	6" [150]	1	RFWN	150#	80	C-1	8" [203]	16,17,20	REFRIGERANT IN
N4 A B	6" [150]	2	RFWN	150#	80	C-1	8" [203]	16,17,20	VAPOUR OUTLET
N5	1 1/2" [40]	1	RFWN	150#	160	C	SHOWN	35,36,37	DRAIN
N6 A B	1 1/2" [40]	2	RFWN	150#	160	C	SHOWN	35,36,37	LC-3100
C1 A B	3/4" [20]	2	LONG CPLG	6000#		C		32,38,39 (FOR C1B)	FUTURE LG c/w
C2	1/2" [15]	1	LONG CPLG	6000#		C		23	PI-3102
C3 A B	3/4" [20]	2	LONG CPLG	6000#		C		38	LG-3101
C4	3/4" [20]	1	LONG CPLG	6000#		C		38	TI-3100
C5	3/4" [20]	1	LONG CPLG	6000#		C		32,38	T.S. DRAIN c/w
C6	1" [25]	1	CPLG	6000#		A		22	EG INJECTION
C7 A B	1/2" [15]	2	LONG CPLG	6000#		C		23	BOOT COIL

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

PG.20F2.

[illegible]

THERMO DESIGN ENGINEERING LTD.

TRAVEL SHEET

REV.3 APR.15/97
BY: D.C.S.

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

(A) NUMBER

LH 97-12-5

VESSEL TITLE
24"ODX42"ODX30'-0"TS/TS
GAG CHILLER

SERIAL NUMBER
#1622

TAG NO.
E-310

A.I.
HOLD
POINTS

C.R. NUMBER

JOB CODE

CTC.

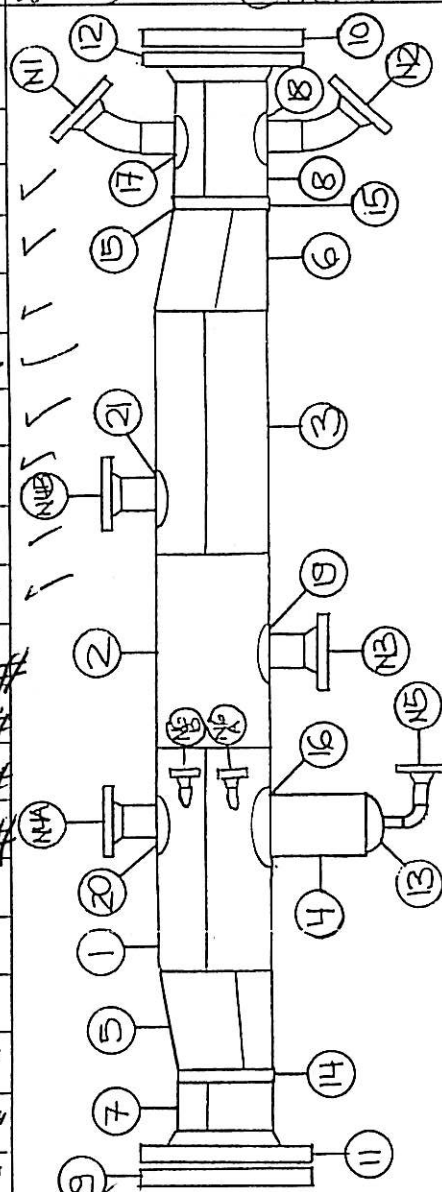
	DATE	FUNCTION COMPLETED	AND INSPECTORS INITIALS
1.	7-10-68	RECEIVED	WJH
2.	7-10-68	RECEIVED	WJH
3.	7-10-68	RECEIVED	WJH
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97.	7-10-68	RECEIVED	WJH
98.	7-10-68	RECEIVED	WJH
99.	7-10-68	RECEIVED	WJH</

AUTHORIZED
INSPECTOR

NO.	FUNCTION	COMMENTS
1	APPROVED DRAWINGS	
2	MAT. CHECKED AGAINST DWG.	
3	MILL TEST CHECKED	
4	IMPACT TESTS	
5	VESSEL LAYOUT	
6	FIT UP	SHELL & HEADS
7		NOZZL'S & FITTINGS
8	INTERNAL INSPECTION	
9	WELD SIZE	
10	WELDERS I.D.	
11	RADIOGRAPHS	LS: FOLL CS: SPOT
12	OTHER N.D.E.	
13	RELEASE FOR P.W.H.T.	NONE
14	P.W.H.T. CHART CHECKED	
15	EXTERNAL INSPECTION	
16	HYDROSTATIC TEST	SS: 380 PSIG R# 88-1-36 TS: 1950 PSIG.
17	HYDRO GAUGES	TH-101, TH-102.
18	DATA REPORT	
19	NAME PLATES	

RT-PROGRESS

PART	SPECIFICATION	HEAT NO.	THK.
SHELLS	1 ✓ SA 516-70N	24692-051892-1	0.375"
	2 ✓ SA 516-70N	24692-051883-1	0.375"
	3 ✓ SA 516-70N	24692-051892-1	0.375"
	4 ✓ SA 333-6	J738268	12" SCH 40X
CONES	5 ✓ SA 516-70N	S70528-505430	0.500"
	6 ✓ SA 516-70N	40591K-75664	0.500"
CHANNELS	7 ✓ SA 516-70N	42275-047813-1	1.000"
	8 ✓ SA 516-70N	42275-047813-1	1.000"
DRIFTS	9 ✓ SA 350LF2	BLIND	24" 600#
	10 ✓ SA 350LF2	BLIND	24" 600#
FLANGES	11 ✓ SA 350LF2	R.F.W.N	24" 600#
	12 ✓ SA 350LF2	R.F.W.N	24" 600#
HEAD	13 ✓ SA 420 WPL6	WELD CAP	12" SCH 40
T-SHEETS	14 ✓ SA 516-70N	60325-38041	2.375"
	15 ✓ SA 516-70N	50799-36568	2.375"
REDUCES	16 ✓ SA 516-70N	8950K-27649	0.500"
	17 ✓ SA 516-70N	97515-47755	1.000"
	18 ✓ SA 516-70N	97515-47755	1.000"
	19 ✓ SA 516-70N	24695-051797-1	0.375"
	20 ✓ SA 516-70N	24695-051797-1	0.375"
	21 ✓ SA 516-70N	24695-051797-1	0.375"
NOZZLES	22 ✓ SA 333-6	738229	8" SCH 40X



N2	SA 333-6	738229.	6" ^{SC} XHY
N3	SA 333-6	9892C	6" ^{SC} XHY
N4A	SA 333-6	9892C	6" ^{SC} XHY
N4B	SA 333-6	9892C.	6" ^{SC} XHY



TAQA NORTH DATA					
EQUIP NO.: 603HT003		RAMS ID TAG NO.: NEW		PRN: N/A	
CATEGORY:		PLANT/FIELD: CHINCHAGA GAS PLANT		LSD: C-032-H / 094-H-08	
LOCATION: GAS PLANT		EQUIP. NAME : GAS/ GAS HEAT EXCHANGERS		CLASS : HT	
TYPE: EXCHANGERS		SERVICE: <input checked="" type="checkbox"/> Sweet <input type="checkbox"/> Sour		H2S: N/A PPM	
FLUID: GLYCOL		S/D REQT.: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial		OPERATING PRESSURE: 180 <input checked="" type="checkbox"/> kPa <input type="checkbox"/> PSI	
OPERATING TEMPERATURE: -8 <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:					

MANUFACTURING DATA					
MFG.: THERMO DESIGN		DWG. NO.: 9097-0850-209		SERIAL NO.: 1622	
YR. BUILT: 1998		STAMP: U,W		CRN: N9968.21	
CODE/DIV.: ASME VIII DIV 1		PARA.: N/A		SUPPORT: <input type="checkbox"/> Skirt <input checked="" type="checkbox"/> Saddles <input type="checkbox"/> Nozzles <input type="checkbox"/> N/A	
MAWP: 1793 <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: 293 <input type="checkbox"/> M³ <input checked="" type="checkbox"/> FT³		FLANGE RATING: 150#		PWHT: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
RADIOGRAPHY: <input type="checkbox"/> RT1 <input checked="" 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 : 610 /1067 <input checked="" type="checkbox"/> mm. <input type="checkbox"/> inch. <input type="checkbox"/> ID <input checked="" type="checkbox"/> OD		LENGTH: 91474 <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	9.5 MM	1.6 MM		
HEAD	SA-350-LF2	9.5 MM	1.6 MM		
CHANNEL	SA-516-70N	12.7 MM	1.6 MM		
COMMENTS:					

