



418171

Permanent Pressure Vessel Record

Vessel #: 418171

Client	Canadian Natural Resources Ltd.		Inspection Date	March 07, 2001	
Prov. Reg.#	418171		Location	Greencourt	
Vessel Name	Line Heater - Shell		LSD	13-13-59-9W5	
Tag/Equip. #			Comp./Unit #		
Vessel Status	In Operation		Manufacturer	BWS	
		Serial #	BW139025	MAWP/TEMP	15.0000 psi
CRN#	M1551.21	Shell Material		Shell Thickness	in
Corrosion All.	in	Head Material		Head Thickness	in
		Head Material 2		Head 2 Thickness	in
		Channel Material		Channel Thickness	in
Diameter	30 in	Length	in	Height	120 in
				HT	RT
Year Built	1997	Next Inspection	2003	Inspection Type	VE/UT
Service	sour	Manway	No	Coating	No
Comments	See tube side for report.				

Field Inspection Report
 Vessel # 418171

Client	Canadian Natural Resources Ltd.				Inspection Date		July 03, 2001		
Prov. Reg.#	418171				Location		Greencourt		
Equipment	Line Heater - Tube A				LSD		13-13-59-9W5		
Tag/Equip. #					Comp./Unit #				
Vessel Status	In Operation				Job #		01-123		
Manufacturer	BWS		Serial #	BW139025	MAWP/Temp	2025 psi	200 ° F		
CRN#	M1551.21	Shell Material		SA-106-B	Shell Thickness		in		
Corrosion All.	in	Head Material			Head Thickness		in		
		Head Material 2			Head Thickness 2		in		
		Channel Material			Channel Thickness		in		
Diameter	3 in	Length	in	Height	120 in	RT	100%	HT	yes
Year Built	1997	Next Inspection		2003	Inspection Type		VE/UT		
Service	sour	Manway		No	Coating		No		

PSV #.							
Mfg.		Serial #		Set Pressure			psi
Type/Model		Capacity		Size			in
Date of Service		Next Service		Service Co.			

PSV #.							
Mfg.		Serial #		Set Pressure			psi
Type/Model		Capacity		Size			in
Date of Service		Next Service		Service Co.			

Permanent Pressure Vessel Record

Vessel #: 418171

Client	Canadian Natural Resources Ltd.		Inspection Date	March 07, 2001	
Prov. Reg.#	418171		Location	Greencourt	
Vessel Name	Line Heater - Tube B		LSD	13-13-59-9W5	
Tag/Equip. #			Comp./Unit #		
Vessel Status	In Operation		Manufacturer	BWS	
	Serial #	BW139025	MAWP/TEMP	1297.0000 psi	200.0000 °F
CRN#	M1551.21	Shell Material	Shell Thickness		
Corrosion All.	in	Head Material	Head Thickness		
		Head Material 2	Head 2 Thickness		
		Channel Material	Channel Thickness		
Diameter	3 in	Length	in	Height	120 in
		Next Inspection	2003	Inspection Type	VE/UT
Service	sour	Manway	No	Coating	No
Comments	See shell side for report.				

Field Inspection Report

Vessel # 418171

Observations:

External

Shell is insulated except for 2" at ends. Insulation is in good condition. Heads are not painted and have minor surface corrosion. Heads have no evidence of leaks. Heater is resting on steel skid. Nozzles are not painted and have minor surface corrosion. Shell temperature gauge in good condition- reads 62C (143F). Pressure gauge in good condition- reads 1800 kPa (265psi). Inlet temperature gauge in good condition - reads 16C. Outlet temperature gauge in good condition - reads 30C. Burner and stack covered with minor surface corrosion. Fuel gas piping and gauge in good condition.

UT

Tube- Flange 3" 900.

Pipe nominal 3" sch160 = 0.438" +/- 12.5%= minimum thickness is 0.383"

Measured in inches. See drawing for details.

Shell

South Head

Top - 0.253, 0.259, 0.257, 0.258

Mid - 0.253, 0.254, 0.258, 0.255

Bottom - 0.255, 0.258, 0.258, 0.256

South Shell

Top - 0.186, 0.193, 0.194, 0.197

Mid - 0.194, 0.196, 0.191, 0.189

Bottom - 0.204, 0.200, 0.197, 0.199

Tube1

Inlet Nozzle - 4 readings taken

Readings from left to right taken in the 12, 3, 6, and 9 o'clock positions respectively.

