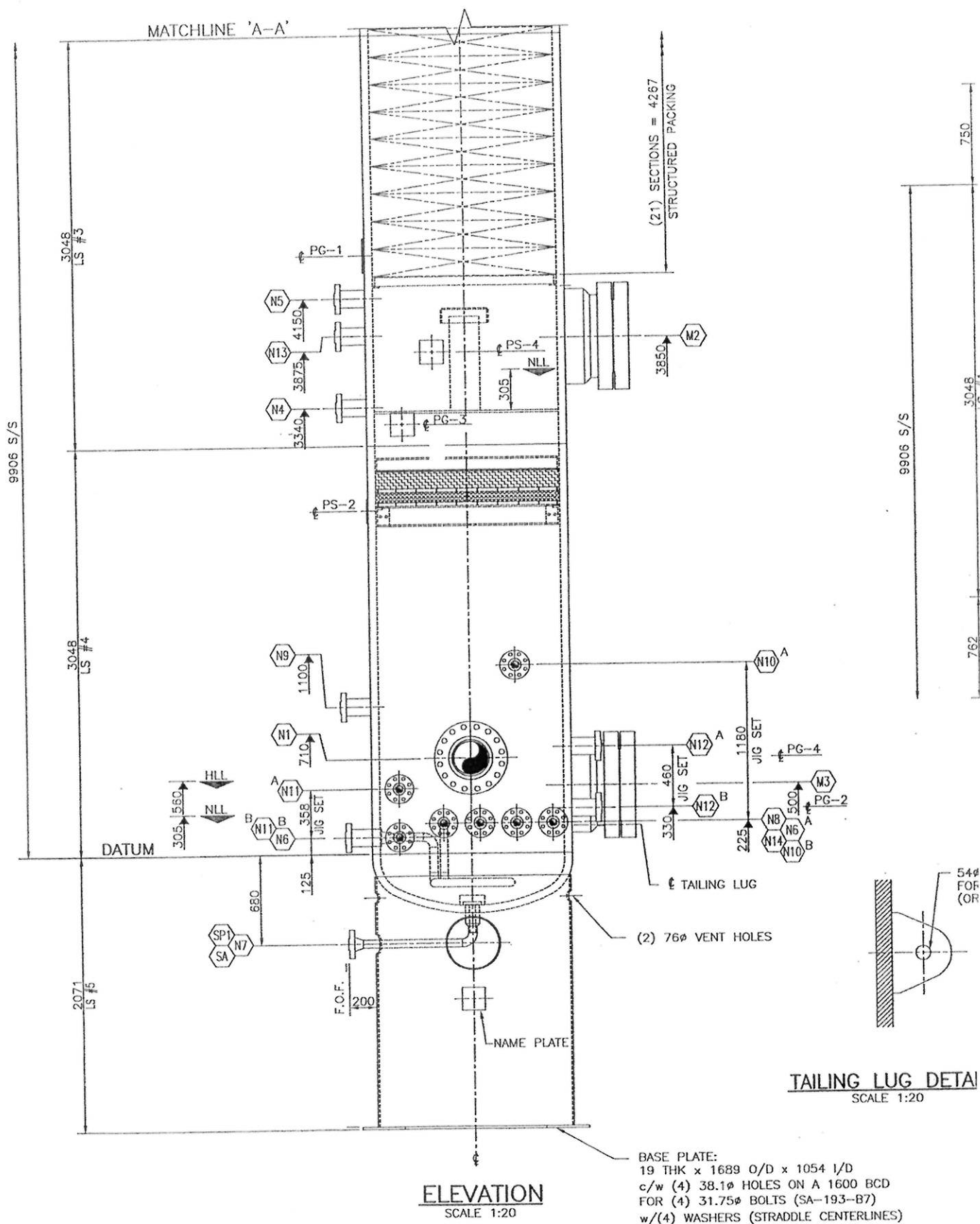
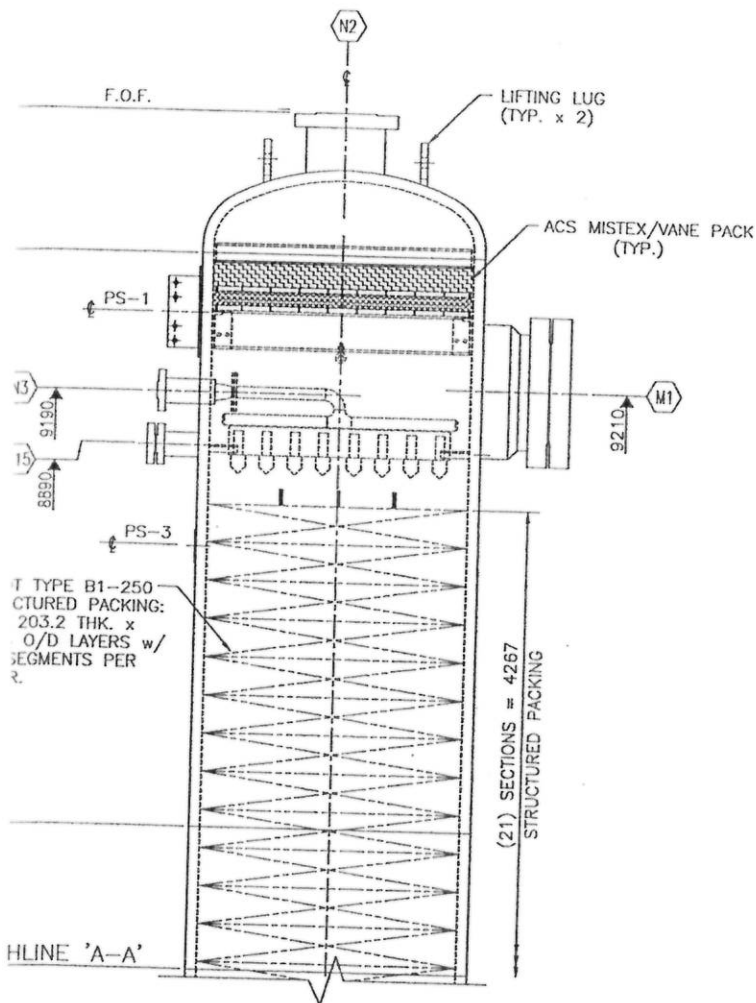