TUBING DATA					
MAWP: 8963 <input checked="" type="checkbox"/> kPa <input type="checkbox"/> PSI		@ TEMP: 66 <input checked="" type="checkbox"/> °C <input type="checkbox"/> °F		TEMA CLASS: N/A	
TYPE: A-179		TUBE SIZE: 152 mm. <input type="checkbox"/> ID <input checked="" type="checkbox"/> OD		NUMBER (QTY OF TUBES): N/A	
GAUGE (BWG): 14		JOINT: <input checked="" type="checkbox"/> Welded <input type="checkbox"/> Rolled			
SECTION	MATERIAL	NOMINAL mm	C.A. mm		
COIL	SA-179	N/A	N/A		
N/A	N/A	N/A	N/A		
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:	STAINLESS STEEL	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	CAP UNITS/OTHER	
603SVVS018 (CHANNEL)	N/A	8963 <input checked="" type="checkbox"/> kPa <input type="checkbox"/> PSI	3408	<input checked="" type="checkbox"/> SCFM <input type="checkbox"/> LB/hr. <input type="checkbox"/> GAL/min.	
603SVVS010 (SHELL)	N/A	1793 <input checked="" type="checkbox"/> kPa <input type="checkbox"/> PSI	14992	<input checked="" type="checkbox"/> SCFM <input type="checkbox"/> LB/hr. <input type="checkbox"/> GAL/min.	
N/A	N/A	N/A <input type="checkbox"/> kPa <input type="checkbox"/> PSI	N/A	<input type="checkbox"/> SCFM <input type="checkbox"/> LB/hr. <input type="checkbox"/> GAL/min.	

FORM U-1 M. MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

CTC, PG. 1 OF 3

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 Chiller #1622 N-9968.21 9097-0850-209 Rev.1 1998
(Horiz., vert., or sphere) (Tank separator, jkt. vessel, heat exh., etc.) (Mfg's serial No.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)

5. ASME Code, Section VIII, Div. 1 Edition 1995, Addenda 1996
(Edition and Addenda (date)) (Code Case No.) (Special Service per UG-120(d))

Items 6 - 11 Incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multi-chamber vessels.

6. Shell (a) No. of course(s): 5 (b) Overall length (ft & in.): 30'-0" TS/TS

Course(s)			Material		Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1-3	41.25"ID	8'-0"	SA-516-70N		0.375"	0.0625"	DbI"V"	Full	100	DbI"V"	CS:Spot	100	N/A	N/A
4	41"23"ID	2'-9 5/8"	SA-516-70N		0.500"	0.0625"	DbI"V"	Full	100	DbI"V"	CS:Spot	100	N/A	N/A
5	41"23"ID	2'-9 5/8"	SA-516-70N		0.500"	0.0625"	DbI"V"	Full	100	DbI"V"	CS:Spot	100	N/A	N/A

7. Heads: (a) N/A N/A (b) N/A N/A
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)														
(b)														

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

8. Type of jacket N/A Jacket closure N/A
(Describe as ogee & weld, bar, etc.)
If bolted, describe or sketch.

9. MAWP 260 N/A psi at max. temp. 150 N/A ° F Min. design metal temp. -49 ° F at 260 psi.
(internal) (external) (internal) (external)

10. Impact test Yes, Shell, As Per UG-84
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press 390 PSIG Proof test Hydrotest

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SA-516-70N (2 Pieces) 23.00/22.00" 2.375" 0.0625" Welded
(Stationary (Mat'l Spec. No.)) (Dia., in (subject to press.)) (Nom. thk., in.) (Corr. Allow., in.) (Attachment (welded or bolted))
N/A N/A N/A N/A N/A
(Floating (Mat'l Spec. No.)) (Dia., in.) (Nom. thk., in.) (Corr. Allow., in.) (Attachment)

13. Tubes: SA-179 0.750" 14 BWG 432 Straight
(Mat'l Spec. No., Grade or Type) (O. D., in.) (Nom. thk., in. or gauge) (Number) (Type (Straight or U))

Items 14 - 18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s): 2 (b) Overall length (ft & in.): 1'4"2'4.5"TS/F

Course(s)			Material		Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter, in.	Length (ft. & in.)	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	22.00"ID	7 3/4"	SA-516-70N		1.00"	0.0625"	DbI"V"	Full	100	Sgl"V"	CS:Spot	100	N/A	N/A
2	22.00"ID	1'-8 1/2"	SA-516-70N		1.00"	0.0625"	DbI"V"	Full	100	Sgl"V"	CS:Spot	100	N/A	N/A

15. Heads: (a) SA-350-LF2 N/A (b) SA-350-LF2 N/A
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	End					24" Dia.-	600#	Bld. Flg.						
(b)	End					24" Dia.-	600#	Bld. Flg.						

If removable, bolts used (describe other fastening) Each End: SA-320-L7, 1 7/8" Diameter, (24)
(Mat'l Spec. No., Grade, Size, No.)

MAWP 1300 N/A psi at max temp. 150 N/A ° F Min. design temp. -49 ° F at 1300 psi.
(internal) (external) (internal) (external)

Impact test Yes, Channels, Tubesheets and Plate, As Per UG-84
(Indicate yes or no and the component(s) impact tested)

Hydro., pneu., or comb. test pressure 1950 PSIG Proof test Hydrotest

No. inspection, and safety valve openings:

Purp. (inlet, outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
N1	1	8"	RFWN	SA-333-6	SA-350-LF2	0.500"	0.0625"	SA-516-70N	UW-16.1(c)	Welded	Channel
N2	1	8"	RFWN	SA-333-6	SA-350-LF2	0.500"	0.0625"	SA-516-70N	UW-16.1(c)	Welded	Channel
N3	1	6"	RFWN	SA-333-6	SA-350-LF2	0.432"	0.0625"	SA-516-70N	UW-16.1(c)	Welded	Shell
N4A/B	2	6"	RFWN	SA-333-6	SA-350-LF2	0.432"	0.0625"	SA-516-70N	UW-16.1(c)	Welded	Shell
N5	1	1 1/2"	RFWN	SA-333-6	SA-350-LF2	0.281"	0.0625"	N/A	UW-16.1(c)	Welded	Boot Head
N6A/B	2	1 1/2"	RFWN	SA-333-6	SA-350-LF2	0.281"	0.0625"	N/A	UW-16.1(c)	Welded	Shell

Supports: Skirt No Lugs Legs Others Saddles Attached Welded
(Yes or No.) (No.) (No.) (Describe) (Where and How)

Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:
(List the name of part, item number, mfg's. name and identifying number)

Remarks: 24"OD x 42"OD x 30'-0" TS/TS, Gas Chiller "E-310"
Capacity: 293 Cu Ft
Heating Surface: 2540.2 Sq Ft
SV: On Piping 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 98-03-26 Name THERMO DESIGN ENGINEERING LTD. Signed Bill Harris
(Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

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 of in Edmonton have inspected the pressure vessel described in this Manufacturer's Data Report on March 27, 19 98, 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 98-3-27 Signed R. Hajos Commissions 39R
(Authorized Inspector) (Nat'l Board incl. endorsement, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1.

U Certificate of Authorization No. Expires , 19
Date Name Signed
(Assembler) (Representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of and employed by of have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items, not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of psi. 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 Signed Commissions
(Authorized Inspector) (Nat'l Board incl. endorsement, State, Province and No.)

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

(Horiz., vert., or sphere)

Chiller

(Tank separator, heat exch., etc)

#1622

(Mfg's serial No.)

N-9968.21

(CRN)

9097-0850-209 Rev.1

(Drawing No.)

1998

(Year built)

Data Report
Item Number

Remarks

C1A	1	3/4"	LgCplg	SA-350-LF2	N/A	6000#	0.0625"	N/A	UW-16.1(a)	N/A	Boot Cap
C1B	1	3/4"	LgCplg	SA-350-LF2	N/A	6000#	0.0625"	N/A	UW-16.1(a)	N/A	Shell
C2	1	1/2"	LgCplg	SA-350-LF2	N/A	6000#	0.0625"	N/A	UW-16.1(c)	N/A	Shell
C3A	1	3/4"	LgCplg	SA-350-LF2	N/A	6000#	0.0625"	N/A	UW-16.1(a)	N/A	Shell
C3B	1	3/4"	LgCplg	SA-350-LF2	N/A	6000#	0.0625"	N/A	UW-16.1(a)	N/A	Shell
C4	1	3/4"	LgCplg	SA-350-LF2	N/A	6000#	0.0625"	N/A	UW-16.1(a)	N/A	Shell
C5	1	3/4"	LgCplg	SA-350-LF2	N/A	6000#	0.0625"	N/A	UW-16.1(a)	N/A	Channel
C6	1	1"	Cplg	SA-350-LF2	N/A	6000#	0.0625"	N/A	UW-16.1(a)	N/A	Bld Flg
C7A	1	1/2"	LgCplg	SA-350-LF2	N/A	6000#	0.0625"	N/A	UW-16.1(c)	N/A	Boot Shell
C7B	1	1/2"	LgCplg	SA-350-LF2	N/A	6000#	0.0625"	N/A	UW-16.1(c)	N/A	Boot Shell

12 - Remarks

Boot:

Shell: No. of Courses: 1

Overall Length: 1'-3" S/S

11.75" ID, SA-333-6, 0.500" Thk., 0.0625" Corr. All., Sml's Pipe, CS:Sgl "V",

CSRT:Spot, 100%Eff., PWHT:N/A

Head: SA-420-WPL6, 0.438" Min. Thk., Concave, CS:Sgl "V", CSRT:Spot, 100%Eff.