1 - 0.416, 0.434, 0.434, 0.428

2 - 0.407, 0.434, 0.435, 0.431

3 - 0.406, 0.406, 0.433, 0.432

4 - 0.417, 0.431, 0.424, 0.432

Outlet Nozzle - 6 readings taken

Readings from left to right taken in the 12, 3, 6, and 9 o'clock positions respectively.

1 - 0.432, 0.435, 0.418, 0.455

2 - 0.428, 0.429, 0.418, 0.462

3 - 0.429, 0.427, 0.424, 0.458

4 - 0.476, 0.427, 0.473,

5 - 0.475, 0.450, 0.442.

6 - 0.438, 0.437, 0.442, 0.439

AB-40 to be attached

Field Inspection Report
Vessel # 418171

UT Inspection continued

Tube 2

Inlet Nozzle - 6 readings taken

Readings from left to right taken in the 12, 3, 6, and 9 o'clock positions respectively.

- 1 - 0.282, 0.289, 0.283, 0.290
- 2 - 0.280, 0.290, 0.282, 0.291
- 3 - 0.274, 0.274, 0.289, 0.285
- 4 - 0.331, 0.332, 0.341,
- 5 - 0.350, 0.334, 0.336,
- 6 - 0.299, 0.299, 0.310, 0.312

Outlet Nozzle - 4 readings taken

Readings from left to right taken in the 12, 3, 6, and 9 o'clock positions respectively.

- 1 - 0.295, 0.315, 0.283, 0.304
- 2 - 0.302, 0.304, 0.283, 0.306
- 3 - 0.302, 0.295, 0.285, 0.304
- 4 - 0.302, 0.298, 0.280, 0.309

Notes

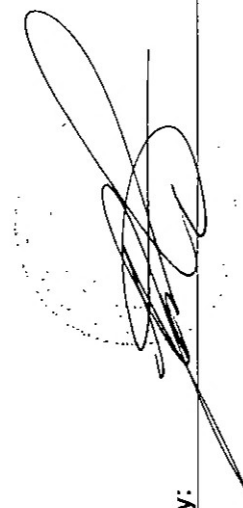
No tube PSV - this is being dealt with as another issue.

Recommendations:

The high pressure coil is not protected by a safety valve. The owner is responsible for ensuring that the installation meets regulatory requirements.



Inspector: Trevor Paananen



Reviewed by:

AB-40 to be attached

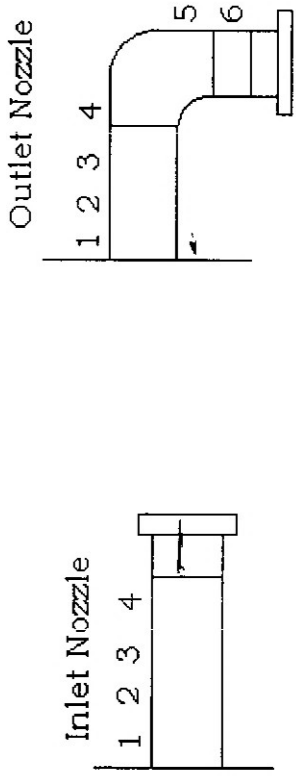
RAE Inspection Service (1979) Ltd.

#111, 4808 - 87 Street, Edmonton, Alberta T6E 5W3

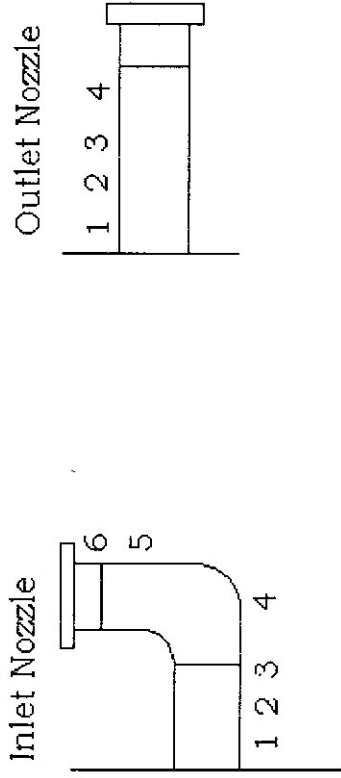
Phone: (780) 469-2401 Fax: (780) 468-2422

