

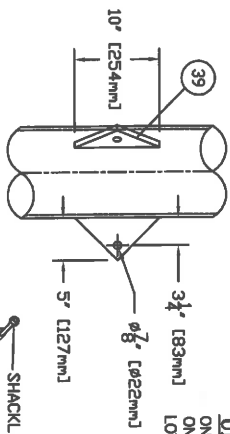
Mark No.	Size	ANSI Rating	Service	O.D. of Nozzle Neck	Projection	Welding	Fillet Weld Size	Bill of Mat'l	Remarks	Elevation	Angle
N1	Rec'd #1 [219mm]	SA350 LF2 150#	WASTE GAS INLET CONNECTION	8 5/8 [219]	0" 22"	3.5	A B C D	Item No.	WELD NECK	15'-0" [4572mm]	90°
N2	1 #1 [33.3mm]	SA350 LF2 150#	GAS ASSIST INLET CONNECTION	1 5/16 [33.3]	0"	3.5	1/2"	4.29	WELD NECK	12'-0" [3658mm]	240°

NOZZLE SCHEDULE AND WELD DETAILS

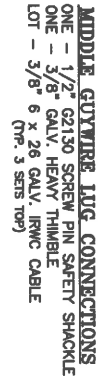
WELD DETAIL 1	WELD DETAIL 2	WELD DETAIL 3	WELD DETAIL 4	WELD DETAIL 5	WELD DETAIL 9
Weld Procedure TT-1-10	Weld Procedure TT-1-TT-31	Weld Procedure TT-1-TT-31	Weld Procedure TT-1-TT-31	Weld Procedure TT-1-TT-31	Weld Procedure TT-1-TT-31



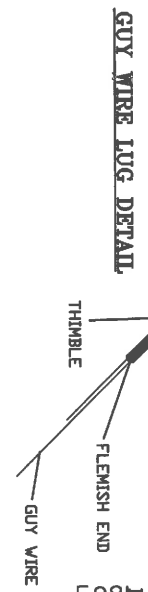
PHONE# (403)883-2400
 FAX# (403)883-2550
 TOLL FREE# 1-800-661-4128
 WEB SITE: WWW.TORNADOTECH.NET



UPPER GUYWIRE LUG CONNECTIONS
 ONE - 1/2" G2130 SCREW PIN SAFETY SHACKLE
 ONE - 3/8" GALV. HEAVY THIMBLE
 LOT - 3/8" 6 x 26 GALV. IRWC CABLE
 (TYP. 3 SETS TOP)



MIDDLE GUYWIRE LUG CONNECTIONS
 ONE - 1/2" G2130 SCREW PIN SAFETY SHACKLE
 ONE - 3/8" GALV. HEAVY THIMBLE
 LOT - 3/8" 6 x 26 GALV. IRWC CABLE
 (TYP. 3 SETS TOP)



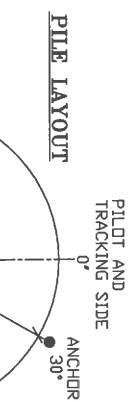
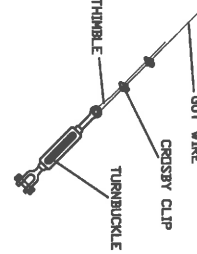
LOWER GUYWIRE LUG CONNECTIONS
 ONE - 1/2" G2130 SCREW PIN SAFETY SHACKLE
 ONE - 3/8" GALV. HEAVY THIMBLE
 LOT - 3/8" 6 x 26 GALV. IRWC CABLE
 (TYP. 3 SETS TOP)