Registered Drawing No.: 9097-0850-209, Sht 1&2, Rev.1

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

Date 98.03.26 Name THERMO DESIGN ENGINEERING LTD.

(Manufacturer)

Signed *Bill Mac*

(Representative)

Date 98-3-27 Name *R. H. J. J.*

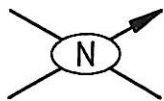
(Authorized Inspector)

Commission 39A

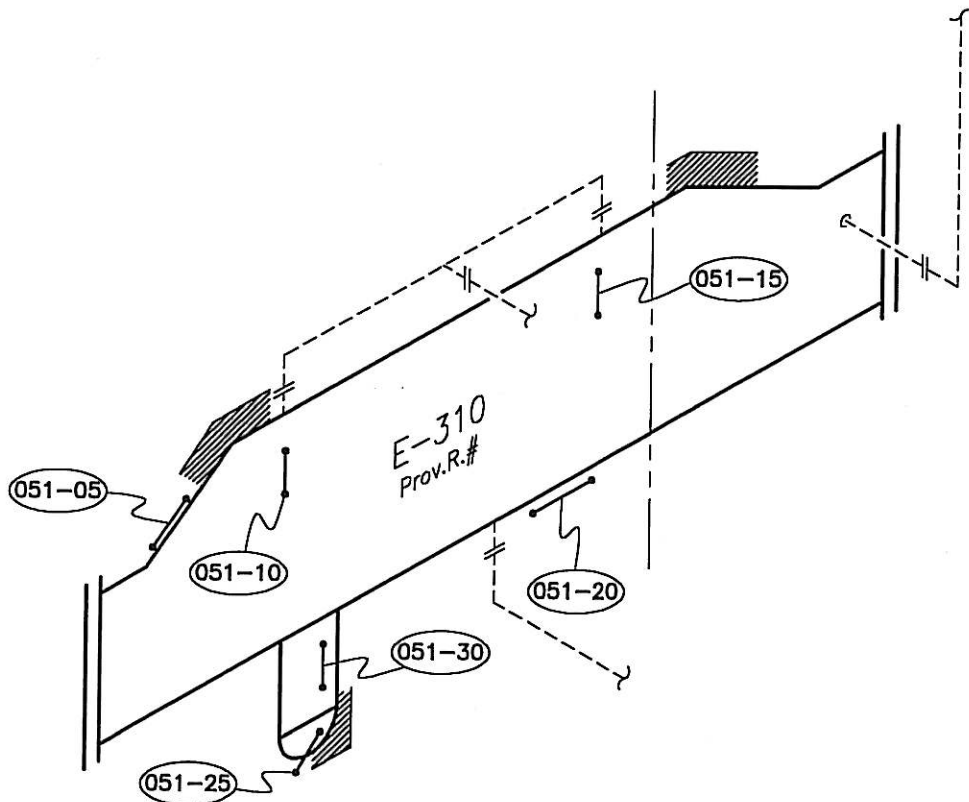
(Nat'l Board (incl. endorsements) State, Province and No.)



TESTING INC.



P&ID. # _____
REF. # _____



VESSEL DATA

P.E. No. E-310 Serial No. 1622 Prov. Reg. No. A C.R.N. 19968.21
MFR. THERMO DESIGN Code/Div. _____ Para _____ Code Stamp U
Yr. Bld. 1998 Yr. Inst. _____ Size 24/42" x 30' Service _____ PWHT _____
RT RT-2 Insulated YES

Nominal Thickness & Material

Head: 600# FLG. Mat'l: SA 350L F2 C.A. .0625" (1.6mm) Reason _____
Head: _____ Reason _____

Shell: .375" / 9.5mm SA 516 70N .0625" (1.6mm)

Shell: .500" (12.7mm)

Chan Hd: _____

Chan Sh: 12.7mm SA 333-8

Boot Hd: 12.7mm SA 429 WB

Boot Sh: _____

MAWP Shell Side 260PSI @ Temp. -49/150°F

MAWP Tube Side 1300PSI @ Temp. -49/150°F

COMMENTS: POINT 051-35 NOT ON FIELD DRAWING

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

GAS CHILLER

TECH.: J.O.	REV. DATE:	DWG DATE: 99/08
CAD: WO	REVISION:	DRAWING: 051

PIONEER NATURAL RESOURCES CANADA INC.
CHINCHAGA GAS PLANT

RIVEST TESTING INC.

Item Desc.: C-32-H/94-H-8 / GAS CHILLER

Equip. No.: E-310

Ser. No.: 1622

Prov. Reg.: N/A

Pt.Desc.: UPPER TRANS.SHELL

Point No.: **051-05**

Nominal: 12.700

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: 11.100

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	13.400	____.____
	2	13.300	____.____
	3	13.400	____.____
	4	13.500	____.____
	5	13.400	____.____
	6	13.500	____.____

Data Evaluation

Lowest Reading : 13.300

Average - Low 3 : 13.367

Thk.Remaining Above Min. : 2.200

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :

Pt.Desc.: UPPER N.SHELL

Point No.: **051-10**

Nominal: 9.500

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: 7.900

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	10.100	____.____
	2	9.900	____.____
	3	10.100	____.____
	4	9.900	____.____
	5	10.000	____.____
	6	10.000	____.____

Data Evaluation

Lowest Reading : 9.900

Average - Low 3 : 9.933

Thk.Remaining Above Min. : 2.000

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 / GAS CHILLER

Equip. No.: E-310

Ser. No.: 1622

Prov. Reg.: N/A

Pt.Desc.: UPPER S.SHELL

Point No.: **051-15**

Nominal: 9.500 Mths. Rem. To Min. Nom:

Corr. Allowance: 1.600 Min. Cal. Wall Thk.:

Min. Nominal: 7.900

Good For Continued Service: YES

Additional Assessment Of Data: YES

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	10.000	____.____
	2	10.200	____.____
	3	10.000	____.____
	4	10.100	____.____
	5	10.000	____.____
	6	9.900	____.____

Data Evaluation

Lowest Reading : 9.900

Average - Low 3 : 9.967

Thk.Remaining Above Min. : 2.000

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :

Pt.Desc.: CTR.BTM.SHELL

Point No.: **051-20**

Nominal: 9.500 Mths. Rem. To Min. Nom:

Corr. Allowance: 1.600 Min. Cal. Wall Thk.:

Min. Nominal: 7.900

Good For Continued Service: YES

Additional Assessment Of Data: YES

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	10.000	____.____
	2	9.700	____.____
	3	9.500	____.____
	4	9.500	____.____
	5	9.500	____.____
	6	9.500	____.____

Data Evaluation

Lowest Reading : 9.500

Average - Low 3 : 9.500

Thk.Remaining Above Min. : 1.600

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 / GAS CHILLER

Equip. No.: E-310

Ser. No.: 1622

Prov. Reg.: N/A

Pt.Desc.: BOOT SHELL

Point No.: 051-25

Nominal: 12.700

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: 11.100

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	12.800	____.____
	2	12.600	____.____
	3	12.500	____.____
	4	12.300	____.____
	5	12.400	____.____
	6	12.200	____.____

Data Evaluation

Lowest Reading : 12.200

Average - Low 3 : 12.300

Thk.Remaining Above Min. : 1.100

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :

Pt.Desc.: BOOT HEAD

Point No.: 051-30

Nominal: 12.700

Mths. Rem. To Min. Nom:

Good For Continued Service: NO

Corr. Allowance: 1.600

Min. Cal. Wall Thk.:

Additional Assessment Of Data: YES

Min. Nominal: 11.100

Suggested Max Insp. Interval In Mths.: 0

Survey Dates:

1999-12

Data Readings	1	11.100	____.____
	2	10.600	____.____
	3	10.300	____.____

Data Evaluation

Lowest Reading : 10.300

Average - Low 3 : 10.667

Thk.Remaining Above Min. : -0.800

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 / GAS CHILLER

Equip. No.: E-310

Ser. No.: 1622

Prov. Reg.: N/A

Pt.Desc.: 1-1/2"90L T-B

Point No.: 051-35

Line No.: N/A

Nominal: 7.100

Mths. Rem. To Min. Nom:

Good For Continued Service: YES

Corr. Allowance: ASTM

Min. Cal. Wall Thk.:

Additional Assessment Of Data: YES

Min. Nominal: 6.213

Suggested Max Insp. Interval In Mths.: 12

Survey Dates:

1999-12

Data Readings	1	8.200	____.____
	2	7.800	____.____
	3	7.500	____.____
	4	7.600	____.____
	5	7.700	____.____

Data Evaluation

Lowest Reading : 7.500

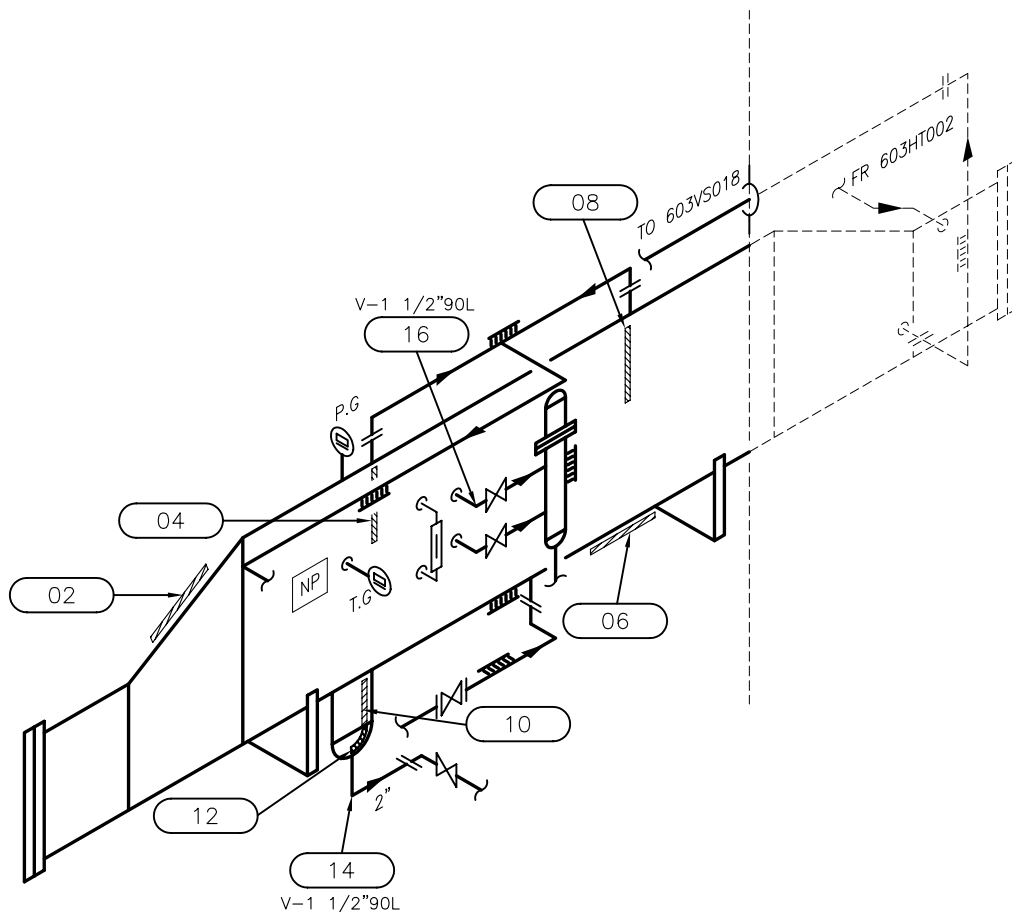
Average - Low 3 : 7.600

Thk.Remaining Above Min. : 1.287

Indv. Short Term Rate (mm/yr) :

Short Term Rate (mm/yr) :

LongTerm Rate (mm/yr) :



Comments: _____



P.E. No.:	<u>N/S</u>	Yr. Blt.:	<u>1998</u>
OIP#	<u>603HT003</u>	Manway:	<u>YES</u>
Serial No.:	<u>1622</u>	Size:	<u>610 x 1067 x 9144</u>
P.R.N. ④	<u>N/S</u>	Service:	<u>SWEET</u>
C.R.N.:	<u>N9968.21</u>	PWHT:	<u>NO</u>
Code/Div.:	<u>ASME VIII DIV. 1</u>	RT:	<u>2</u>
Para:	<u>N/S</u>	Insulated:	<u>LOW TEMP</u>
C. Stamp:	<u>UW</u>	N.B. No:	<u>N/S</u>
Manufacturer:	<u>THERMO DESIGN LTD.</u>		

Design & Materials Data

HEAD	SHELL
Material: <u>SA-350-LF2</u>	Material: <u>SA-516-70N</u>
Nom.: <u>9.5mm</u>	Nom.: <u>9.5mm</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: <u>SA-516-70N</u>
Nom.: _____	Nom.: <u>12.7mm</u>
C.A.: _____	C.A.: <u>1.6mm</u>
MAWP Shell Side: <u>1793 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	DATE	DESCRIPTION	AMOUNT
1	1/1/20	Initial deposit	100.00
2	1/15/20	Withdrawal	25.00
3	2/1/20	Deposit	50.00
4	2/15/20	Withdrawal	10.00
5	3/1/20	Deposit	75.00
6	3/15/20	Withdrawal	30.00
7	4/1/20	Deposit	40.00
8	4/15/20	Withdrawal	15.00
9	5/1/20	Deposit	60.00
10	5/15/20	Withdrawal	20.00
11	6/1/20	Deposit	80.00
12	6/15/20	Withdrawal	35.00
13	7/1/20	Deposit	55.00
14	7/15/20	Withdrawal	18.00
15	8/1/20	Deposit	70.00
16	8/15/20	Withdrawal	22.00
17	9/1/20	Deposit	65.00
18	9/15/20	Withdrawal	28.00
19	10/1/20	Deposit	50.00
20	10/15/20	Withdrawal	12.00
21	11/1/20	Deposit	78.00
22	11/15/20	Withdrawal	32.00
23	12/1/20	Deposit	62.00
24	12/15/20	Withdrawal	24.00
25	1/1/21	Deposit	85.00
26	1/15/21	Withdrawal	38.00
27	2/1/21	Deposit	58.00
28	2/15/21	Withdrawal	16.00
29	3/1/21	Deposit	72.00
30	3/15/21	Withdrawal	26.00
31	4/1/21	Deposit	68.00
32	4/15/21	Withdrawal	21.00
33	5/1/21	Deposit	82.00
34	5/15/21	Withdrawal	34.00
35	6/1/21	Deposit	52.00
36	6/15/21	Withdrawal	14.00
37	7/1/21	Deposit	76.00
38	7/15/21	Withdrawal	29.00
39	8/1/21	Deposit	64.00
40	8/15/21	Withdrawal	23.00
41	9/1/21	Deposit	88.00
42	9/15/21	Withdrawal	40.00
43	10/1/21	Deposit	56.00
44	10/15/21	Withdrawal	17.00
45	11/1/21	Deposit	74.00
46	11/15/21	Withdrawal	31.00
47	12/1/21	Deposit	61.00
48	12/15/21	Withdrawal	25.00
49	1/1/22	Deposit	84.00
50	1/15/22	Withdrawal	37.00
51	2/1/22	Deposit	59.00
52	2/15/22	Withdrawal	19.00
53	3/1/22	Deposit	73.00
54	3/15/22	Withdrawal	27.00
55	4/1/22	Deposit	69.00
56	4/15/22	Withdrawal	20.00
57	5/1/22	Deposit	83.00
58	5/15/22	Withdrawal	35.00
59	6/1/22	Deposit	53.00
60	6/15/22	Withdrawal	15.00
61	7/1/22	Deposit	77.00
62	7/15/22	Withdrawal	30.00
63	8/1/22	Deposit	65.00
64	8/15/22	Withdrawal	24.00
65	9/1/22	Deposit	89.00
66	9/15/22	Withdrawal	41.00
67	10/1/22	Deposit	57.00
68	10/15/22	Withdrawal	18.00
69	11/1/22	Deposit	75.00
70	11/15/22	Withdrawal	32.00
71	12/1/22	Deposit	62.00
72	12/15/22	Withdrawal	26.00
73	1/1/23	Deposit	86.00
74	1/15/23	Withdrawal	39.00
75	2/1/23	Deposit	60.00
76	2/15/23	Withdrawal	20.00
77	3/1/23	Deposit	74.00
78	3/15/23	Withdrawal	28.00
79	4/1/23	Deposit	70.00
80	4/15/23	Withdrawal	22.00
81	5/1/23	Deposit	84.00
82	5/15/23	Withdrawal	36.00
83	6/1/23	Deposit	54.00
84	6/15/23	Withdrawal	16.00
85	7/1/23	Deposit	78.00
86	7/15/23	Withdrawal	31.00
87	8/1/23	Deposit	64.00
88	8/15/23	Withdrawal	

GAS CHILLER

BY: M.T.

