



418172

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

Field Inspection Report

Client	Canadian Natural Resources Ltd.			Date of Insp.	May 13, 1998	
Prov. Reg.#	418172			Location	Greencourt	
Equipment	Indirect Line Heater			LSD	11-23-59-9W5	
Tag/Equip. #	-			Comp./Unit #	-	
				Job #	98-127	
Fabricator	Brooks Welding	Serial #	BW139.02		MAWP/Temp	Coil A - 13961 kPa Coil B-8942 kPa
CRN#	M1551.21	Coil Mat'l	A-106-B		Shell Thick.	-
Corr. All	-	Head Mat'l	-		Head Thick.	-
Diameter	41"	Length	152"	Height	RT	100% HT Yes
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				

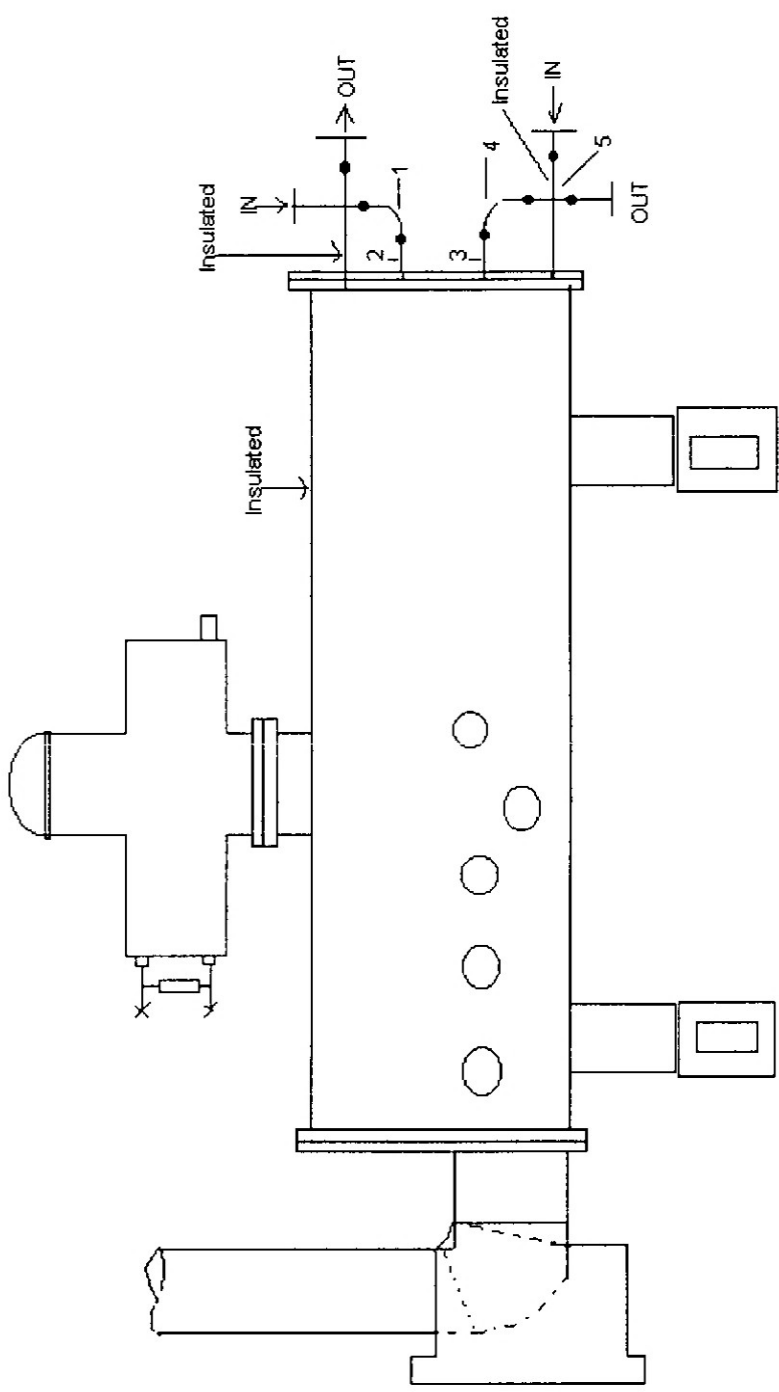
Observations:

External - Fully insulated, solid and tight, exposed attachment with no evidence of any rust or corrosion.
 Generally in good condition. No access for internal inspection at this time. No PSV on this line heater.
 UT inspection was done, see readings below.