GUY WIRE LUG DETAIL

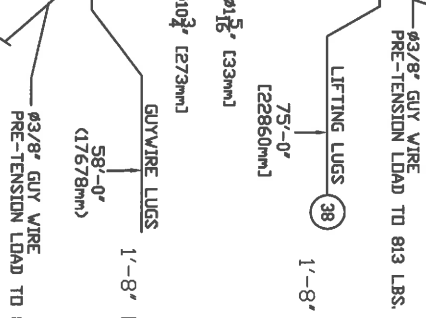
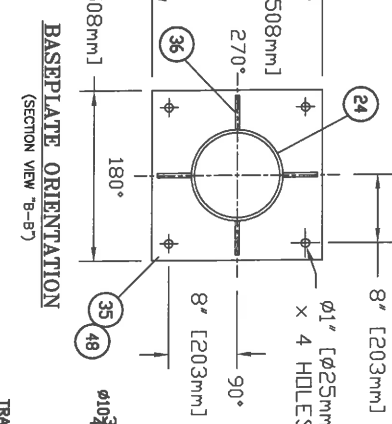
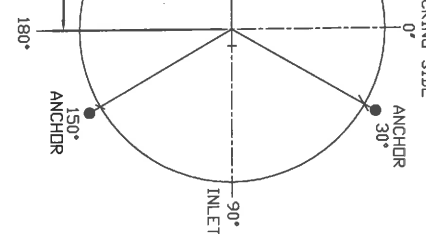
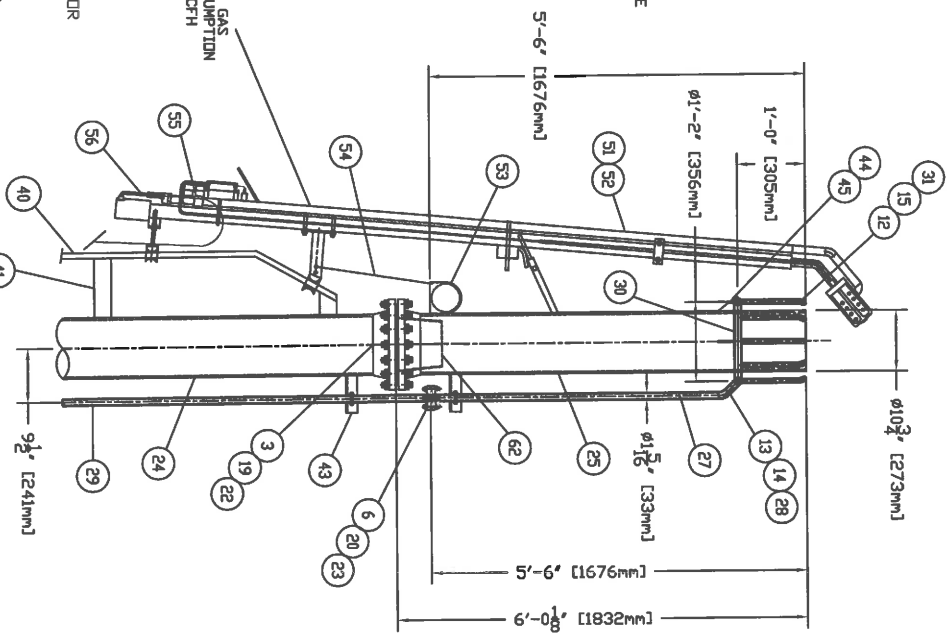
UPPER GUYWIRE ANCHOR CONNECTIONS
 ONE - 3/4" x 12" J & J TURNBUCKLE
 ONE - 3/8" GALV. HEAVY THIMBLE
 THREE - 3/8" CROSBY CLIPS
 LOT - 3/8" 6 x 26 GALV. IRWC CABLE
 (TYP. 3 SETS BOTTOM)

