

**Canadian Natural Resources Limited
GENERAL PRESSURE VESSEL INFORMATION**

Job # 05.001539

District: Ft St John B.C.	
Facility: Halfway Battery	Location (LSD): 05 - 12 - 87 - 25 - W6M
Vessel Name & Equipment Number: High Pressure Flare Knock Out Drum	
Orientation: Horizontal	
Status: Operating	Regulatory Inspection

PRESSURE VESSEL NAMEPLATE DATA

"A" or "G" or "S" (Sask.) or BC Registration Number. C 23425		CRN Number Non Code	
Vessel serial number: 001891		Size : 72 in. x 20 ft.	
Shell thickness: 9.5 mm		Shell material: SA 36	
Head thickness: 9.5 mm		Head material: SA 516 70 N	
Tube wall thickness:		Tube material:	
Tube diameter:		Tube length:	
Channel thickness:		Channel material:	
Design pressure	Shell: Atmos.	Operating pressure	Shell:
	Tubes:		Tubes:
Design Temp.	Shell:	Operating temperature	Shell:
	Tubes:		Tubes:
X-ray: Nil		Heat treatment: Nil	
Code parameters: Non Code		Coated: No	
Manufacturer: NUSCO		Year built: 1998	
Corrosion allowance: Not Stated		Manway: Yes	

PRESSURE SAFETY VALVE NAMEPLATE DATA

Tag No	Manufacture	Model	Serial #	Set Press	Capacity	Size
Serv By	Date	Code Stamp	Block Valve	Location	CRN #	

SERVICE CONDITIONS-INDICATE ALL THAT APPLY

Sweet	Sour X	Oil	Gas X	Water X
Amine	LPG	Condensate X	Air	Glycol

Other (Describe):

Inspection Interval _____ PSV Service Interval Max 5 Years

(Determined by MIC in conjunction with Chief Inspector following guidelines of CNRL's Owner-User Inspection Program)

Reports reviewed and accepted by:

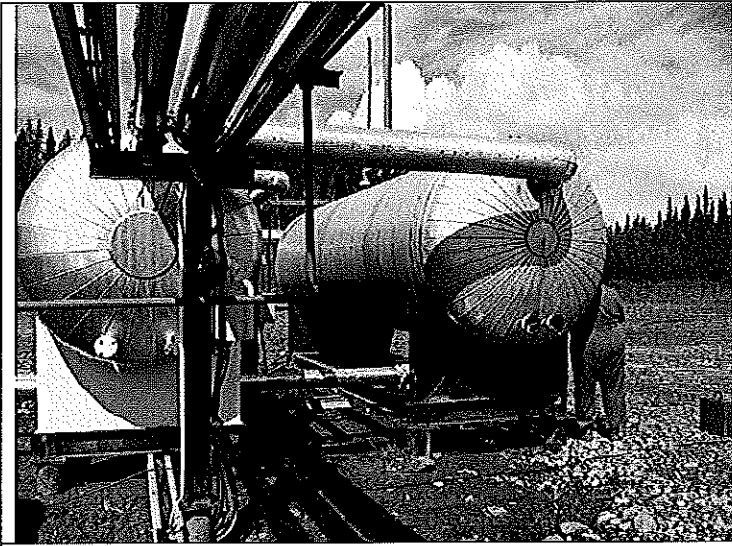
Mechanical Integrity Coordinator: _____ Date _____

External Inspection Items	G	F	P	N/A	Comments
Insulation: Verify sealed around manways, nozzles, no damage present, and there is no egress of moisture.	X				Good condition, no open or torn sections.
External Condition: Assess paint condition, areas peeling, record any corrosion, damage, etc (record location, size and depth of corrosion or damage)				X	No loose or flaking paint.
Leakage: Record any leakage at flanges, threaded joints, weep holes on repads, etc.	X				No leaks detected.
Saddles: Assess condition of paint, fire protection, concrete. Look for corrosion, buckling, dents, etc. Look at vessel surface area near supports. Verify no signs of leakage at attachment to vessel and attachment welds are acceptable. Ground wire attached?	X				No buckling or distortion to saddles. No obvious leaking at saddle to shell welded area – no stains. Skid package is grounded.
Anchor Bolts: Hammer tap to ensure secure. Look for cracking in treads or signs of deformation.	X				Firmly welded to skid.
Concrete foundation: Check for cracks, spalling, etc.				X	
Ladder / Platform: Describe general condition, ensure support is secure to vessel, describe any hazards.				X	
Nozzle: Assess paint, look for leakage, and ensure stud threads are fully engaged. Record any damage, deflection, etc. Are nozzles gusseted?	X				No seeping detected. No short studs. Nozzles are not gusseted.
Gauges Ensure gauges are visible, working, no leakage, and suitable for range of MAWP/ Temp.				X	No gussets.
External Piping Ensure pipe is well supported.	X				Firmly supported – no deflection – no corrosion.
Valving: Ensure no leaks are visible. Valves are properly supported and chained if necessary.	X				No leaking detected.
PSV: Ensure PSV is set at pressure at or below that of vessel. Discharge piping is same size as inlet to valve and is properly supported and routed. Ensure no block valves between psv and vessel or if there are they are locked open.				X	Atmospheric – discharges to flare.
NDE methods: Was UT/ MPI done on vessel (MI coordinator to review results)	X				Ultrasonic thickness inspection carried out to determine remaining thickness of metal – shell metal thickness detected below nominal – visual internal in 2004 revealed general corrosion – subsequent UT inspection shows increased corrosion rate – still sufficient metal for containment.
Recommendations or corrective actions: Vessel is Fit for Service or describe corrective actions required) (MIC to review corrective actions with Operations, discuss with Chief Inspector where necessary, and get remedial action implemented) Recommendations: Carry out internal on next outage. Summary: This vessel is in very good condition, visual external and ultrasonic thickness inspection carried out – shell metal thickness detected below nominal – general corrosion detected over full surface – still sufficient remaining metal thickness for containment. Vessel is fit for service.					

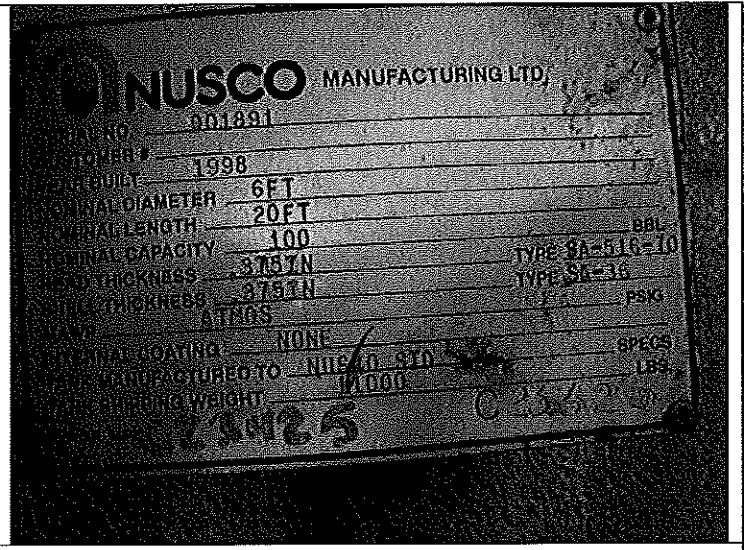
Inspected By: D. Wiedman

Mar 12 – 2008

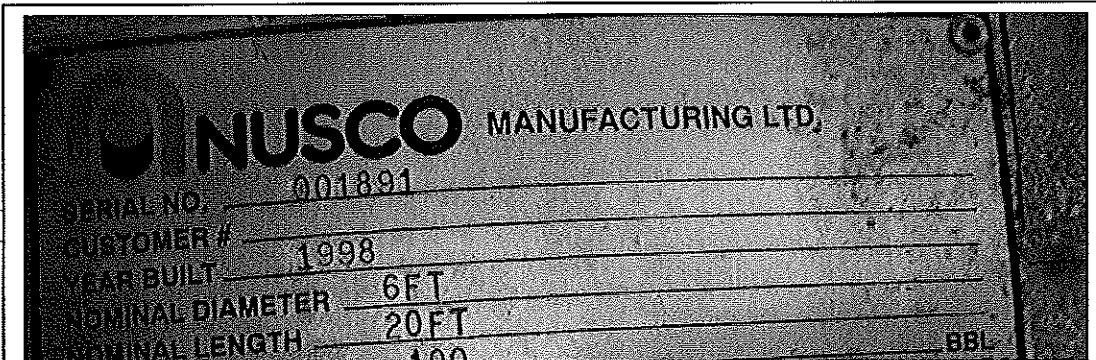
H.P. Flare Knock Out Drum – C23425



Over view



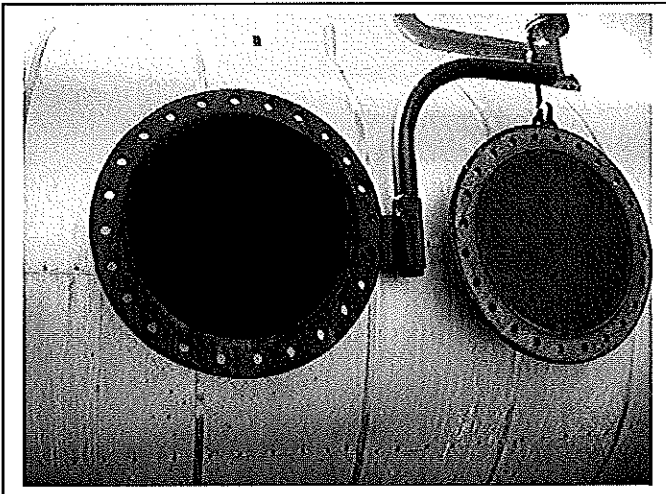
Data Plate



C 23425

NUSCO MANUFACTURING LTD.
 SERIAL NO. 001891
 CUSTOMER # _____
 YEAR BUILT 1998
 NOMINAL DIAMETER 6FT
 NOMINAL LENGTH 20FT
 NOMINAL CAPACITY 100
 NOMINAL THICKNESS 3757N
 WALL THICKNESS 3757N
 DESIGN PRESSURE 100PSI
 NOMINAL COATING NONE
 MANUFACTURED TO NUSCO STD
 NET WEIGHT 11000
 BBL

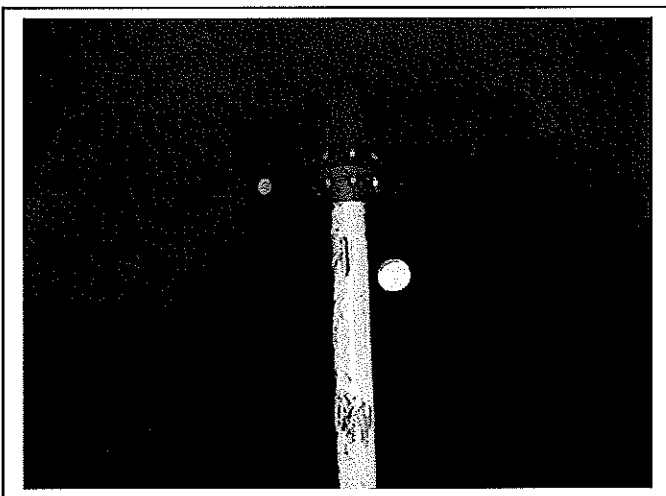
Man way access.



Pitting to .040 inches deep along 6:00 position.



Internal float column – intact



Heat Medium coil – intact and attached – pitting to .040 inches.



Inlet deflector and nozzle – good condition – general scaling as shell – pitting to .030 inches deep.

Heat medium coil.