Test Point	A	B	C	D	mm
1	9.4	10.0	9.2	9.4	mm
2	8.2	8.3	8.2	8.5	mm
3	12.3	12.1	12.4	12.5	mm
4	12.4	13.0	12.9	12.5	mm
5	13.9	13.3	13.4	13.3	mm

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Field Inspection Report



Recommendations:

1. NCR#0637 issued for PSV.
2. Next inspection May 2001.

Suitable to Return to Service: Y

Repair and Alteration Form (AB40): NA

Inspector:

Ramón Jimeno
Ramón Jimeno

Chief Inspector:

[Signature]
PROFESSIONAL ENGINEER
ALBERTA
PRINCE 100

Hennie Prinsloo
PROFESSIONAL ENGINEER
ALBERTA
PRINCE 100

RAE Inspection Service (1979) Ltd.

#11,4808 - 87 Street, Edmonton, Alberta T6E 5W3

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

Date Printed 2001/04/03

Permanent Pressure Vessel Record

Vessel #: 418172

Client	Canadian Natural Resources Ltd.		Inspection Date	March 06, 2001	
Prov. Reg.#	418172		Location	Greencourt	
Vessel Name	Line Heater - Shell		LSD	11-23-59-9W5	
Tag/Equip. #			Comp./Unit #		
Vessel Status	Not in Operation		Manufacturer	BWS	
		Serial #	BW139023	MAWP/TEMP	15,0000 psi
CRN#	M1551.2	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	42 in	Length	in	HT	yes RT 100%
Year Built	1997	Next Inspection	2003	Inspection Type	VE/UT
Service		Manway	No	Coating	No
Comments	See tube side for report.				

Permanent Pressure Vessel Record Vessel #: **418172**

Client	Canadian Natural Resources Ltd.		Inspection Date	March 06, 2001	
Prov. Reg.#	418172		Location	Greencourt	
Vessel Name	Line Heater - Tube A		LSD	11-23-59-9W5	
Tag/Equip. #			Comp./Unit #		
Vessel Status	Not In Operation		Manufacturer	BWS	
	Serial #	BW139023	MAWP/TEMP	2025.0000 psi	200.0000 °F
CRN#	M1551.2	Shell Material	SA-106-B	Shell Thickness	in
Corrosion All.	in	Head Material		Head Thickness	in
		Head Material 2		Head 2 Thickness	in
		Channel Material		Channel Thickness	in
Diameter	3 in	Length	in	HT	yes RT 100%
Year Built	1997	Next Inspection	2003	Inspection Type	VE/UT
Service		Manway	No	Coating	No
Comments					

Permanent Pressure Vessel Record

Vessel #: 418172

Client	Canadian Natural Resources Ltd.		Inspection Date	March 06, 2001	
Prov. Reg.#	418172		Location	Greencourt	
Vessel Name	Line Heater - Tube B		LSD	11-23-59-9W5	
Tag/Equip. #			Comp./Unit #		
Vessel Status	Not In Operation		Manufacturer	BWS	
	Serial #	BW139023	MAWP/TEMP	1297.0000 psi	200.0000 °F
CRN#	M1551.2	Shell Material	SA-106-B	Shell Thickness	in
Corrosion All.	in	Head Material		Head Thickness	in
		Head Material 2		Head 2 Thickness	in
		Channel Material		Channel Thickness	in
Diameter	3 in	Length	in	HT	RT
Year Built	1997	Next Inspection	2003	Inspection Type	VE/UT
Service		Manway	No	Coating	No
Comments	See tube side for report.				

RAE Inspection Service (1979) Ltd.

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

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

Field Inspection Report
Vessel A #418172

Observations:

External

Shell is insulated except for 2" at ends. Heads are in good condition with no indication of leaks, only interpass tube nozzles are exposed. Inlet and outlet nozzles are insulated. Heater is resting on steel skid. Minor surface corrosion on burner and stack. Fuel gas line and gauges are in good condition. Inspection sight glass missing on burner. Shell temperature gauge is in good condition- reads 6C (44F). Tube inlet and outlet gauge are in good condition – reads 10C and 6C. Tube nozzles are in good condition.

Internal

None at this time as heater was under pressure.

UT Inspection

Tubes - Nominal 3" sch80 - 0.300" +/- 12.5% = minimum 0.2625"

Tubes - Nominal 3" sch160 - 0.438" +/- 12.5% = minimum 0.383"

Flange 3" class 900.

Measurements in inches. See drawings for details.

Shell

East Head

Top - 0.266, 0.269, 0.269, 0.269

Mid- 0.259, 0.264, 0.262, 0.271

Bottom - 0.256, 0.259, 0.259, 0.260

East Shell

Top - 0.246, 0.253, 0.243, 0.244

Mid - 0.243, 0.245, 0.243, 0.246

Bottom - 0.243, 0.242, 0.243, 0.239

West Shell

Top - 0.236, 0.237, 0.238, 0.237

Mid - 0.291, 0.243, 0.243, 0.240

Bottom - 0.240, 0.241, 0.241, 0.239

West Head

Top - 0.370, 0.369, 0.369, 0.369

Mid - 0.374, 0.369, 0.370, 0.370

Tube 1

Inlet Nozzle - 3 readings taken

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

1 - 0.294, 0.289, 0.285, 0.304

2 - N/A, 0.287, 0.294, 0.302

3 - 0.295, 0.280, 0.283, 0.302

RAE Inspection Service (1979) Ltd.

#1-1J, 4808 - 87 Street, Edmonton, Alberta T6E 5W3

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

Field Inspection Report
Vessel A #418172

UT Inspection continued

Outlet Nozzle - 6 readings taken

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

1 - 0.434, 0.423, 0.404, 0.436

2 - 0.435, 0.425, 0.404, 0.431

3 - 0.468, 0.440, 0.456

4 - 0.461, 0.431, 0.467

5 - 0.420, 0.433, 0.441, 0.436

6 - 0.421, 0.425, 0.442, 0.441

Tube 2

Inlet Nozzle - 4 readings taken

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

1 - 0.284, 0.288, 0.292, 0.295

2 - 0.284, 0.288, 0.295, 0.298

3 - 0.359, 0.329, 0.346

4 - 0.343, 0.338, 0.335

Outlet Nozzle - 3 readings taken

1 - 0.296, 0.289, 0.279, 0.295

2 - N/A, 0.289, 0.287, 0.295

3 - 0.282, 0.291, 0.285, 0.293

Notes

No tube PSV - being dealt with as another issue.

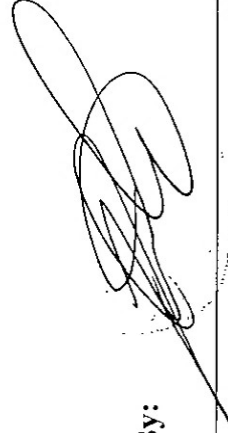
Recommendations:

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:



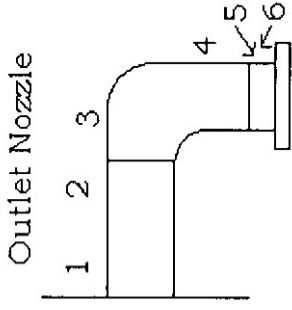
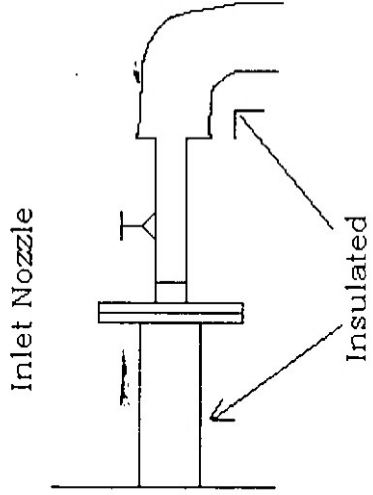
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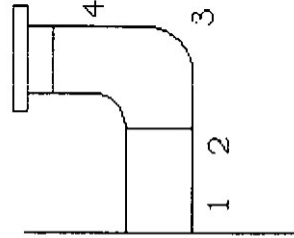
**Vessel Drawing
(not to scale)**

Client	Canadian Natural Resources Ltd.	Location	Greencourt
Prov. Reg.#	418172	LSD	11-23-59-9W5
Equipment	Line Heater	RAE Job#	01-123

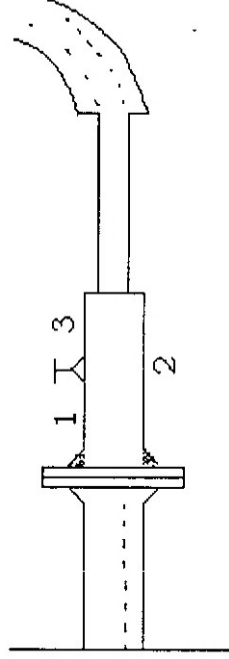


Tube 1 (above)

Inlet Nozzle



Outlet Nozzle



Tube 2 (above)

Certificate of Inspection

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

LOCATION: 11-23-59-9 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 #: BW139.023

YEAR BUILT: 1997
VOLUME: 0.16 M3

HEATING SURFACE:
SURFACE AREA:

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.