**Vessel Drawing
(not to scale)**

Client	Canadian Natural Resources Ltd.	Location	Greencourt
Prov. Reg.#	418171	LSD	13-13-59-9W5
Equipment	Line Heater	RAE Job#	01-123



Tube 1 (above)



Tube 2 (above)

Client	Canadian Natural Resources Ltd.			Date of Insp.	May 13, 1998	
Prov. Reg.#	418171			Location	Greencourt	
Equipment	Indirect Line Heater			LSD	13-13-59-9W5	
Tag/Equip. #	-			Comp./Unit #	-	
				Job #	98-127	
Fabricator	Brooks Welding	Serial #	BW139.025			
CRN#	- MISSI 21	Coil Mat'l	SA-106-B		Shell Thick	-
Corr. All.	-	Head Mat'l	-		Head Thick	-
Diameter	34"	Length	125"	Height	-	HT
Year Built	1997	Next Insp	2001		Insp Type	VE/UT
Service	Sour	Manway	Y	N	Coating	Y N
PSV #						
Mfg		Serial #				
Type/Model		Capacity				
Date of Service		Next Service				
					Set Pressure	
					Size	
					Service Co	

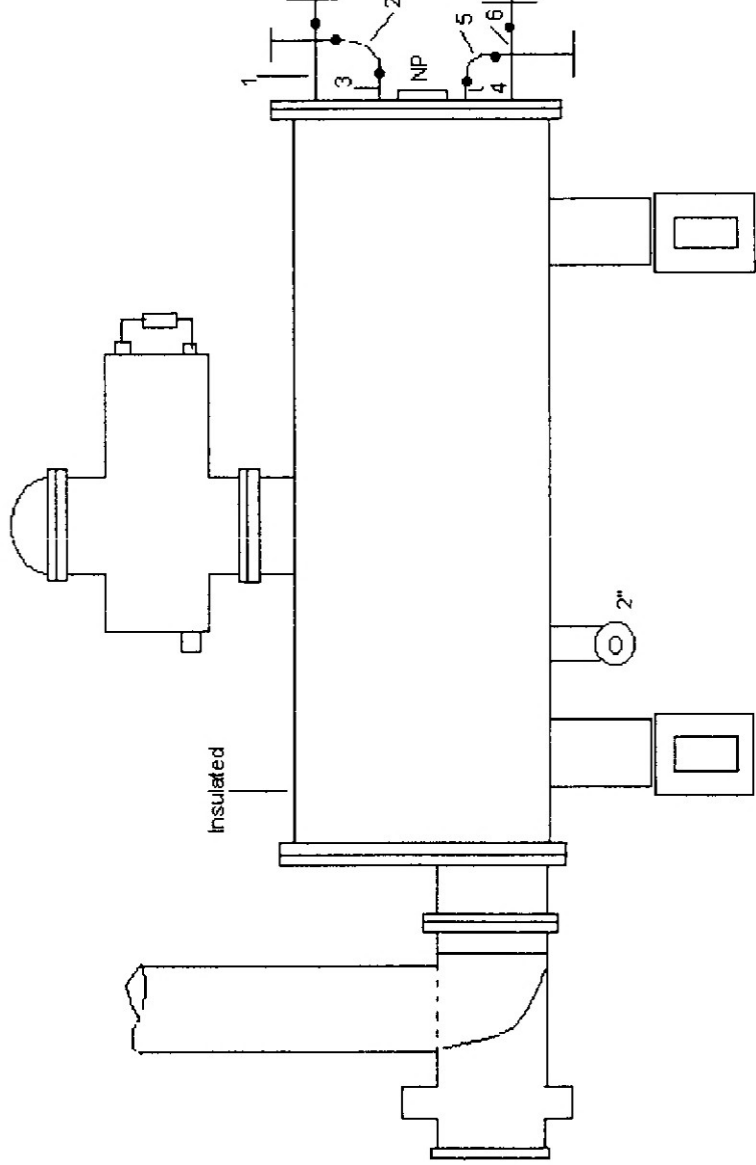
Observations:

External - Fully insulated, tight and solid. Exposed in and out flow pipes, elbows and flanges not painted but no evidence of rust or corrosion observed. Generally in good condition. No access for internal inspection at this time. No PSV protecting this line heater. UT inspection was done, see readings below.

Test Point	A	B	C	D	mm
1	9.0	8.3	8.2	8.6	mm
2	9.2	8.9	9.6	9.1	mm
3	7.8	7.8	8.1	8.0	mm
4	11.9	12.0	12.8	12.1	mm
5	13.4	13.6	12.4	13.1	mm
6	11.7	12.3	12.3	12.0	mm

RAE Inspection Service (1979) Ltd.
#301, 8925 - 51st Avenue, Edmonton, Alberta T6E 5J3
Phone: (403) 469-2401 Fax: (403) 468-2422

Field Inspection Report



Recommendations:

1. NCR#0637 issued for PSV.
2. Next inspection May 2001.
3. ~~NCR#0813~~ ~~ISSUED FOR C.R.N.#~~

Suitable to Return to Service: Y

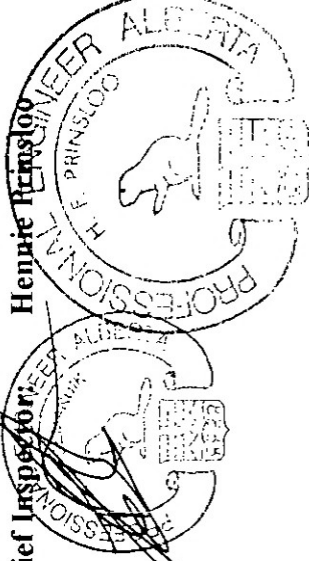
Repair and Alteration Form (AB40): NA

Inspector:

Ramon Jimeno

Chief Inspector:

Hennie Prinsloo



Certificate of Inspection

CANADIAN NATURAL
RESOURCES LTD., SUITE 2000, ESSO PLAZA
425-1 STREET SW
CALGARY, ALBERTA
T2P 3L8

LOCATION: 13-13-59-9 W5M GREENCOURT
COMPANY CODE:
DESCRIPTION: INDIRECT FIRED HEATER COIL

PREFERRED RE-INSP. INTERVAL: 0.00 Yrs
CRN: M1551.2

MANUFACTURER: BROOKS WELDING SERVICES LTD

SERIAL #: BW139.025

YEAR BUILT: 1997
VOLUME: 0.16 M3

HEATING SURFACE:

SURFACE AREA:

SAFETY VALVES

PART	MAX. AUTHORIZED WORKING PRESSURE	MAX. TEMP	MIN. TEMP	VALVE ID	SETTING	CAPACITY LOCATION
COA	13,961 KPA	93C	-29 C	SV1		TO BE INSTALLED
COB	8,942 KPA	93C	-29 C	SV2		TO BE INSTALLED

OWNER INSTRUCTIONS/REMARKS:

NO FURTHER INSPECTION REQUIRED BY ALBERTA BOILERS SAFETY ASSOCIATION.

OWNER TO VERIFY INTEGRITY OF VESSEL BY PERIODIC INSPECTION PROGRAM.

VERIFY THAT VESSEL IS PROTECTED BY A 'UV' SAFETY RELIEF VALVE, OF ADEQUATE CAPACITY, SET AT NO MORE THAN MAXIMUM PRESSURE AUTHORIZED, HAS BEEN INSTALLED IN ACCORDANCE WITH THE REGULATIONS.

TO BE INSTALLED IN ACCORDANCE WITH THE SAFETY CODES ACT AND REGULATIONS.

NOT SUBJECT TO ANNUAL FEES AS PER THE REGULATIONS PART 4 SECTION 28.

(h) direct or indirect fired oil and gas process heaters of the coil type:

SAFETY CODES OFFICER: WARKENTIN, DANIEL

SIGNATURE:

NOTE: REQUIREMENTS OF THE SAFETY CODES ACT AND THE REGULATIONS ISSUED THEREUNDER:

THE OWNER OR PERSON IN CHARGE SHALL REPORT ALL ACCIDENTS INVOLVING A BOILER, PRESSURE VESSEL OR PRESSURE PIPING SYSTEM TO THE DISTRICT SAFETY CODES OFFICER IMMEDIATELY AND SHALL SEND A FULL REPORT IN WRITING TO THE ADMINISTRATOR/CHIEF INSPECTOR AS REQUIRED BY THE ACT. NO REPAIRS OR ALTERATIONS MAY BE MADE UNLESS AUTHORIZED BY A SAFETY CODES OFFICER.