MIDDLE GUYWIRE ANCHOR CONNECTIONS
 ONE - 3/4" x 12" J & J TURNBUCKLE
 ONE - 3/8" GALV. HEAVY THIMBLE
 THREE - 3/8" CROSBY CLIPS
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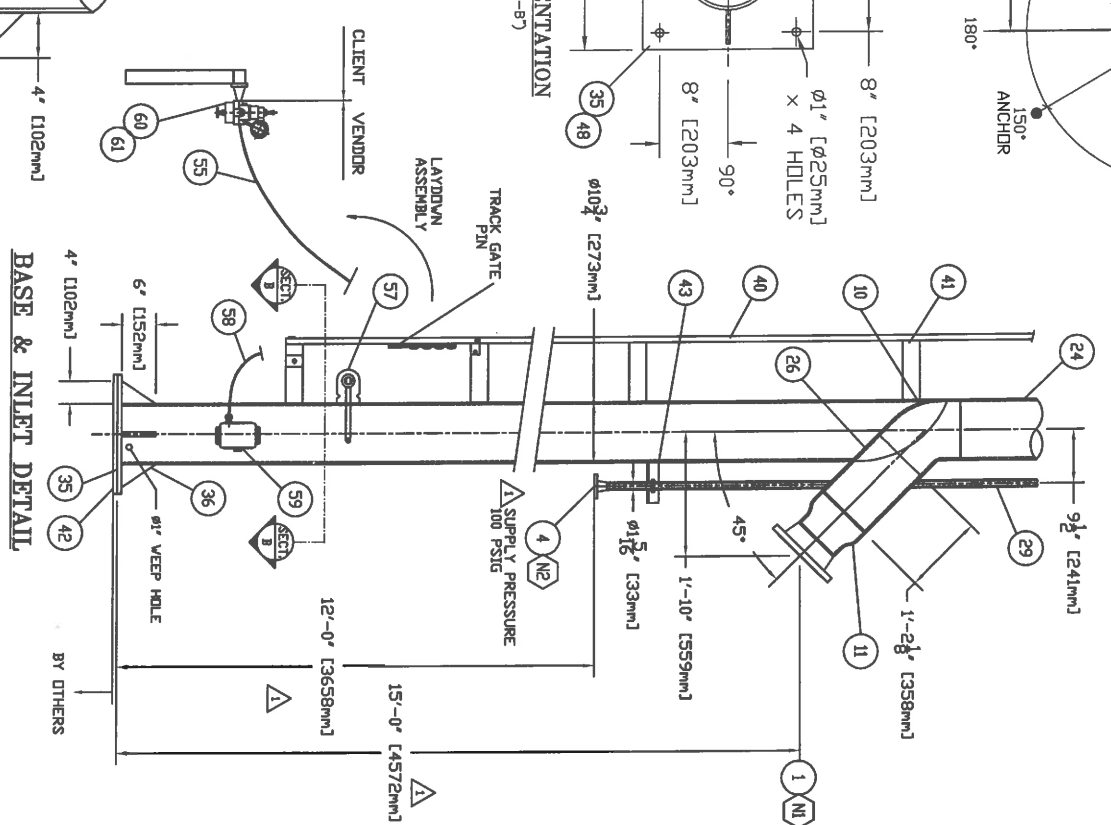