DATE: 2008/04

DWG.# 018

TAQA North

Unit: N-603

FACILITY:	CHINCHAGA GAS PLANT	MANUFACTURER:	THERMO DESIGN ENGINEER
LSD:	C-032-H/094-H-08	DESIGN PRESSURE:	1793 kPa / 260 psi
ITEM DESC.:	GAS CHILLER	DESIGN TEMP.:	66 C / 151 F
EQUIP / OIP#:	603HT003	RECOMMENDED NEXT INSP. DATE:	04/2013
PROV. REG. #:	N/S	RECOMMENDED RETIREMENT DATE:	03/2488
SERIAL #:	1622	REM. LIFE (from last survey 04/2008):	479.90 yrs.
CRN.:	N9968.21	TOTAL CAUTION / ACTION TML:	0

Item # (018)

COMMENTS:

2008/04 - THERE ARE TWO SIZES: 610MM AND 1067MM.

TML No.: 2 CHANNEL T/SH T-B

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 13.65 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 13.30 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date	B/L Survey Date	Prev. Survey Date	Prev. Survey Date	Last Survey Date	Last Survey Date	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
				mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy					
2.01	12.70	1.60	11.10	01/1998	12.70	N/A	N/A	04/2008	13.80	0.000	0.000	04/2013	04/2908	NO
2.02	12.70	1.60	11.10	01/1998	12.70	N/A	N/A	04/2008	13.80	0.000	0.000	04/2013	04/2908	NO
2.03	12.70	1.60	11.10	01/1998	12.70	N/A	N/A	04/2008	14.00	0.000	0.000	04/2013	12/2974	NO
2.04	12.70	1.60	11.10	01/1998	12.70	N/A	N/A	04/2008	13.40	0.000	0.000	04/2013	12/2774	NO
2.05	12.70	1.60	11.10	01/1998	12.70	N/A	N/A	04/2008	13.60	0.000	0.000	04/2013	08/2841	NO
2.06	12.70	1.60	11.10	01/1998	12.70	N/A	N/A	04/2008	13.30	0.000	0.000	04/2013	08/2741	NO

TML No.: 4 UPPER SOUTH SH

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 9.62 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 9.10 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date	B/L Survey Date	Prev. Survey Date	Prev. Survey Date	Last Survey Date	Last Survey Date	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
				mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy					
4.01	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.90	0.000	0.000	04/2013	12/2674	NO
4.02	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.10	0.000	0.038	04/2013	10/2039	NO *
4.03	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.70	0.000	0.000	04/2013	04/2608	NO *
4.04	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.70	0.000	0.000	04/2013	04/2608	NO *
4.05	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.60	0.000	0.000	04/2013	12/2574	NO *
4.06	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.70	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.

TAQA North

Unit: N-603

FACILITY:	CHINCHAGA GAS PLANT	MANUFACTURER:	THERMO DESIGN ENGINEER
LSD:	C-032-H/094-H-08	DESIGN PRESSURE:	1793 kPa / 260 psi
ITEM DESC.:	GAS CHILLER	DESIGN TEMP.:	66 C / 151 F
EQUIP / OIP#:	603HT003	RECOMMENDED NEXT INSP. DATE:	04/2013
PROV. REG. #:	N/S	RECOMMENDED RETIREMENT DATE:	03/2488
SERIAL #:	1622	REM. LIFE (from last survey 04/2008):	479.90 yrs.
CRN.:	N9968.21	TOTAL CAUTION / ACTION TML:	0

Item # (018)

COMMENTS:

2008/04 - THERE ARE TWO SIZES: 610MM AND 1067MM.

TML No.: 6 BTM SH S-N

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 9.52 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 9.40 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date	B/L Survey Date	Prev. Survey Date	Prev. Survey Date	Last Survey Date	Last Survey Date	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
				mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy					
6.01	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.50	0.000	0.000	04/2013	08/2541	NO *
6.02	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.40	0.000	0.010	04/2013	11/2155	NO *
6.03	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.50	0.000	0.000	04/2013	08/2541	NO *
6.04	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.50	0.000	0.000	04/2013	08/2541	NO *
6.05	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.60	0.000	0.000	04/2013	12/2574	NO *
6.06	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.60	0.000	0.000	04/2013	12/2574	NO *

TML No.: 8 UPPER NORTH SH

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 10.13 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 9.70 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date	B/L Survey Date	Prev. Survey Date	Prev. Survey Date	Last Survey Date	Last Survey Date	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
				mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy					
8.01	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	10.60	0.000	0.000	04/2013	04/2908	NO
8.02	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	10.10	0.000	0.000	04/2013	08/2741	NO
8.03	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.90	0.000	0.000	04/2013	12/2674	NO
8.04	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	9.70	0.000	0.000	04/2013	04/2608	NO *
8.05	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	10.00	0.000	0.000	04/2013	04/2708	NO
8.06	9.50	1.60	7.90	01/1998	9.50	N/A	N/A	04/2008	10.50	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:	1793 kPa / 260 psi
ITEM DESC.:	GAS CHILLER	DESIGN TEMP.:	66 C / 151 F
EQUIP / OIP#:	603HT003	RECOMMENDED NEXT INSP. DATE:	04/2013
PROV. REG. #:	N/S	RECOMMENDED RETIREMENT DATE:	03/2488
SERIAL #:	1622	REM. LIFE (from last survey 04/2008):	479.90 yrs.
CRN.:	N9968.21	TOTAL CAUTION / ACTION TML:	0

Item # (018)

COMMENTS:

2008/04 - THERE ARE TWO SIZES: 610MM AND 1067MM.

TML No.: 10 BOOT BTM SH T-B

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 12.52 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 11.60 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date	B/L Survey Date	Prev. Survey Date	Prev. Survey Date	Last Survey Date	Last Survey Date	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
				mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy					
10.01	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	13.60	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	12.60	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	12.70	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	12.70	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	11.60	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	11.90	0.000	0.000	04/2013	04/4008	NO

TML No.: 12 BOOT BTM HD T-B

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 9.38 mm.

MATERIAL: SA516-70

MINIMUM THICKNESS MEASURED: 7.80 mm.

Pts.	Nom. Thick.	Corr. Allow.	Min. Thick.	B/L Survey Date	B/L Survey Date	Prev. Survey Date	Prev. Survey Date	Last Survey Date	Last Survey Date	Short Term Rate	Long Term Rate	TML Insp. Due	TML Retire. Date	Action/Caution Required Item
				mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy	mm/yyyy					
12.01	0.00	0.00	0.00	N/A	N/A	N/A	N/A	04/2008	10.30	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	7.80	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	9.70	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	9.70	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:	1793 kPa / 260 psi
ITEM DESC.:	GAS CHILLER	DESIGN TEMP.:	66 C / 151 F
EQUIP / OIP#:	603HT003	RECOMMENDED NEXT INSP. DATE:	04/2013
PROV. REG. #:	N/S	RECOMMENDED RETIREMENT DATE:	03/2488
SERIAL #:	1622	REM. LIFE (from last survey 04/2008):	479.90 yrs.
CRN.:	N9968.21	TOTAL CAUTION / ACTION TML:	0

Item # (018)

COMMENTS:

2008/04 - THERE ARE TWO SIZES: 610MM AND 1067MM.

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

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 7.52 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 7.30 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
14.01	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	7.80	0.000	0.000	04/2013	12/2774	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	7.40	0.000	0.000	04/2013	08/2641	NO
14.04	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	7.30	0.000	0.000	04/2013	04/2608	NO *
14.05	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	7.50	0.000	0.000	04/2013	12/2674	NO

TML No.: 16 NOZ 1.5"90L 150#

DATE BUILT: 01/1998

AVERAGE THICKNESS MEASURED: 8.36 mm.