PROPAK SYSTEMS LTD POSTAL BAG #2, AIRDRIE, ALBERTA, CANADA T4B 2C3				PRESSURE VESSEL				SHEET 1 OF 1	
				FILE NO:		REQ #			
CUSTOMER : CANADIAN NATURAL RESOURCES LTD.				REV	BY	DATE	REVISION DESCRIPTION		
PLANT : LADYFERN GAS PLANT				0	PC	9/04/01	ISSUED TO DRAFTING		
SERVICE : STRIPPING COLUMN				1	PC	11/12/01	ISSUED FOR CONSTRUCTION		
JOB NO. : 01164 TAG NO: T-571 / T-671									
MFR. : PROPAK MODEL NO:									
1	PART	REQ'D(THICKNESS)	MATERIAL (SPEC)	MK	SERVICE	SIZE	RATING	FLANGE	PROJECT
2	SHELL	9.53 mm	SA-106-B SMLS	N1	GLYCOL INLET	114	150#	RFWN	
3	HEADS	25 mm	SA-516-70N	N2	PACKING DUMP	114	150#	RFWN	
4	SKIRTS		---	N3	EQUALIZING	89	150#	RFWN	
5	SADDLES		---	N4	GLYCOL OUTLET	89	150#	RFWN	
6	PIPE		SA-106-B SMLS	N5	DRAIN	48	150#	RFWN	
7	PIPE FITTINGS		SA-234-WPB SMLS	N6	STRIPPING GAS	60	150#	RFWN	
8	FLANGES		SA-105	N7					
9	COUPLINGS		SA-105	N8					
10	BOLTS		SA-193-2H	N9					
11	NUTS		SA-194-B7	N10					
12	GASKETS		DURLON 8500	N11					
13	COIL		---	N12					
14	RISER		SA-106-B SMLS						
15	PACKING SUPPORT		GRATING C.S.	C1					
16	TRAY SUPPORTS		---	C2					
17	BAFFLES		---	C3					
18	INLET BAFFLE		---	C4					
19	VORTEX BREAKER		---	C5					
20	SYPHON DRAIN		---	C6					
21	DEMISTER		---	C7					
22	DISTRIB. SPIDER		---	C8					
23	PACKING	0.23 m ² 25 mm PALL	304SS	C9					
24	TRAYS		---	C10					
25	PLATFORM		---	C11					
26	LADDER		---	C12					
27	DAVIT								
28	INSULATION RINGS		---	M1					
29	LIFTING LUGS		---	M2					
30	PIPE CLIPS		---						
31	PIPE SUPPORTS		---		SKIRT VENTS				
32					SKIRT ACCESS				
33									
34									
35	DESIGN DATA								
36	SIZE: ID (mm)		OD: (mm)	457	NOTES:				
37	F/S (mm)	1825							
38	DES PRESS (kPa)	100	OPER. PRESS (kPa)	ATM					
39	DES TEMP ° C	232	OPER. TEMP ° C	200					
40	HYDROTEST (kPa)	LEAK TEST	CORR. ALLOW. (mm)	1.59					
41	MDMT	-28.8	CYCLIC LOAD	NO					
42	X-RAY	NONE	STRESS RELIEVE	NO					
43	WIND LOAD (km / h)	160	EARTHQUAKE ZONE	2B					
44	SOUR SERVICE	NO	INSUL THK (mm)	38H					
45	FIREPROOF	NO	REFRACTORY THK (mm)	NONE					
46	INT. SURFACE PREP.	NONE	EXT. SURFACE PREP.	01168-PNT2					
47	INT. COATING		PRIMER COAT	01168-PNT2					
48	ASME SEC. VIII DIV.	NO	FINISH COAT	01168-PNT2					
49	'U' STAMP REQ'D	NO	FINISH COLOR	01168-PNT2					
50									
51	WEIGHT EMPTY (kg)		HYDRO WEIGHT (kg)						
52	LSD								
53									
54									
55									
56									
57									

PROPAK SYSTEMS LTD POSTAL BAG # 2, AIRDRIE, ALBERTA, CANADA T4B 2C3				TOWER PACKING		SHEET 1 OF 1 FILE NO:11.7.R REQ #	
CUSTOMER : CNRL				REV	BY	DATE	REVISION DESCRIPTION
PLANT : LADYFERN				0	TLL	01/08/03	FOR BID
SERVICE : GLYCOL CONTACTOR				1	TLL	01/09/05	FOR PURCHASE UNDER 01168
JOB NO. : 01168 TAG NO: T-510/T-610							
MFR. : ACS MODEL NO:							
1	TYPE OF PACKING			STRUCTURED TWO UNITS REQUIRED			
2	TOTAL INSIDE DIAMETER in			54 (1371 mm)			
3	TOTAL SECTION PACKING			ONE			
4	HEIGHT PACKING / SECTION in			168 (4267 mm)			
5	TOTAL PACKING HEIGHT			168 (4267 mm) - THREE THEORETICAL STAGES			
6	MAX DIFF PRESS (psig / ft PACKING)						
7							
8	INTERNAL CONDITIONS						
9				Case 1	Case 2	Case 3	
10	VAPOR TO PACKING			Natural Gas (115 MMSCFD)			
11	RATE lb / h			223092 (101193 kg/hr)			
12	DENSITY lb / cu. ft			3.5876	4.4011	5.5076	
13	PRESSURE psia			1125	1370	1677	
14	TEMPERATURE °F			110	110	110	
15	MOLECULAR WT			17.6	17.6	17.6	
16							
17	LIQUID FROM PACKING			99.5 WT% TEG			
18	RATE lb / h			9858	9987	9803	
19	DENSITY lb / cu. ft			68.89	68.75	68.675	
20							
21	TEMPERATURE °F			112	111	111	
22	VISCOSITY cP			9.513	9.23	8.893	
23	SURFACE TENSION dynes/cm2			46.4	46.29	46.29	
24	MOLECULAR WT			111.7	115.2	116.5	
25	FOAMING TENDANCY			MODERATE			
26	CONTAMINATES/CORROSION			4.3% CO2, 16 PPM H2S			
27	MAXIMUM FLOOD			70%	70%	70%	
28							
29	MECHANICAL DATA						
30	PACKING TYPE			STRUCTURED			
31	PACKING SIZE			Montz B1-250			
32	PACKING MATERIAL			304 SS			
33	SUPPORT PLATE: NO.			YES			
34	TYPE			GRATING - 304 SS			
35	HOLD DOWN PLATES: NO.			ONE			
36	TYPE			GRATING - 304 SS			
37							
38	REDISTRIBUTORS: NO.			NONE			
39	TYPE						
40							
41	INLET DISTRIBUTOR			YES			
42	TYPE			TROUGH TYPE WITH LEVELING DEVICE			
43							
44							
45							
46							
47							
48							
49	REMARKS: 1. VENDOR TO CONFIRM HEIGHT OF PACKING REQUIRED TO OBTAIN A MINIMUM OF THREE THEORETICAL STAGES.						
50	2. CHIMNEY TRAY BY PROPAK						
51	3. OUTLET MIST ELIMINATOR - HIGH PERFORMANCE MESH-VANE ASSEMBLY TO BE PROVIDED.						
52	4. SCRUBBER SECTION MIST ELIMINATOR - HIGH PERFORMANCE MESH-VANE ASSEMBLY TO BE PROVIDED.						
53							
54							
55							

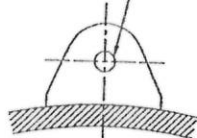




ELEVATION
SCALE 1:20

25 TON CROSBY S-209 HACKLE

54" HOLE FOR 45" NOM. 25 TON CROSBY S-209 (OR EQUAL) SHACKLE



LIFTING LUG DETAIL
SCALE 1:20

DRAWING TABLE *

DRAWING No.	SERIAL No.	TAG #
D-CTR-01168-401	01168"401"	V-510
D-CTR-01168-501	01168"501"	V-610

SERVICE: HYDROCARBONS

PRODUCTION IMPACT TEST REQ'D: YES

IMPACT TESTING:

YES-FOR SHELLS & HEADS

-IMPACT TEST REQUIRED PER AM-204.1 AS FOLLOWS:

AVERAGE (3) SPEC. = 15 ft-lbs.

MINIMUM (1) SPEC. = 10 ft-lbs

AT TEMP: -20°F

-LOW TEMP. MAT'L - PER MAT'L SPEC. ONLY

NO-PER AM-218 & FIG AM-218.1

-PER AM-214.1(a)

CAPACITY: 15.7 m³

WEIGHT EMPTY: 33000 Kg

WEIGHT FULL OF WATER: 48700 Kg

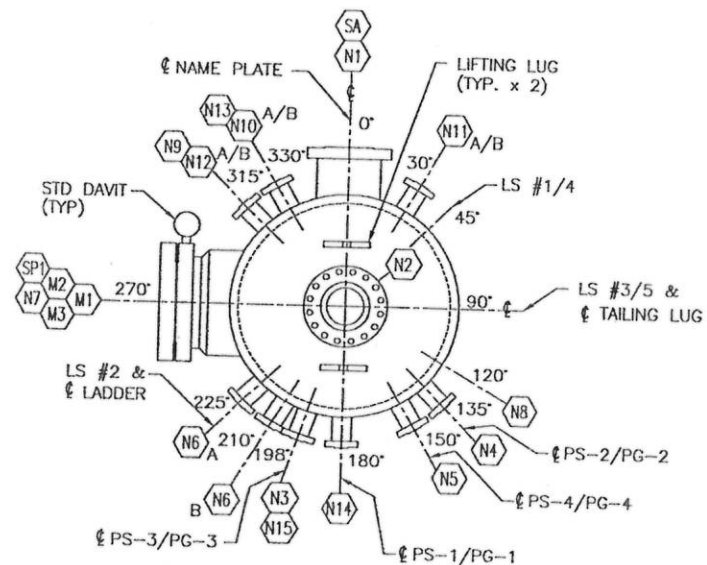
PAINT SPEC: 01168-PNT-1

INSULATION: NONE

SHIP LOOSE: YES

NOZZLE SCHEDULE

MK	SIZE	RATING	FACING	SCH	SERVICE	EXT. PROV	WT
N1	273	900#	R/TVC-HB*	WT=85.73	GAS INLET	310	
N2	273	900#	R/TVC-HB*	WT=85.73	GAS OUTLET	SPEC	
N3	60	900#	R/TVC-HB*	WT=39.62	GLYCOL INLET	200	
N4	60	900#	R/TVC-HB*	WT=39.62	GLYCOL OUTLET	200	
N5	60	900#	R/TVC-HB*	WT=39.62	LEVEL POT RETURN	200	
A/B N6	60	900#	R/TVC-HB*	WT=39.62	GLYCOL COIL	200	
N7	60	900#	R/TVC-HB*	WT=29.38	DRAIN	SPEC	
N8	60	900#	R/TVC-HB*	WT=39.62	LEVEL CONTROL VALVE	200	
N9	60	900#	R/TVC-HB*	WT=39.62	PRESSURE GAUGE	200	
A/B N10	60	900#	R/TVC-HB*	WT=39.62	LEVEL GAUGE	200	
A/B N11	60	900#	R/TVC-HB*	WT=39.62	LEVEL TRANSMITTER	200	
A/B N12	60	900#	R/TVC-HB*	WT=39.62	LEVEL SWITCH	200	
N13	60	900#	R/TVC-HB*	WT=39.62	DIFF. PRESSURE TRANS.	200	
N14	60	900#	R/TVC-HB*	WT=39.62	TEMPERATURE INDICATOR	200	
N15	60	900#	R/TVC-HB*	WT=39.62	SPARE w/BLIND	200	
M1	457	900#	R/TVC-V2*	WT=123.83	MANWAY w/ BLIND & DAVIT	350	
M2	457	900#	R/TVC-V2*	WT=123.83	MANWAY w/ BLIND & DAVIT	350	
M3	457	900#	R/TVC-V2*	WT=123.83	MANWAY w/ BLIND & DAVIT	350	
SA	406	-	PIPE	STD	SKIRT ACCESS	25	
SP1	150	-	-	-	SKIRT PIPE ACCESS	-	



ORIENTATION
SCALE 1:25

SERIAL NO: SEE TABLE *		CRN: -
YEAR BUILT: 2002		
LSD #: A-84-G/94-H-01		
CODE: ASME SECT. VIII DIV II, '98 , ADDENDA '00 (COIL : ASME B31.3 '99 ,ADDENDA N/A)		
	VESSEL	COIL
DESIGN PRESSURE	11997 kPag	11997 kPag
DESIGN TEMPERATURE	93.3°C	93.3°C
M.D.M.T.	-28.8°C @ 11997 kPag	-28.8°C
HYDROTEST PRESSURE	14996 kPag	17995 kPag
MATERIAL: HEAD:	SA-516-70N	SA-350-LF2
SHELL:	SA-516-70N	SA-106-B (SMLS)
RADIOGRAPHY: LONG:	PER AI-500 INCL ALL	
CIRC:	PER AI-500 BUTT WELDS	100%
P.W.H.T.	YES	YES
MIN TEMP / TIME	593°C/2 Hours, 15 Minutes	
CORR. ALLOWANCE	3.18 mm	1.59 mm
"SOUR SERVICE"		
TAG NO: SEE TABLE *		

CANADIAN NATURAL RESOURCES LTD.

230 MMSCFD DEHYDRATION FACILITY
GLYCOL CONTACTOR (SEE TABLE *)
1372 I/D x 9906 LG S/S

PROPAK
440 East Lake Road,
Postal Bag #2
Airdrie, Alberta
Canada T4B 2C3

APPROVED	DRAWN
MECH/STRUCT.	BY
DATE	DATE
ELECTRICAL	CHECKED
DATE	BY
PROJECT	DATE
DATE	SCALE
	AS NOTED

DWG. No.: D-CTR-01168-X01*-SKT SHT. 1 OF 1 REV.