PILOT & TIP DETAIL

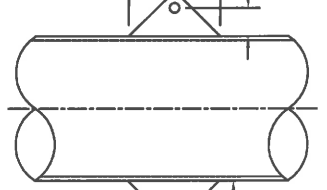


ALL BREAK FLANGES C/W STUDS - SA193 - 2BH NUTS - SA194 - 2BH GASKETS - 1/8" THK. 304SS FLEXIBULIC

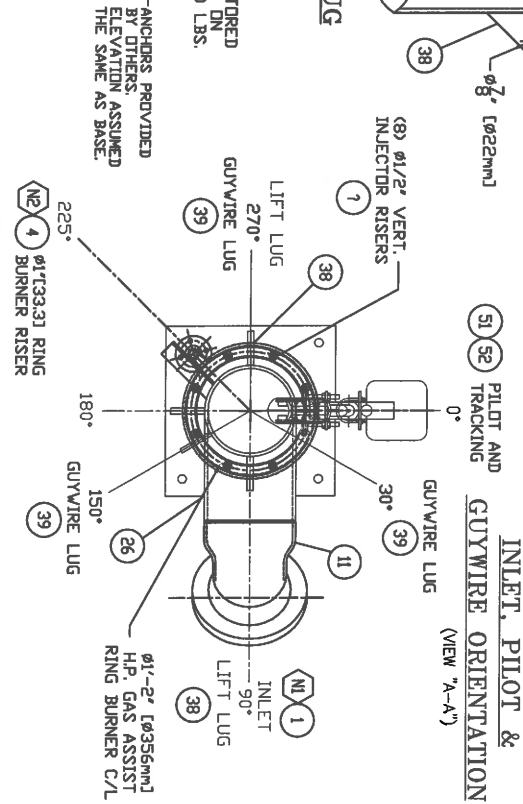
BASE & INLET DETAIL



LIFTING LUG DETAIL



INLET, PILOT & GUYWIRE ORIENTATION (VIEW A-A)



Paint: SANDBLAST SSPC-SP6 RUSTOLEUM 4285 GRAY PRIMER RUSTOLEUM 4285 GRAY FINISH	Ignition System RETRACTABLE FUEL GAS (45°) PILOT MODEL TSI#6 c/w AUTO RELITE SYSTEM MODEL TPMP-A FS 24V.D.C.
Approx. Weight: 5,215 LBS. Mag Particle Procedure: SEE NOTE Radiography / Xray: SEE NOTE	Coolant Tracing: NO Aluminum Cladding: NO Corrosion Allowance: .0625" Weld Procedure #: #1323.2 Q.C. Program #: AQP-1266

Dwg. By: EMW Date: 2007 03 29 Salesperson: JOHN CASSIDY JOB#: 7-3077 Sheet 1 of 2	DWG#: HUS-7-3077ga Y M D QUOTE#: JC07-ST119
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Title: 10" x 100'-0" TALL GUYWIRE SUPPORTED FLARE STACK c/w 10" INLET CONNECTION Customer: HUSKY OIL OPERATIONS LTD. c/o IMV PROJECTS INC. P.O.#: AB0439-002 LSD: ANSELL, ALBERTA 7-27-51-19 W5M	REV. 4
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Rev.	Description	By	Y	M	D
4	AS BUILT	AL	07	06	22
3	UPDATED TITLEBLOCK LOAD VALUES PER TORNADO	EW	07	05	30
2	UPDATED PILOT CALLOUT TO 24 V.D.C. MODEL	EW	07	05	17
1	REVISED AS PER CUSTOMER REQUEST	AL	07	04	09
0	ISSUED FOR APPROVAL PURPOSES	EW	07	03	29
General Notes:					
Tag #: 2-F-800					
100% RADIOGRAPHY TESTING ON ALL LONGITUDINAL & CIRCUMFERENTIAL BUTT WELDS IN CONTACT WITH FLARE GAS. 100% MAGNETIC PARTICLE OR DYE PENETRANT TESTING OF ALL LOAD BEARING FILLET WELDS (CARBON & S.S.)					
Max. Horiz. Load At Base: 1,474 LBS. Max. Vertical Load At Base: 15,546 LBS.					
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Bill of Materials

		FLANGES		WELD FITTINGS		COUPLINGS		GASKETS		STUD BOLTS C/W 2 HEX NUTS/EA.		PIPE		PLATE		IGNITION SYSTEM / MISC. PARTS				
No	Qty	Size	Sch.	Rating	Face	Type	Material Specification	Remarks	Heat#	No	Qty	Size	Type	Sch.	Length	Bolt Spec.	Nut Spec.	Match Item	Remarks	Heat#
1	1	ø8"[219]	STD.	150#	R.F.	W.N.	SA350 LF2	N1 – FLARE GAS INLET CONNECTION	327R5	21	12	12	1	7/8"[22]	5.25"[133]	SA193 B7M	SA194 2HM	2.18	STACK FLUE BREAK FLANGES	
2	2	ø10"[273]	STD.	150#	R.F.	W.N.	SA350 LF2	STACK FLUE BREAK FLANGES	195R5	22	12	12	1	7/8"[22]	5.25"[133]	SA193 B7M	SA194 2HM	3.19	STACK TIP BREAK FLANGES	
3	2	ø10"[273]	STD.	150#	R.F.	W.N.	SA350 LF2	STACK TIP BREAK FLANGES	195R5	23	8	4	2	ø1/2"	3 1/4"	SA193 B7M	SA194 2HM	5.6,20	GAS ASSIST RISER BREAK FLGS.	
4	1	ø1"[33.3]	XH	150#	R.F.	W.N.	SA350 LF2	N2 – GAS ASSIST INLET CONNECTION	404R5	No	Qty	No./SET	Sets	Diameter						
5	2	ø1"[33.3]	XH	150#	R.F.	S.O.	SA350 LF2	GAS ASSIST RISER BREAK FLANGES	460RX	24	1	ø10"[273]		SMLS	STD.	SA333 GR. 6 x 94'-0"[28651mm]	LG.		STACK FLUE	96E2709/965549
6	2	ø1"[33.3]	XH	150#	R.F.	S.O.	SA350 LF2	GAS ASSIST TIP BREAK FLANGES	460RX	25	1	ø10"[273]		Tp 312	STD.	316L S.S. x 6'-0"[1829mm]	LG.		STACK FLUE TIP	VLF042226
7										26	1	ø10"[273]		SMLS	STD.	SA333 GR. 6 x 1'-2 1/8"[358mm]	LG.	N1 – FLARE GAS INLET EXT.		96E2707
8										27	1	ø1"[33.3]		Tp 312	80	316L S.S. x 4'-2 1/4"[1276]	LG.	GAS ASSIST RISER TIP		0609-128
9										28	1	ø1"[33.3]		Tp 312	80	316L S.S. x 1 1/8"[28]	LG.	GAS ASSIST RISER		23792
										29	1	ø1"[33.3]		SMLS	XH	SA333 GR. 6 x 82'-3 1/2"[25803]	LG.	ROLLED INJECTOR RING		0609-128
										30	1	ø1"[33.3]		SMLS	80	316L S.S. x 1'-2"[356]	DIA. C/L	VERTICAL INJECTOR RISERS		05A0402-571
										31	8	ø1/2"[21]		SMLS	80	316L S.S. x 10 1/4"[260]	LG.			
										32										
										33										
										34										
No	Qty	Size	Sch.	Description	Rating	Ends	Material Specification	Remarks	Heat#	No	Qty	Size	Type	Sch.	Length	Bolt Spec.	Nut Spec.	Match Item	Remarks	Heat#
51	1	TORNADO RETRACTABLE FUEL GAS PILOT MODEL TSI#6					3/4" THK. SA 516-70N CS PLATE	BASEPLATE	54878	35	1	20" x 20"	[508 x 508] SQ.		3/4"	THK. SA 516-70N CS PLATE			BASEPLATE	
52	1	TORNADO PILOT MONITORING & AUTO RELITE SYSTEM TPMR-A FS 24 V.D.C.					1/2" THK. SA 516-70N CS PLATE	BASEPLATE GUSSETS	6400N-04	36	4	6" x 4"	[152 x 102]		1/2"	THK. SA 516-70N CS PLATE				
53	1	PILOT RETRACTING ENCLOSED CS PULLEY					3/4" THK. SA 516-70N CS PLATE	LIFTING LUGS	54878	37										
54	LOT	ø3/16" S.S. IGNITOR RETRACTING PULLEY CABLE					1/8" THK. HSS TUBING	PILOT TRACKING		38	4	8" x 4"	[203 x 102]		3/4"	THK. SA 516-70N CS PLATE			LIFTING LUGS	
55	LOT	ø1/4" NPT TYPE 3 FLEXIBLE FUEL SUPPLY HOSE					1/4" THK. SA 36 CS PLATE	TRACKING SUPPORTS		39	9	10" x 5"	[254 x 127]		1/2"	THK. SA 516-70N CS PLATE			GUYWIRE LUGS	6400N-04
56	LOT	ø1/4" NPT PARKER INLINE HIGH PRESSURE FUEL FILTER					3/4" THK. SA 516-70N CS PLATE	MATING BASEPLATE	54878	40	LOT	2" x 1"	[51 x 25]		1/8"	THK. HSS TUBING			PILOT TRACKING	
57	1	PILOT RETRACTING WINCH (MANUAL)					c/w U-BOLT CLAMPS	RISER STANDOFF BRACKETS		41	LOT	3"	[76mm] FLAT		1/4"	THK. SA 36 CS PLATE			TRACKING SUPPORTS	
58	LOT	#16-4 SOW ELECTRICAL CABLE					1/4" THK. 316L S.S. PLATE	INJECTOR RING SUPPORT PLATE	836163	42	1	20" x 20"	[508 x 508] SQ.		3/4"	THK. SA 516-70N CS PLATE				
59	1	FS-12 ELECTRICAL JUNCTION BOX					1/4" THK. 316L S.S. PLATE	INJECTOR RING LOCKDOWN TAB	836163	43	LOT	2" x 2" x 1/4"	ANGLE IRON							
60	1	ø1/4" NPT FISHER 67 AFR REGULATOR					1/4" THK. 316L S.S. PLATE		836163	44	3	2 3/4"	[70] x 2 3/8"	[60.3]						
61	1	ø1/4" NPT, 2" DIAL FACE, 0-30 PSI CS DRY GAUGE (18 PSI Set)								45	1	1 3/8"	[35] x 2 1/2"	[64]						
62	1	ø10"[273mm] 304L S.S. TORNADO FLANGED TYPE PURGE SEAL								46										
63										47										
										48										
										49										
										50										

- 1.) REQUIRED FLARE TIP GAS FLOW RATE = 80 S.C.F.H.
- 2.) PILOT FUEL GAS CONSUMPTION = 20 S.C.F.H. @ 15 P.S.I.
- 3.) ASSIST GAS FLOW RATE = 6,100 S.C.F.H. @ 10 P.S.I.G.

4	UPDATED PART ITEM #52 AND UPDATED TITLEBLOCK	EW	07	05	17	General Notes: 100% RADIOGRAPHY TESTING ON ALL LONGITUDINAL & CIRCUMFERENTIAL BUTT WELDS IN CONTACT WITH FLARE GAS. 100% MAGNETIC PARTICLE OR DYE PENETRANT TESTING OF ALL LOAD BEARING FILLET WELDS (CARBON & S.S.)	Tag #: 2-F-600	Paint: SANDBLAST SSPC-SP6 RUSTOLEUM 4285 GRAY PRIMER RUSTOLEUM 4285 GRAY FINISH	Ignition System RETRACTABLE FUEL GAS (45°) PILOT MODEL TSI#6 c/w AUTO RELITE SYSTEM MODEL TPMR-A FS 24V.D.C.	Dwg. By: EMW DWG#: HUS-7-3077bon Date: 2007 03 29 Y M D Salesperson: JOHN CASSIDY JOB#: 7-3077 QUOTE#: JC07-ST119 Sheet 2 of 2	Title: ø10" x 100'-0" TALL GUYWIRE SUPPORTED FLARE STACK c/w ø10" INLET CONNECTION Customer: HUSKY OIL OPERATIONS LTD. c/o DMV PROJECTS INC. P.O.#: AB0439-002 REV. 6 ANSALL, ALBERTA 7-27-51-19 W5M	PHONE# (403)883-2400 FAX# (403)883-2550 TOLL FREE# 1-800-661-4128 WEB SITE: WWW.TORNADOTECH.NET
3	ADDED NOTES PER CLIENT'S REQUEST	EW	07	05	14							
2	MATERIAL REVISION (SA 36 TO SA 516-70N)	AL	07	04	10							
6	AS BUILT	AL	07	06	22							
5	UPDATED TITLEBLOCK LOAD VALUES PER TORNADO	EW	07	05	30							
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