MATERIAL:

MINIMUM THICKNESS MEASURED: 8.20 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
16.01	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	8.70	0.000	0.000	04/2013	12/3074	NO
16.02	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	8.40	0.000	0.000	04/2013	12/2974	NO
16.03	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	8.30	0.000	0.000	04/2013	08/2941	NO
16.04	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	8.20	0.000	0.000	04/2013	04/2908	NO
16.05	7.10	1.60	5.50	01/1998	7.10	N/A	N/A	04/2008	8.20	0.000	0.000	04/2013	04/2908	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:	Gas Chiller	A No:	BC	MTL No: EXC204
Internal Coating Type:		Next External:	2/6/2003	Next Internal: Feb, 2004
Vessel Orientation:	Horizontal	Internal Coating Lining:	0	
Vessel Type:	Exchanger	Fluid Type:		
Tag No:	E-310	Serial Number:	1622	
Separator Type:		Business Unit:		
Direct Fired Vessel:	N/A	Fired Tube:		Cost Centre:
Current Status:	In Service	Flame Arrester Date Required:		Date
Thermal Insulation:	No	Asbestos:	No	

PRESSURE VESSEL NAMEPLATE INFORMATION

MTL Number:	EXC204	Volume:	293.000 F3	CRN Number:	N-9968-21	Registered:	No
Serial Number:	1622	Size:	24.000 in O.D. x 30 ft	0 in Overall			
Drawing Number:	9097-0850-209	P & ID Number:					
Shell Material:	SA-516-70N	Cone	Shell Thickness:	0.500 In			
		Top	Shell Thickness:	0.375 In			
Head Material:	SA-350-LF2		Head Thickness:	In			
			Head Thickness:	In			
Tube Material:	SA-179	Tube Size(OD):	14 In	Tube Thickness:	14.000 In		
Tubesheet Material:		Tubesheet Thickness:	In				
Channel Material:		Channel Type:		Channel Thickness:	In		
Design Pressure:	Shell: 260 psi	Operating Pressure:	Shell: psi				
	Tube: 1300 psi		Tube: psi				
Design Temperature:	Shell: 150 F	Operating Temperature:	Shell: F				
	Tube: 150 F		Tube: F				
RT (XRay):	RT2	Heat Treatment:	No				
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:	Gas Chiller	A No:	BC	MTL No: EXC204

VESSEL SHELL / HEADS / PIPING

External / Instrumentation Condition

The external surface of this vessel was insulated and cladded. The exposed areas were covered in frost.

Internal Condition

No internal access

Nozzle Condition

The external surface of the nozzle assemblies and associated welds were noted in good condition. No visible evidence of external corrosion was noted during this inspection.

Flange Condition

The flanges are bolted properly and there was no visible evidence of leakage.

Internal Piping

Not Applicable

External Piping

The external piping was insulated and cladded and noted 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 base, exchanger pedestals and bolts were all noted 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:	Gas Chiller	A No:	BC	MTL No: EXC204

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?	Yes	Repairs Required?	No
Owners Representative		Repairs Completed?	
Owners Date		Repairs Completed By	
		Repair Date	

Recommendations

Remove end covers to evaluate the tube side of the exchanger.
Service PSV.
Repeat UT Survey.
Re-chalk shell penetration as required.

Details of Repairs

DETAIL VESSEL AND PIPING INSPECTION REPORT

(Imperial)

GENERAL PRESSURE VESSEL INFORMATION

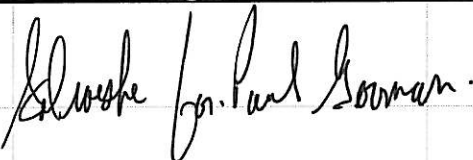
Company:	Pioneer Natural Resources Canada Inc.	LSD:	BC	C-32-H/94-H-8
Area/Facility:	Chinchaga Gas Plant	Inspection Date	06-Feb-02	Interval: 2 yrs
Vessel Name:	Gas Chiller	A No:	BC	MTL No: EXC204

PSV DATA

Side	Set Pressure psi	CRN Number	Manufacturer PSV Number	Model Serial Number	Capacity	Size Inches	Set Date
Shellside	1000	W-15693	Crosby PNR4081	JOS 45/A SE-17092-5	25662 SCFM	2.5 x 4	Dec/1999
Shellside	1000		Crosby PNR4281	JOS 45A SE-17093-5	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: 603HT003

Page of

FACILITY: Chinchaga Gas Plant

PROV. REG. NO:

EQUIPMENT NAME: Gas Chiller

TAG NO:

SIZE: 610mm /1067mm OD x 9144mm L/H

MAWP: 1793 kPa @ 66/-45 °C

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

MANWAY ☒ YES ☐ NO

SERVICE:

FLUID: Glycol / Gas

☐ 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 to north support
5. PROTECTIVE COATINGS AND INSULATION ☒
6. EXTERNAL METAL SURFACES ☐ N/A
7. FANS AND OTHER ANCILLARY EQUIPMENT ☐ N/A
8. PRESSURE RELIEF DEVICES ☒ 2 PSV
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

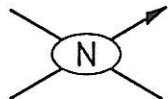
DATE OF INSPECTION 06 04 2008
(DD MONTH YYYY)

FOLLOW-UP INSPECTION REQ'D:

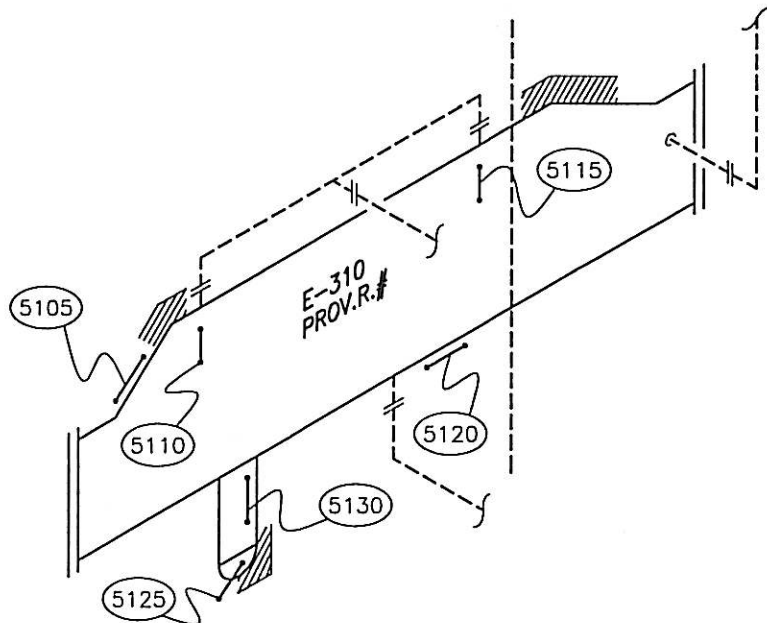
☐ YES ☒ NO

BY DATE:

(DD MONTH YYYY)



P&ID. # _____
REF. # _____



VESSEL DATA

Prov. Reg. No. _____ C.R.N. 19968.21 P.E. No. E-310 Serial No. 1622
MFR. THERMO DESIGN Code/Div. _____ Para _____ Code Stamp U
Yr. Bld. 1998 Yr. Inst. _____ Size 24/42"ØX30' Vol.: _____ Service _____ PWHT _____

Nominal Thickness & Material

Head: 600#FLG. Mat'l: SA 350L F2 C.A.: 1.6mm
Head: _____
Shell: 9.5mm SA 516-70N C.A.: 1.6mm
Shell: 12.7mm
Chan Hd: _____ C.A.: _____
Chan Sh: 12.7mm SA 333-6
Gas Boot Hd: 12.7mm SA 429 WB C.A.: _____
Gas Boot Sh.: _____
Liq. Boot Hd.: _____ C.A.: _____
Liq. Boot Sh.: _____

Insulated YES R.T. 2

Repairs _____
COMMENTS _____

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

GAS CHILLER

MAWP Shell Side 260psi @ Temp. -49/150°F
MAWP Tube Side 1300psi @ Temp. -49/150°F

TECH.: J.OLIVER	REV.DATE:	DWG DATE: 02/2002
CAD: MKM	REVISION:	DRAWING: 051

Equip No E-310

Serial No 1622

Prov Reg No N/A

Description GAS CHILLER

051 - 005

TML Description: UPPER TRANS. SHELL

T Nominal: 12.7

Min Nominal: 11.1

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: 2.2
 Short Term Corr Rate: N/A
 Long Term Corr Rate: N/A
 Months Remain to LFL: N/A
 Lowest Value - Last Reading: 13.3

Comment:

	Dec-99
Point 1	13.4
Point 2	13.3
Point 3	13.4
Point 4	13.5
Point 5	13.4
Point 6	13.5
Point 7	
Point 8	
Point 9	
Point 10	
Point 11	
Point 12	
Average	13.4
Avg Low 3	13.4
Lowest	13.3

051 - 010

TML Description: UPPER N. SHELL

T Nominal: 9.5

Min Nominal: 7.9

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: 2.0
 Short Term Corr Rate: N/A
 Long Term Corr Rate: N/A
 Months Remain to LFL: N/A
 Lowest Value - Last Reading: 9.9

Comment:

	Dec-99
Point 1	10.1
Point 2	9.9
Point 3	10.1
Point 4	9.9
Point 5	10.0
Point 6	10.0
Point 7	
Point 8	
Point 9	
Point 10	
Point 11	
Point 12	
Average	10.0
Avg Low 3	9.9
Lowest	9.9

051 - 015

TML Description: UPPER S. SHELL		
T Nominal:	9.5	
Min Nominal:	7.9	
Corr Allowance:	1.6	
<i>Data Readings</i>		
<i>Data Evaluations</i>		Dec-99
	Point 1	10.0
	Point 2	10.2
	Point 3	10.0
	Point 4	10.1
	Point 5	10.0
	Point 6	9.9
	Point 7	
	Point 8	
	Point 9	
	Point 10	
	Point 11	
Comment:	Point 12	
	Average	10.0
	Avg Low 3	10.0
	Lowest	9.9

051 - 020

TML Description: CTR. BTM. SHELL		
T Nominal:	9.5	
Min Nominal:	7.9	
Corr Allowance:	1.6	
<i>Data Readings</i>		
<i>Data Evaluations</i>		Dec-99
	Point 1	10.0
	Point 2	9.7
	Point 3	9.5
	Point 4	9.5
	Point 5	9.5
	Point 6	9.5
	Point 7	
	Point 8	
	Point 9	
	Point 10	
	Point 11	
Comment:	Point 12	
	Average	9.6
	Avg Low 3	9.5
	Lowest	9.5

051 - 025

TML Description: BOOT SHELL		
T Nominal:	12.7	
Min Nominal:	11.1	
Corr Allowance:	1.6	
<i>Data Readings</i>		
<i>Data Evaluations</i>		Dec-99
Months Remaining to T Min:	999	Point 1 12.8
Min Calc'd Wall Thickness:	N/A	Point 2 12.6
Thick Remain Above T Min:	1.1	Point 3 12.5
Short Term Corr Rate:	N/A	Point 4 12.3
Long Term Corr Rate:	N/A	Point 5 12.4
Months Remain to LFL:	N/A	Point 6 12.2
Lowest Value - Last Reading:	12.2	Point 7
Comment:		Point 8
		Point 9
		Point 10
		Point 11
		Point 12
		Average 12.5
		Avg Low 3 12.3
		Lowest 12.2

051 - 030

TML Description: BOOT HEAD		
T Nominal:	12.7	
Min Nominal:	11.1	
Corr Allowance:	1.6	
<i>Data Readings</i>		
<i>Data Evaluations</i>		Dec-99
Months Remaining to T Min:	999	Point 1 11.1
Min Calc'd Wall Thickness:	N/A	Point 2 10.6
Thick Remain Above T Min:	N/A	Point 3 10.3
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:	10.3	Point 7
Comment:		Point 8
		Point 9
		Point 10
		Point 11
		Point 12
		Average 10.7
		Avg Low 3 10.7
		Lowest 10.3

Equip No N/A

Serial No N/A

Prov Reg No N/A

Description

051 - 035

TML Description: 1-1/2" 90' L T-B

T Nominal: 7.1

Min Nominal: 6.2

Corr Allowance: ASTM

*Data Readings**Data Evaluations*

Months Remaining to T Min: 999
 Min Calc'd Wall Thickness: N/A
 Thick Remain Above T Min: 1.3
 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	7.8
Point 3	7.5
Point 4	7.6
Point 5	7.7
Point 6	
Point 7	
Point 8	
Point 9	
Point 10	
Point 11	
Point 12	
Average	7.8
Avg Low 3	7.6
Lowest	7.5

EQUIPMENT INTERNAL INSPECTION REPORT

Customer:	TAQA North	ITS Job No.:	1829
District:	Northern	Date:	11-Jul-2012
Facility:	Chinchaga Gas Plant	LSD:	C-32-H/94-H-08
Equip. Description:	Gas Chiller	Serial No.:	1622
Equip./OIP No.:	603HT003	PRN:	Not Stated
Equip. Type: <input type="checkbox"/> Column <input type="checkbox"/> Cooler <input checked="" type="checkbox"/> Exchanger <input type="checkbox"/> Furnace <input type="checkbox"/> Heater <input type="checkbox"/> Plate Exchanger <input type="checkbox"/> Reboiler <input type="checkbox"/> Vessel <input type="checkbox"/> 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 checked="" type="checkbox"/> Not Applicable
<input checked="" type="checkbox"/> Flat <input checked="" type="checkbox"/> FLG <input type="checkbox"/> ELL <input type="checkbox"/> ECC <input type="checkbox"/> HEMI	<input checked="" type="checkbox"/> Flat <input checked="" type="checkbox"/> FLG <input 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 checked="" type="checkbox"/> Good Condition	<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Internal Corrosion
<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Internal Corrosion	<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Pitting: (max depth)
<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion
<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Wear/Erosion	<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked
<input type="checkbox"/> Cracked	<input type="checkbox"/> Cracked	<input type="checkbox"/> Blistered	<input type="checkbox"/> Blistered
<input type="checkbox"/> Blistered	<input type="checkbox"/> Blistered	<input type="checkbox"/> Scale	<input type="checkbox"/> Scale
<input type="checkbox"/> Scale	<input type="checkbox"/> Scale	<input type="checkbox"/> Coated	<input type="checkbox"/> Coated
<input type="checkbox"/> Coated	<input type="checkbox"/> Coated	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage
<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Bulged/ Distorted/ Deformation	<input type="checkbox"/> Bulged/ Distorted/ Deformation
<input type="checkbox"/> Bulged/ Distorted/ Deformation	<input type="checkbox"/> Bulged/ Distorted/ Deformation	<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> See Comments
<input checked="" type="checkbox"/> See Comments	<input checked="" 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 checked="" 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: (max depth)	<input type="checkbox"/> Good Condition
<input type="checkbox"/> Pitting: (max depth)	<input type="checkbox"/> Pitting: (max depth)	<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: (max depth)
<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 checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable
<input 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 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 type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Not Applicable
<input checked="" 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**

- Only the South-end was opened at this outage. The North-end still had the cladding on at the time of inspection.
- The manway flange and cover plate sealing areas show no signs of corrosion, erosion or mechanical damage.
- The internal writing is still present on the shell wall from the manufacturer. No corrosion, erosion or pitting noted on channel head wall surface.
- The circumferential weld of flange to channel head shows no signs of corrosion, erosion or preferential attack.
- Tubes are seal welded. There is no corrosion, erosion or preferential attack noted on seal welds. There are no concerns. The visual internal of tubes that could be seen shows no signs of corrosion, erosion or pitting noted.

Recommendations:

- Do Eddy Current at the next outage to do tube internals to know the condition of them.

Pictures:



Photo 1: Overview



Photo 2: Nameplate and OIP



Photo 3: North End

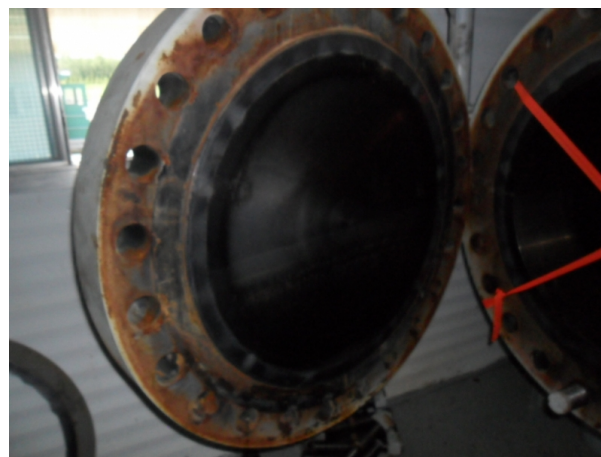


Photo 4: Manway Cover Plate

Pictures:



Photo 5: Sealing Area



Photo 6: Internal Overview

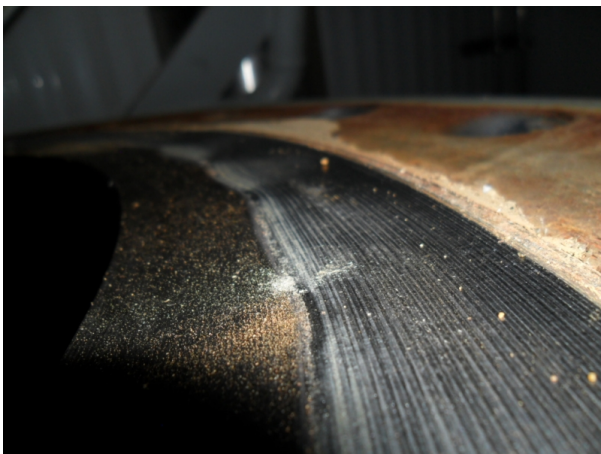


Photo 7: Flange Sealing Area



Photo 8: Writing on Wall Still Present

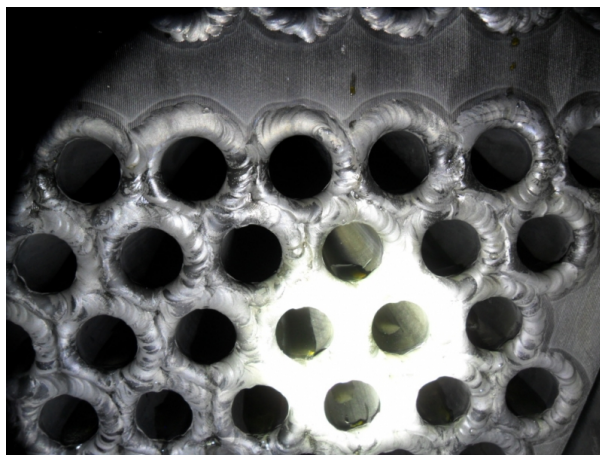


Photo 9: Tube Internals

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#		433854		EQUIP STATIC RECORD				JOB#		2636	
Unique OUP #:		603HT003		Old OUP #:				LSD:		C-032-H/094-H-08	
PLANT / FIELD:		Chinchaga Gas Plant		Down Hole Location:				RENTAL:			
EQUIPMENT NAME:		Gas Chiller		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:		Glycol Rich		CYCLIC:	
MANUFACTURER:		Thermo Design Engineering Ltd.		DWG.#		9097-0850-209		S N:		1622	
PRN		for VESSEL or SHELL		CRN		N9968.21		YR. BUILT		1998	
NB:		CODE/DIV.		ASME VIII DIV.1		PARA.		STAMP		U	
SHELL-TANK				RADIOGRAPHY:		RT2		JOINT EFF.		100%	
MAWP		1379 kPa		AT		66 °C		MDMT		-49 °C	
DIA. OD		1066.8 mm		LENGTH:		9144.0 mm		HEIGHT:		mm	
VOLUME:		m³									
SECTION		MATERIAL		NOMINAL THICKNESS		C.A.					
Shell		SA-516-70N		9.500		mm		1.600		mm	
Head		SA-350-LF2		9.500		mm		1.600		mm	
Channel		SA-516-70N		12.700		mm		1.600		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		°C		kPa		S N:					
CODE/DIV.		PARA.		STAMP		TUBE/TUBE SHEET		TEMA CLASS			
DIA.		mm		LENGTH:		mm		TUBE SIZE		mm	
# of Tubes				TUBE SIZE		mm		# of Tubes			
SECTION		MATERIAL		NOMINAL THICKNESS		C.A.					
						mm				mm	
						mm				mm	
						mm				mm	
						mm				mm	
TUBING: PRN CRN N9968.21 TEMA CLASS TYPE S N: 1622											
MAWP		8963 kPa		AT		66 °C		TUBE SIZE		152.0 mm	
GAUGE,BWG		14		TUBE/TUBE SHEET JT.		Welded					
# of Tubes		MATERIAL		NOMINAL THICKNESS		C.A.					
		SA-179				mm				mm	
COIL: PRN CRN COIL NAME: HP, LP, FG, HS											
MAWP		kPa		AT		°C		TUBE SIZE		mm	
S N:				TUBE SIZE		mm		S N:			
# of Tubes		MATERIAL		NOMINAL THICKNESS		C.A.					
						mm				mm	

RAM# 433854		EQUIP STATIC RECORD		JOB# 2636	
Unique OUP #: 603HT003		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: Partial					
OPERATING PRESSURE: 2068 kPa OPERATING TEMP. -5 °C YEAR PUT IN SERVICE:					
VESSEL CONNECTIONS: NPT FLANGE LARGEST CONNECTION mm INSPECTION PORT: Man Way					
FLANGE ANSI: FLG. FACE: SIZE of INSPECTION PORT: 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: SS					
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	
603SVVS010		1793	kPa	Shell	
603SVVS018		8963	kPa	Channel	
			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:	Gas Chiller	Serial No.:	1622
Equip./OIP No.:	603HT003	PRN:	Not Stated
Equip. Type: <input type="checkbox"/> Column <input type="checkbox"/> Cooler <input checked="" type="checkbox"/> Exchanger <input type="checkbox"/> Furnace <input type="checkbox"/> Heater <input type="checkbox"/> Plate Exchanger <input type="checkbox"/> Reboiler <input 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 type="checkbox"/> See Attached Pictures	<input type="checkbox"/> Deformation/Distortion
<input type="checkbox"/> See Comments	<input type="checkbox"/> BH	<input type="checkbox"/> Excessive Vibration	<input type="checkbox"/> Condensation/Sweating
	<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 type="checkbox"/> No Access Ice Build Up
Status	<input checked="" type="checkbox"/> See Comments	<input type="checkbox"/> Y <input 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"/> See Comments	<input type="checkbox"/> Weld(s) Poor Quality
<input type="checkbox"/> Surplus/Boneyard;			<input type="checkbox"/> Weld(s) Cracked
<input type="checkbox"/> Other:			<input type="checkbox"/> See Comments

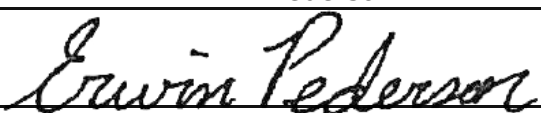

Head (1)	Head (2)	Nozzles
<input type="checkbox"/> Top <input checked="" type="checkbox"/> North <input type="checkbox"/> West	<input type="checkbox"/> Bottom <input checked="" type="checkbox"/> South <input type="checkbox"/> East	<input checked="" type="checkbox"/> RF <input type="checkbox"/> RTJ <input checked="" type="checkbox"/> NPT
<input checked="" type="checkbox"/> Flat <input checked="" type="checkbox"/> FLG <input type="checkbox"/> ELL <input type="checkbox"/> ECC <input type="checkbox"/> HEMI	<input checked="" type="checkbox"/> Flat <input checked="" type="checkbox"/> FLG <input 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 checked="" type="checkbox"/> No Access Insulated	<input checked="" type="checkbox"/> No Access Insulated	<input type="checkbox"/> Partial Internal Inspection
<input checked="" type="checkbox"/> No Access Ice Build Up	<input checked="" type="checkbox"/> No Access Ice Build Up	<input checked="" type="checkbox"/> No Access Insulated
<input type="checkbox"/> External Protection Only	<input type="checkbox"/> External Protection Only	<input type="checkbox"/> Weld(s) in Good Condition
<input type="checkbox"/> See Comments	<input type="checkbox"/> See Comments	<input type="checkbox"/> Weld(s) Corroded
		<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 type="checkbox"/> Good Condition	Location: PIPING	Location: PIPING
<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.: 603SVVS010	PSV Tag No.: 603SVVS018
<input type="checkbox"/> Coated <input type="checkbox"/> Full <input type="checkbox"/> Part.	<input type="checkbox"/> Welded to Skid	<input type="checkbox"/> Pitting: <small>(max depth)</small>	<input checked="" type="checkbox"/> Service Date within Interval	<input checked="" 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 checked="" 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 checked="" 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 checked="" 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 checked="" type="checkbox"/> Current Service Tag Attached
<input type="checkbox"/> Visible Moisture Contamination	<input type="checkbox"/> Short Threaded	<input 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	<input checked="" type="checkbox"/> No Access Insulated	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 type="checkbox"/> See Comments	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"/> 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
- Vessel has ice build up - unable to do ut.	
Recommendations:	
- Do ut at next turn around. - Do vi at next turn around.	

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 Recommended Service Interval:	40 Months

External Inspection Performed By:	ABSA IPV PESL: 000406 API 510: 33075 API 570: 28183 PEI Class 2: 154
Print Name: Erwin D. Pederson	Certification No.:
Signature: 	Report Reviewed: 
	Initial

Chief Inspector /
Client
Representative:

Name (Print)

Signature

Date: