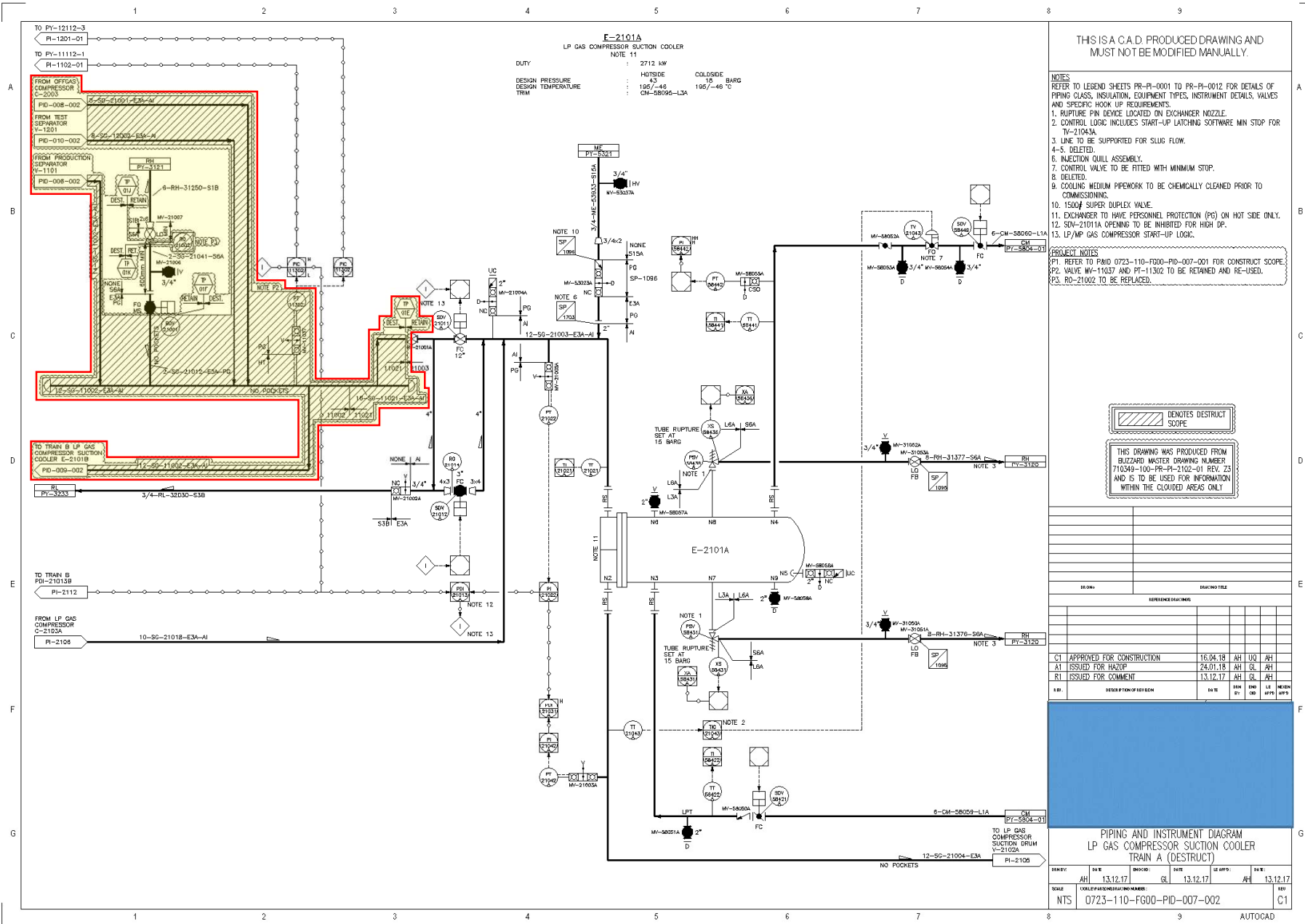
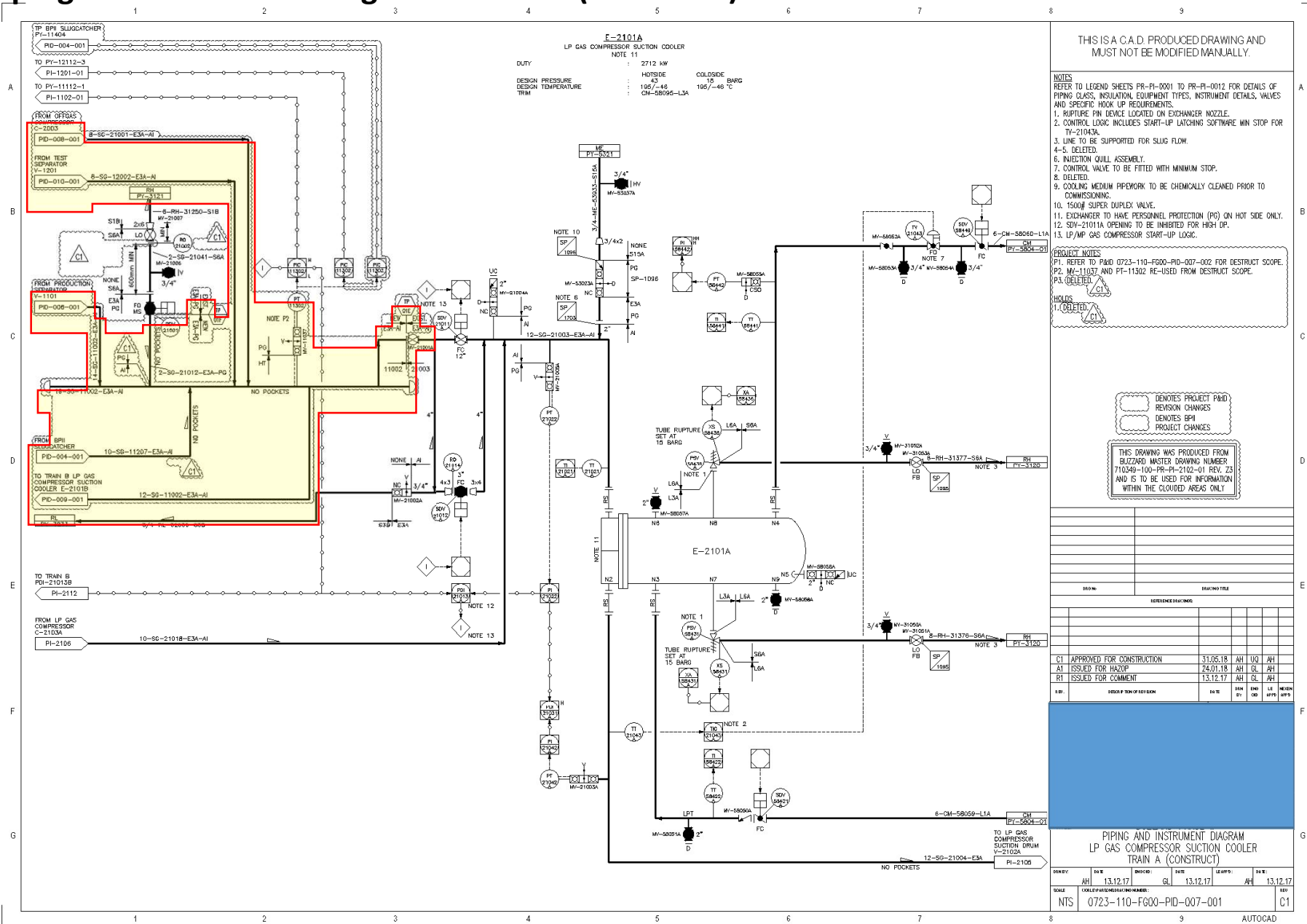


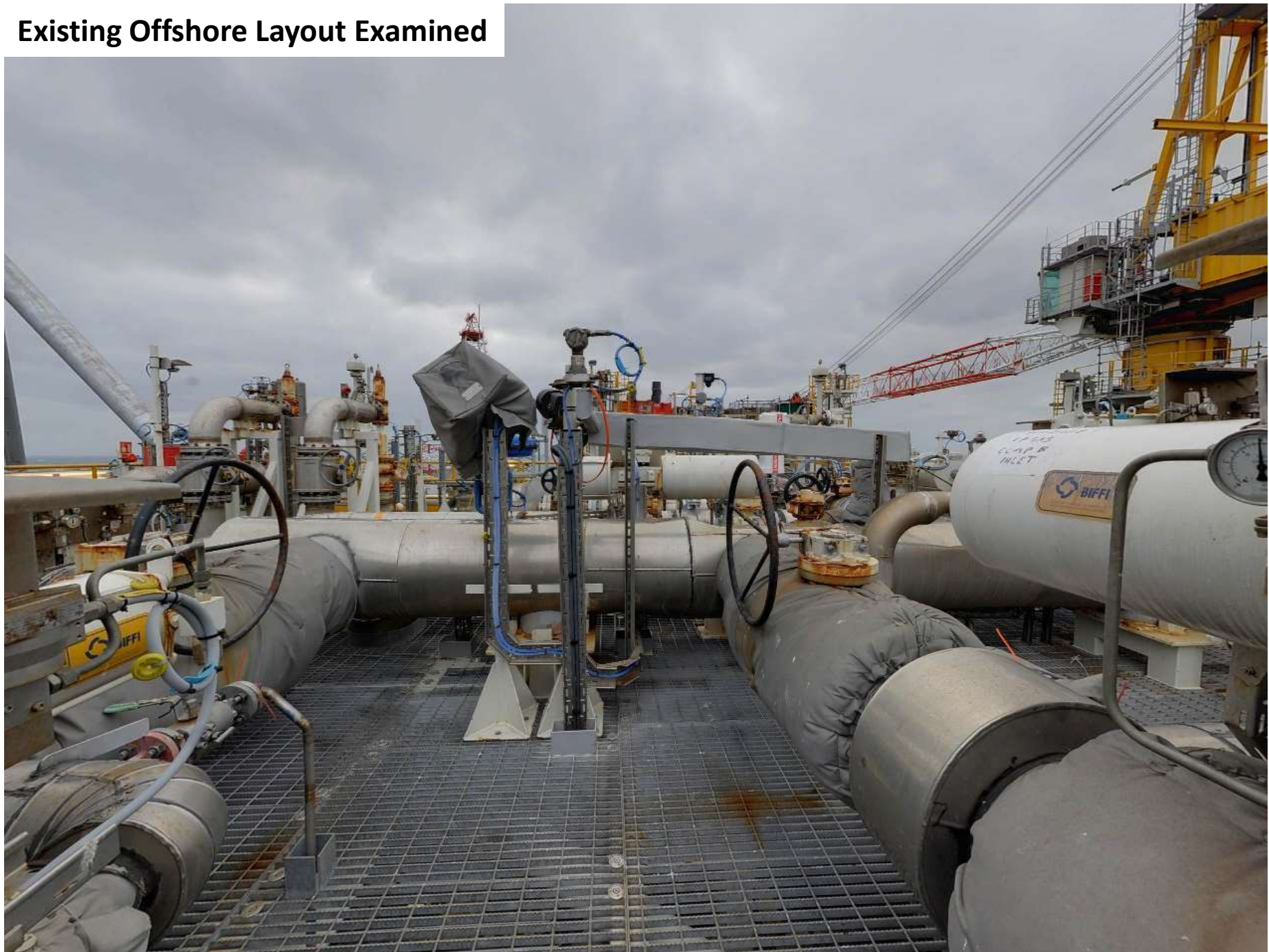
Piping and Instrument Diagrams Created (Destruct)



Piping and Instrument Diagrams Created (Construct)



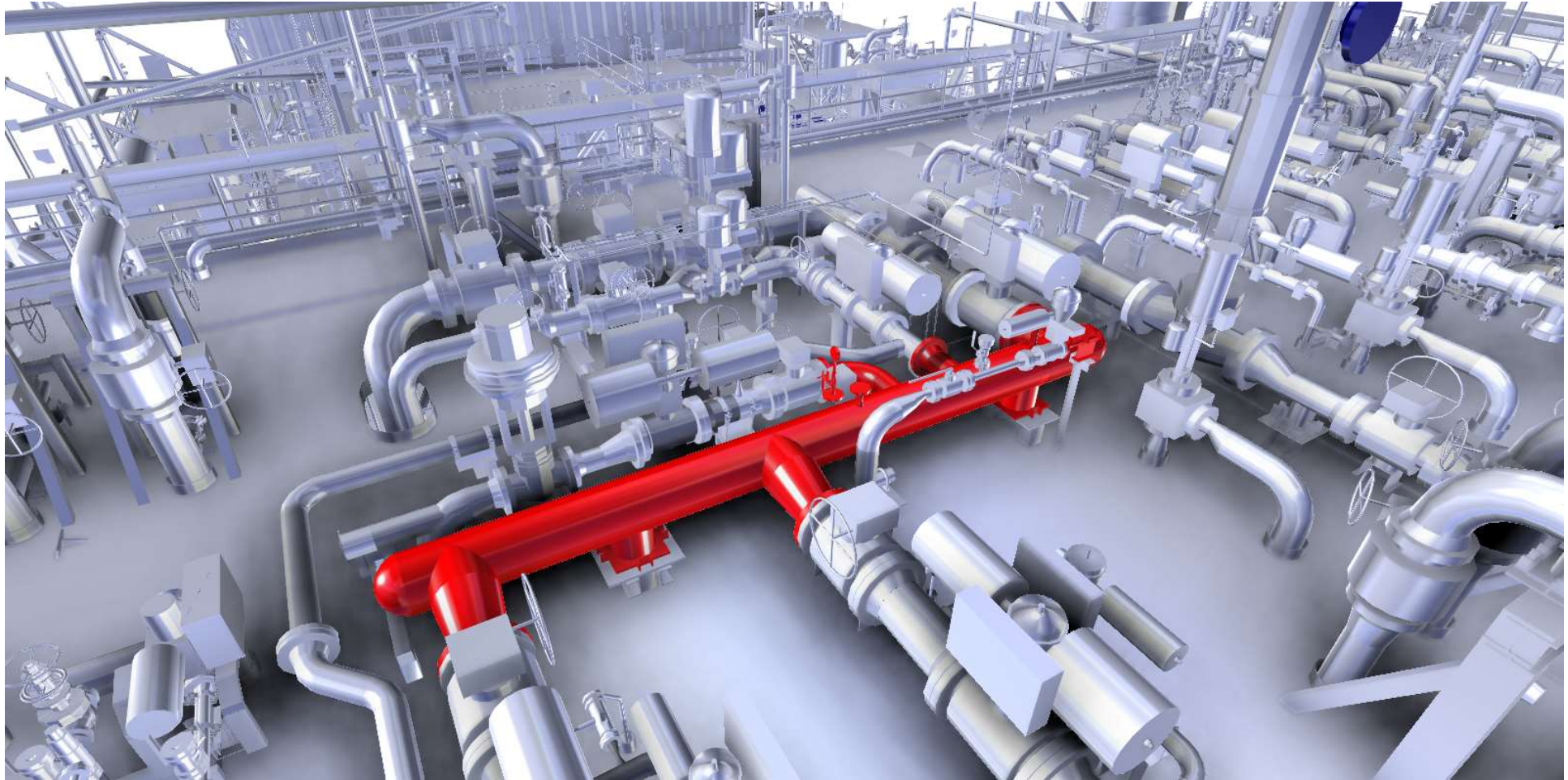
Existing Offshore Layout Examined



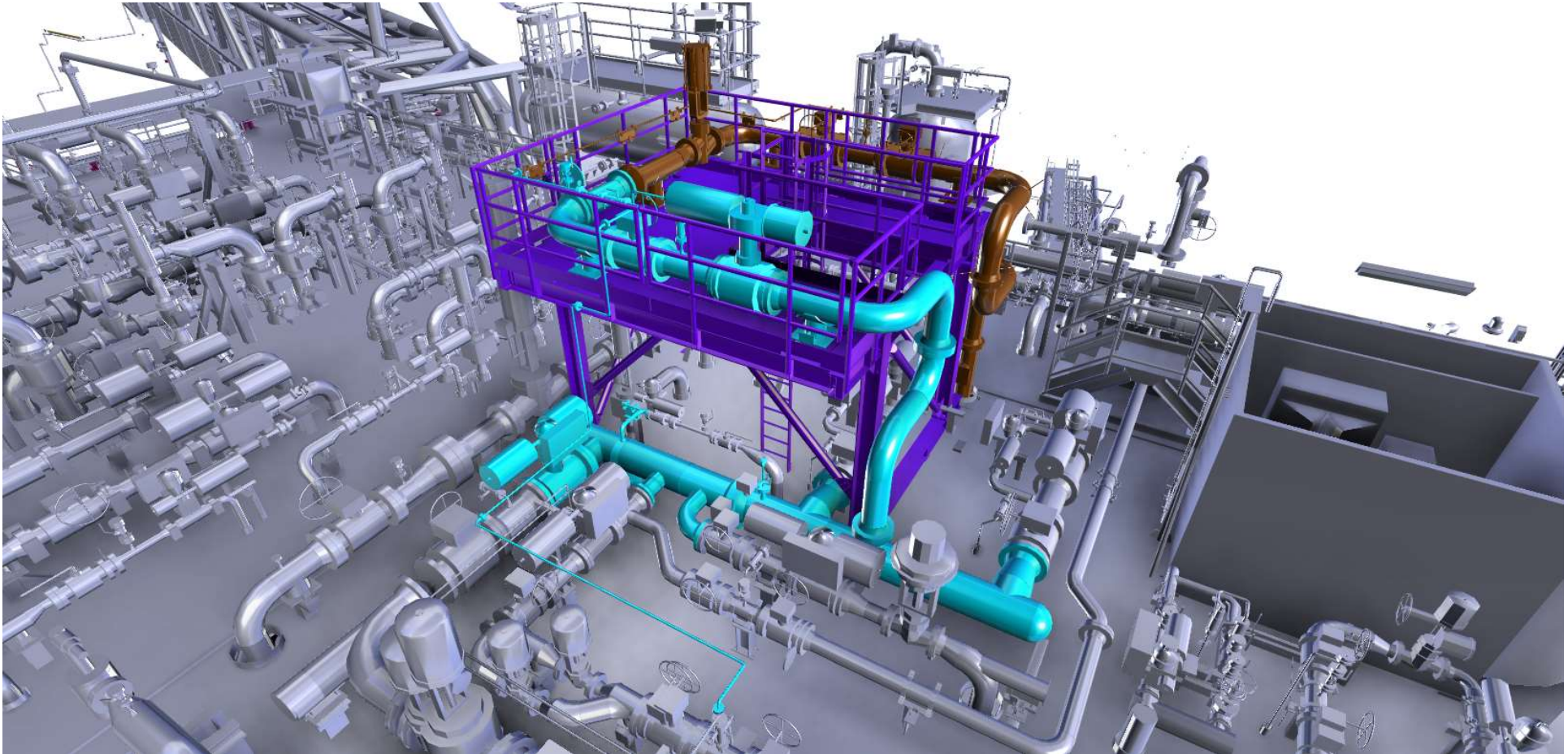
Existing Offshore Layout Examined



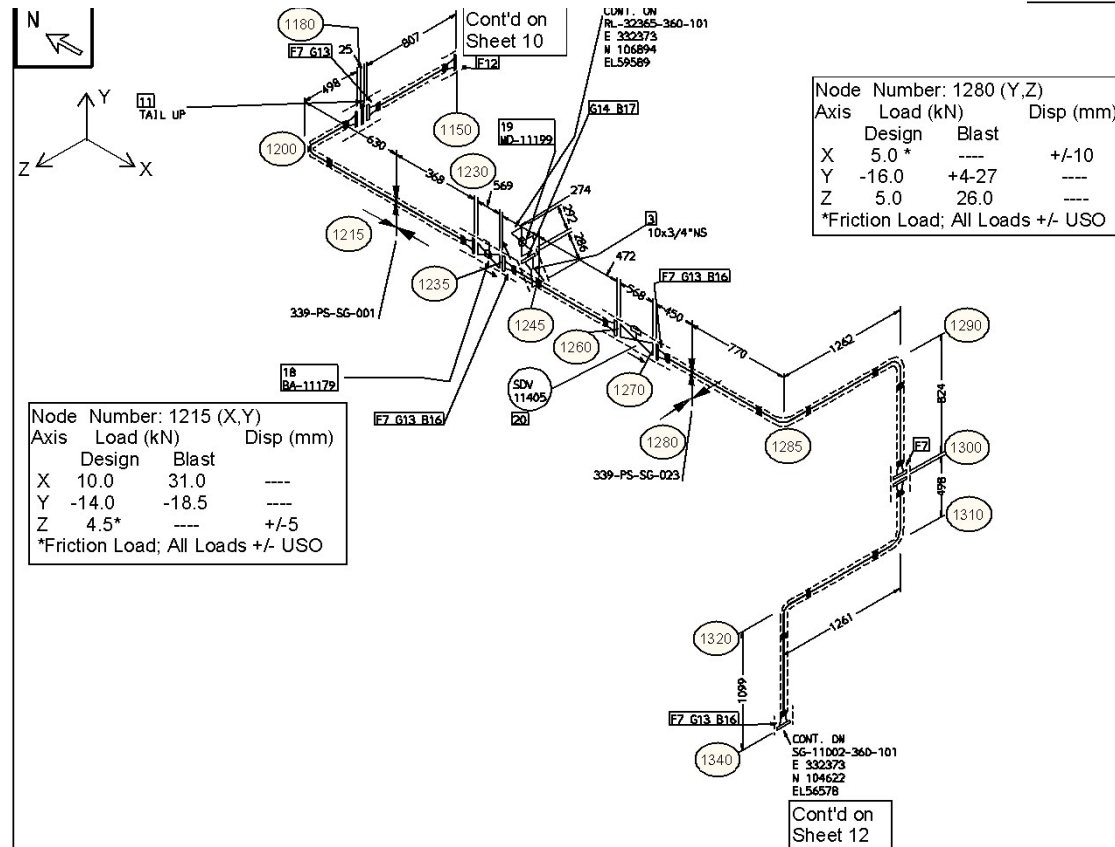
Existing Layout identified in 3D CAD Software (PDMS Design)



**Proposed new layout established in 3D CAD Software
(PDMS Design)**



Stress Analysis of Proposed New Pipe Layout – Stress Sketch Produced



FABRICATION MATERIALS				
ITEM NO	COMPONENT DESCRIPTION	U.S. (lbs)	ITEM CODE	QTY WEIGHT
1	10" Sch10S Pipe Sels. BE Super Duplex SS ASTM A790 LMS 532760	10	PP01603	4320MM 118.27
2	10" Sch10S Pipe Sels. BE Super Duplex SS ASTM A790 LMS 532760	8	PP01602	406MM 8.16
3	10" Sch10S 3/4" SCH80S W/offset CL300 RF. SS ASTM A790 LMS 532760	10 x 3/4	P009316	1 2.00
4	10" Sch10S 3/4" SCH80S W/offset CL300 RF. SS ASTM A790 LMS 532760	10	PE03062	5 97.50
5	Turnon Base Plate for Stop Slide Plates	8 x 8	AC03-PLAT-B	1 19.50
6	Turnon Base Plate for Guide Slide Plates	8 x 8	AC01-PLAT-B	1 19.50
7	10" Sch10S Flange. BW CL300 RF. Super Duplex SS ASTM A790 LMS 532760	10	PF05792	10 410.00
8	Reinforcing pad for turnon type TO	10	AC08-PAD-250	2 0.00
9	Turnon with Re-pad for Straight Pipe	10	1144-TURN-250	2 0.00
10	MISCELLANEOUS COMPONENTS	10	PP01603	740MM ---
TOTAL FABRICATION WEIGHT				674.93

ERECTION MATERIALS				
ITEM NO	COMPONENT DESCRIPTION	U.S. (lbs)	ITEM CODE	QTY WEIGHT
11	10" Spectacle Blind. CL300 RF Super Duplex SS ASTM A790 LMS 532760	10	P301483	1 29.70
12	10" Flange Blind CL300 RF. Super Duplex SS ASTM A790 LMS 532760	10	PF05843	1 58.00
13	10" x 4.5mm Thick Gasket SPS CL300 600 Winding	10	P601971	9 10.26
14	10" x 4.5mm Thick Gasket SPS CL300 600 Winding	3/4	P601963	2 0.08
15	10" LONG SCH80S Alloy Steel, Not Disposed	1	P800102	16 18.24
16	10" LONG SCH80S Alloy Steel, Not Disposed	1	P800154	112 114.24
17	10" LONG SCH80S Alloy Steel, Not Disposed	5/8	P800091	8 1.84
18	10" Ball Valve. BW CL300 RF. Super Duplex SS ASTM A790 LMS 532760	10	BA-11179	1 340.00
19	10" x 1/2" NPT (Female) Blind Super Duplex Needle Valve/Blind For In-Line	3/4	MD-11199	1 7.50
20	Automated Valve SDV 11405	10		1 2.70
21	SPECIAL SUPPORTS	8	SPECIAL-8	1 ---
TOTAL ERECTION WEIGHT				582.56
TOTAL WEIGHT				1257.49

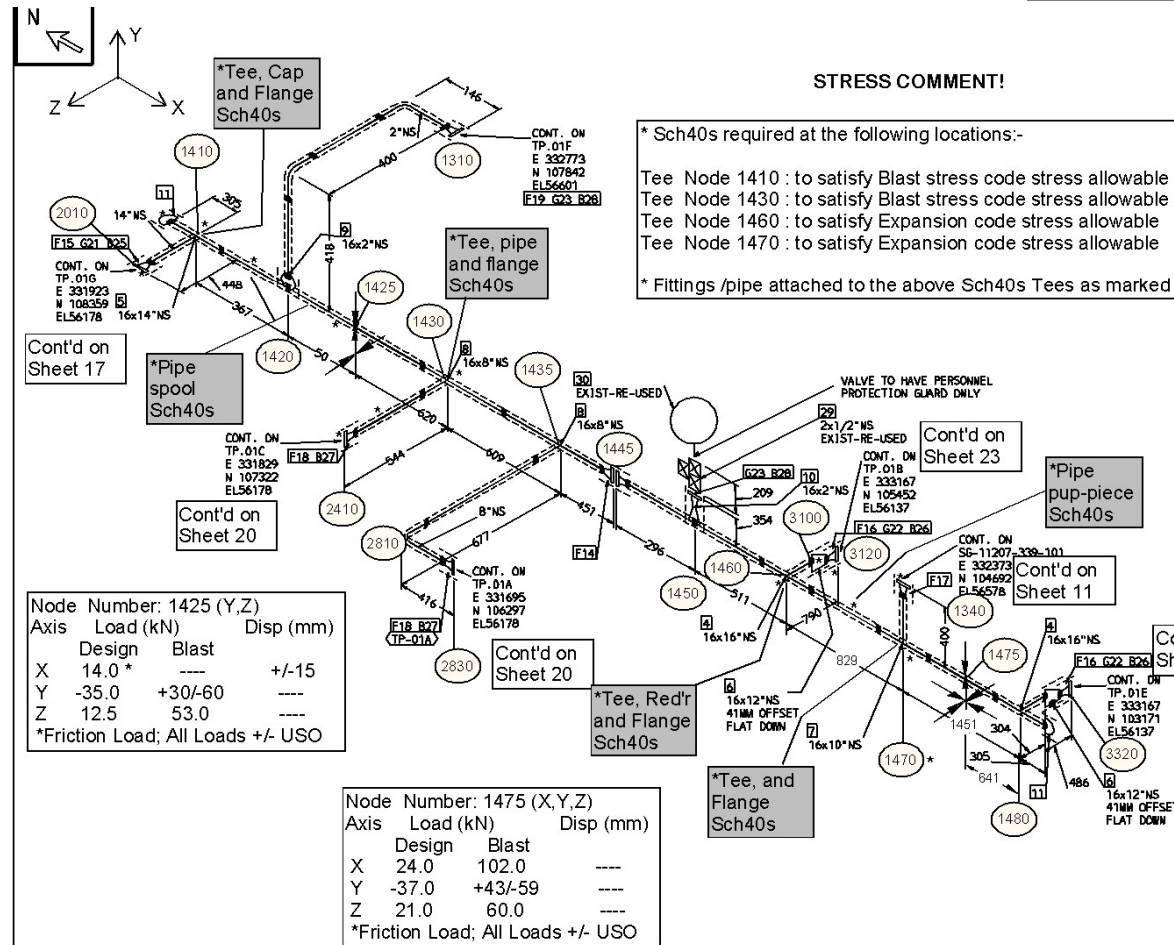
Stress Calculation : NBU103A Rev08

Stress Sketch : NBU103 Sheet 11 of 28
Rev A8

Approved By : RGM
Date : 27-09-18

DIMENSIONAL CONTROL THIRD PARTY :-		REF NO.	NOT FOR CONSTRUCTION		LINE CONDITIONS AND LINE DATA		PRESSURE EQUIPMENT REGULATIONS: PER SPOOL CATEGORY		PRESSURE EQUIPMENT REGULATIONS: PER SPOOL CATEGORY		PRESSURE EQUIPMENT REGULATIONS: PER SPOOL CATEGORY	
HOLD	HOLD		PLATFORM NORTH	4	DESIGN OPERATING TEST							
					PRECIPITATION 43	9.5 / 10.577.6						
					TEMP (°C) -46 / 195	45 / 80	NONE					
					TEXT TYPE	HYDRO						
					INSULATION TYPE	AJ	REV	DATE	DESCRIPTION OF REV.	MIN	CHG	APP
					INSULATION THK	78mm	HEAT TREATMENT	NO				
					STRESS RELIEVE	NO	STRESS ANALYSIS	YES				
					WELD HSPW CLASS	1	STRESS SKETCH	HOLD	SG-11207-339-101-1,2	111	H	111
					RADIATION/PAV	100%	ULTRASONIC TEST	100%				
					DYE PEN/MP	N/A			0723-110-380A-PID-001	N/A		
					CLASS/TYPE	300LB/RF			0723-110-380A-PID-001	N/A		
					PAINTING SYSTEM	NONE						
					COLOR	NONE						

Stress Analysis of Proposed New Pipe Layout – Stress Sketch Produced



FABRICATION MATERIALS						
PT NO	COMPONENT DESCRIPTION	U.S. (LBS)	ITEM CODE	QTY	WEIGHT	
PIPE						
1	16" Sch10s Pipe Sais. or Welded Joint Factor	16	PP01799	1844MM	87.87	
2	10" BE Super Duplex SS ASTM A312	8	PP01602	259MM	5.21	
3	4" A196 LMS 32760	2	PP01598	354MM	1.40	
FITTINGS						
4	16" Sch10s Tee Equal W. Sais Super Duplex SS	16 x 16	PT06666	2	118.00	
5	ASTM A312 16" Sch10s Tee Branch Red. W. Sais	16 x 14	PT05052	1	53.00	
6	9" Sais Super Duplex SS ASTM A615 LMS 32760	16	PR08701	2	36.60	
7	Super Duplex SS ASTM A615 LMS 32760 Sais	16 x 10	PT05000	1	50.70	
8	9" Sais Super Duplex SS ASTM A615 LMS 32760	16 x 8	PT06649	2	99.60	
9	9" Sais Super Duplex SS ASTM A615 LMS 32760	16 x 2	PO06472	1	0.80	
10	12" Sch10s Tee Equal W. Sais Super Duplex SS	16 x 2	PO06765	1	6.00	
11	12" Sch10s Super Duplex SS ASTM A615 LMS 32760	8	PC01255	2	29.00	
12	8" Sais Super Duplex SS ASTM A615 LMS 32760	8	PC03061	1	10.60	
13	8" Sais Super Duplex SS ASTM A615 LMS 32760	2	PC02057	2	1.00	
FLANGES						
14	16" Sch10s Flange. WN CL300 RF. Super Duplex	16	PF05795	2	222.00	
15	14" Sch10s Flange. WN CL300 RF. Super Duplex	14	PF05794	1	84.00	
16	12" Sch10s Flange. WN CL300 RF. Super Duplex	12	PF05793	2	124.00	
17	10" Sch10s Flange. WN CL300 RF. Super Duplex	10	PF05792	1	41.00	
18	8" Sch10s Flange. WN CL300 RF. Super Duplex	8	PF05791	2	60.00	
19	6" Sch10s Flange. WN CL300 RF. Super Duplex	2	PF05787	1	4.00	

EJECTION MATERIALS		ITEM INFORMATION			WEIGHT
PI NO	COMPONENT DESCRIPTION	N.S. (lbs)	ITEM CODE	QTY	WEIGHT
	GASKETS				
20	1A- 5mm. Thk. Gasket for CW Cl.3000 for Winding	16	P001974	1	2.10
21	WF- Filled Gaskets for CW Cl.3000 for Winding	14	P001973	1	1.57
22	1A- 5mm. Thk. Gasket for CW Cl.3000 for Winding	12	P001972	2	2.82
23	WF- Filled Gaskets for CW Cl.3000 for Winding	2	P001966	2	0.22
	BOLTS				
24	25mm. LxW. Studbolt 25mm. Super Duplex ASTM A276	1 1/4	PH3AGCAGAB	20	0.00
25	33mm. LxW. Nut ASTM A276 33mm. A	1 1/8	PB00115	20	37.20
26	33mm. LxW. Studbolt 33mm. Super Duplex ASTM A276	1 1/8	PH3AGCAGAB	32	0.00
27	100 LxW. Studbolt 100mm. Super Duplex ASTM A276		PB001153	24	16.56
28	50mm. LxW. Studbolt 50mm. Super Duplex ASTM A276	5/8	PB000022	1	3.84
	VALVES / IN- LINE TUBES				
29	2" Modlar Double Block & Bleed Valve, Cl.3000 WSS-314 (Female) Super Duplex Datasheet	2 x 1/2	PV06394	1	9.00
	INSTRUMENTS				
30	INSTRUMENT CONNECTION (Instrument Supply)	1/2	-	1	5.00
TOTAL EJECTION WEIGHT					78.91

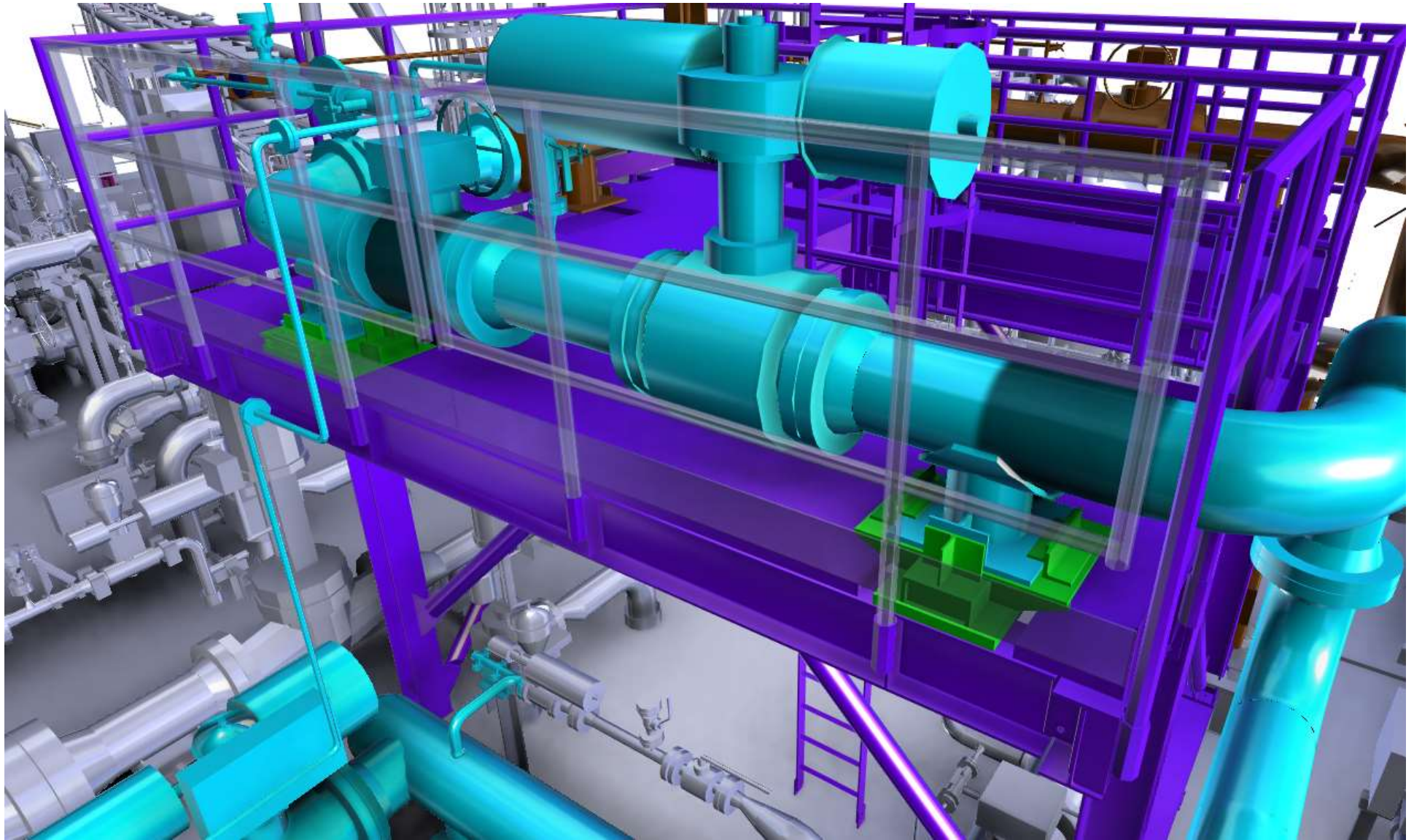
Stress Calculation : NBU103A Rev08

Stress Sketch : NBU103 Sheet 121 of 28
Rev A8

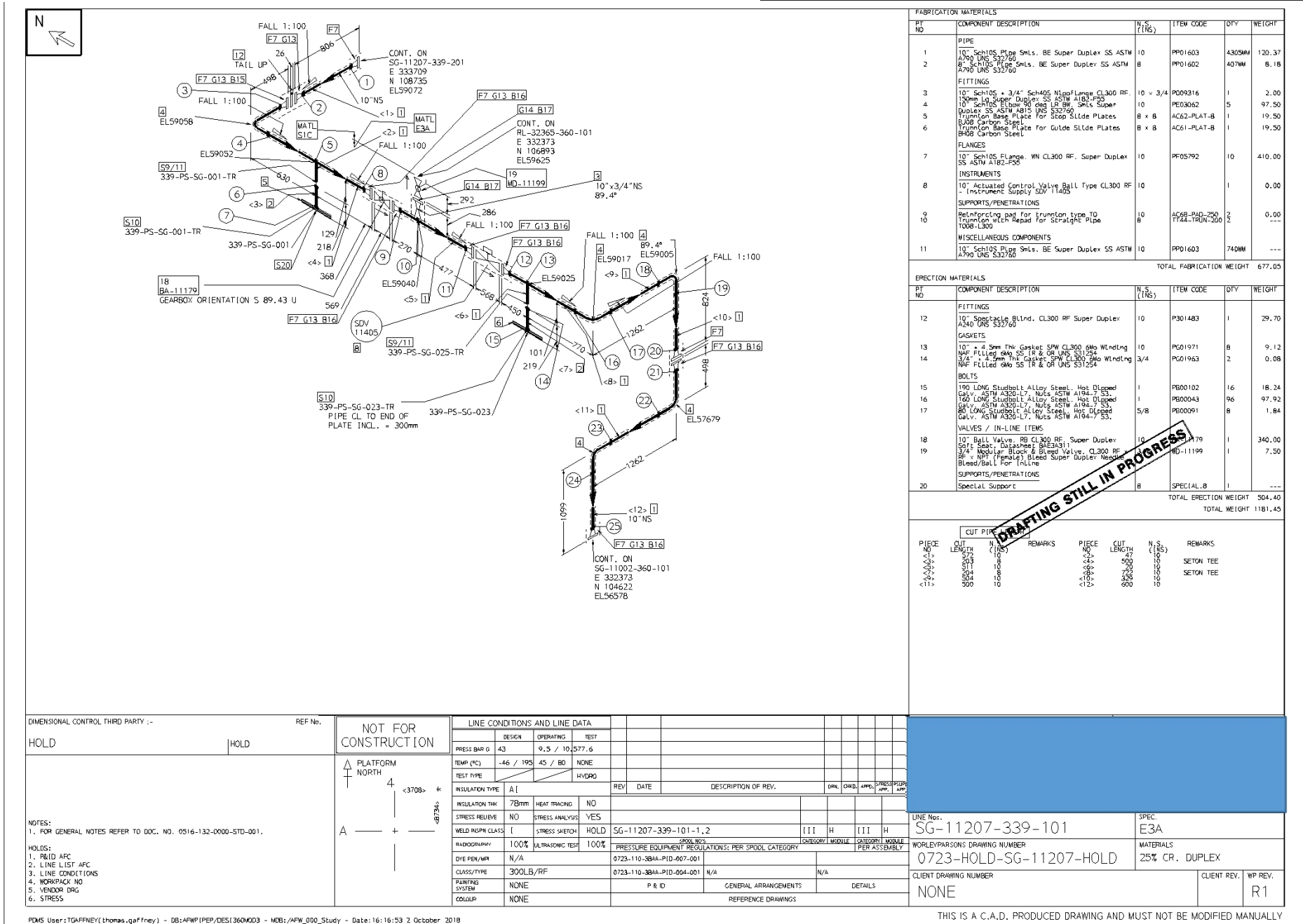
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Date : 27-09-18

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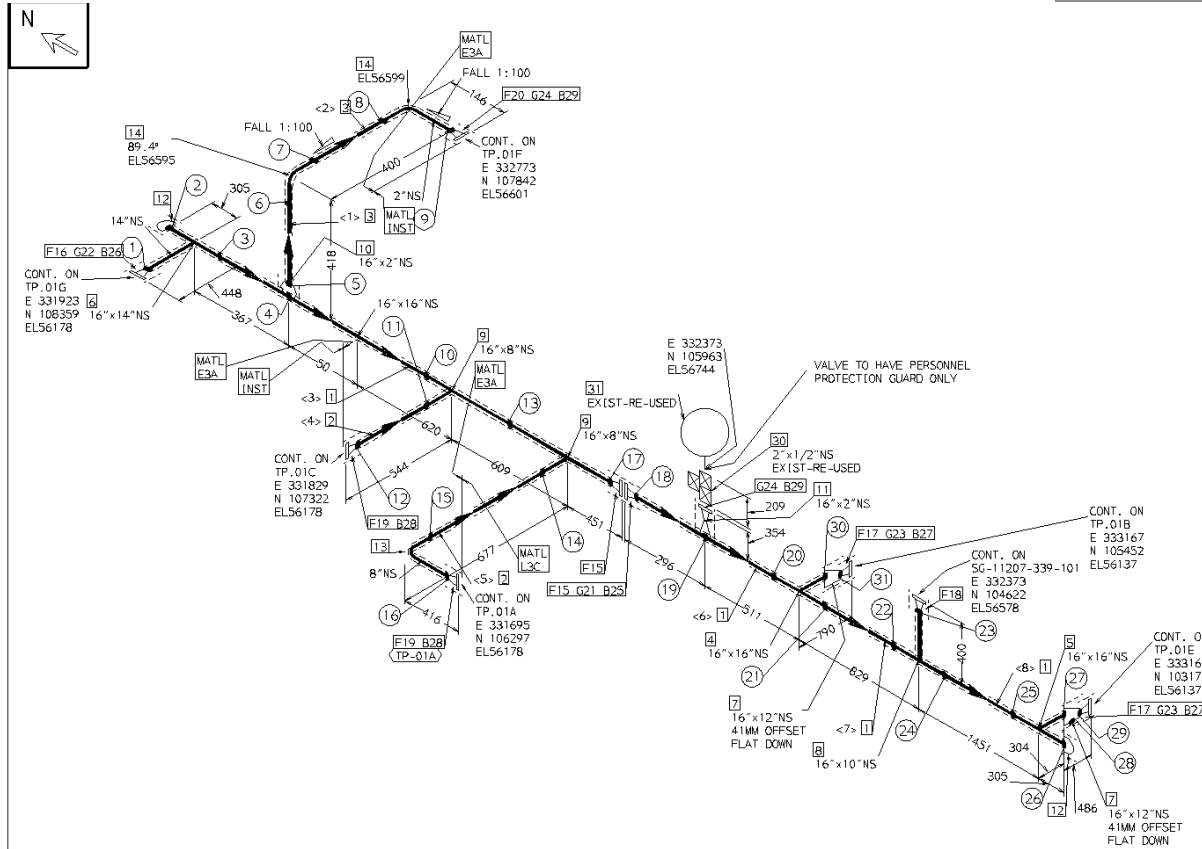
Pipe Supports Designed to Suit Calculated Loads



2D CAD Construct Isometrics Produced



2D CAD Construct Isometrics Produced



FABRICATION MATERIALS					
PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY	WEIGHT
1	PIPE				
1	16" SCH20S Pipe SMLS. or Welded (Joint Factor 1.0) BE Super Duplex SS ASTM A790 UNS S32760	16	PP01799	184MM	87.87
2	8" SCH20S Pipe SMLS. BE Super Duplex SS ASTM A790 UNS S32760	8	PP01602	259MM	5.21
3	2" SCH20S Pipe SMLS. BE Super Duplex SS ASTM A790 UNS S32760	2	PP01598	354MM	1.40
4	FITTINGS				
4	16" SCH20S Tee Equal BW. SMLS Super Duplex SS ASTM A790 UNS S32760	16 x 16	PT06466SCH20S	1	100.00
5	16" SCH20S Tee Equal BW. SMLS Super Duplex SS ASTM A790 UNS S32760	16 x 16	PT06466	1	39.00
6	16" SCH20S Tee Branch Red BW. SMLS Super Duplex SS ASTM A790 UNS S32760	16 x 14	PT06502SCH20S	1	90.00
7	16" SCH20S Tee Branch Red BW. SMLS Super Duplex SS ASTM A790 UNS S32760	16 x 12	PR08701	2	36.60
8	16" SCH20S Tee Branch Red BW. SMLS Super Duplex SS ASTM A790 UNS S32760	16 x 10	PT06505SCH20S	1	85.50
9	16" SCH20S Tee Branch Red BW. SMLS Super Duplex SS ASTM A790 UNS S32760	16 x 8	PT06499	2	99.60
10	16" SCH20S Tee Branch Red BW. SMLS Super Duplex SS ASTM A790 UNS S32760	16 x 2	PO06472	1	0.80
11	16" SCH20S Tee Branch Red BW. SMLS Super Duplex SS ASTM A790 UNS S32760	16 x 2	PO06765	1	6.00
12	16" SCH20S Tee Branch Red BW. SMLS Super Duplex SS ASTM A790 UNS S32760	16	PC01255	2	29.00
13	8" SCH20S Elbow 90 deg LR BW. SMLS Super Duplex SS ASTM A790 UNS S32760	8	PE03061	1	10.60
14	2" SCH20S Elbow 90 deg LR BW. SMLS Super Duplex SS ASTM A790 UNS S32760	2	PE03057	2	1.00
15	FLANGES				
15	16" SCH20S Flange. WN CL300 RF. Super Duplex SS ASTM A182-F55	16	PF05795	2	222.00
16	16" SCH20S Flange. WN CL300 RF. Super Duplex SS ASTM A182-F55	14	PF05794	1	84.00
17	16" SCH20S Flange. WN CL300 RF. Super Duplex SS ASTM A182-F55	12	PF05793	2	124.00
18	16" SCH20S Flange. WN CL300 RF. Super Duplex SS ASTM A182-F55	10	PF05792	1	41.00
19	8" SCH20S Flange. WN CL300 RF. Super Duplex SS ASTM A182-F55	8	PF05791	2	60.00
20	2" SCH20S Flange. WN CL300 RF. Super Duplex SS ASTM A182-F55	2	PF05787	1	4.00

ERECTION MATERIALS					
PT NO	COMPONENT DESCRIPTION	N.S. (INS)	ITEM CODE	QTY	WEIGHT
21	GASKETS				
21	16" x 4.5mm Thk Gasket SPW CL300 6Mo Winding NAF Filled 6Mo SS TR & OR UNS S31254	16	PQ01974	1	2.10
22	16" x 4.5mm Thk Gasket SPW CL300 6Mo Winding NAF Filled 6Mo SS TR & OR UNS S31254	14	PQ01973	1	1.57
23	16" x 4.5mm Thk Gasket SPW CL300 6Mo Winding NAF Filled 6Mo SS TR & OR UNS S31254	12	PQ01972	2	2.82
24	16" x 4.5mm Thk Gasket SPW CL300 6Mo Winding NAF Filled 6Mo SS TR & OR UNS S31254	2	PQ01966	2	0.22
25	BOLTS				
25	225 LONG Studbolt Alloy Steel. Hot Dipped Galv. ASTM A320-L7. Nuts ASTM A194-F55.	1/2	PB00115	20	0.00
26	216 LONG Studbolt Alloy Steel. Hot Dipped Galv. ASTM A320-L7. Nuts ASTM A194-F55.	3/4	PB00115	20	37.20
27	208 LONG Studbolt Alloy Steel. Hot Dipped Galv. ASTM A320-L7. Nuts ASTM A194-F55.	7/8	PB00030	32	0.00
28	140 LONG Studbolt Alloy Steel. Hot Dipped Galv. ASTM A320-L7. Nuts ASTM A194-F55.	1	PB00030	24	16.56
29	90 LONG Studbolt Alloy Steel. Hot Dipped Galv. ASTM A320-L7. Nuts ASTM A194-F55.	5/8	PB00002	16	3.84
30	VALVES / IN-LINE ITEMS				
30	2" Modular Double Flange Valve. CL300 6Mo Winding NAF Filled 6Mo SS TR & OR UNS S31254	2 x 1/2	PV06394	1	9.00
31	INSTRUMENT CONNECTION (Instrument Supply)	1/2		1	5.00

TOTAL FABRICATION WEIGHT 1147.56
TOTAL ERECTION WEIGHT 78.31
TOTAL WEIGHT 1225.89

CUT PIPE LENGTH				CUT PIPE LENGTH			
PIECE NO	CUT LENGTH (INS)	N.S. (INS)	REMARKS	PIECE NO	CUT LENGTH (INS)	N.S. (INS)	REMARKS
<1	105	16	SEITON TEE	<1	105	16	SEITON TEE
<2	105	16	SEITON TEE	<2	105	16	SEITON TEE
<3	105	16	SEITON TEE	<3	105	16	SEITON TEE
<4	105	16	SEITON TEE	<4	105	16	SEITON TEE
<5	105	16	SEITON TEE	<5	105	16	SEITON TEE
<6	105	16	SEITON TEE	<6	105	16	SEITON TEE
<7	105	16	SEITON TEE	<7	105	16	SEITON TEE
<8	105	16	SEITON TEE	<8	105	16	SEITON TEE

DIMENSIONAL CONTROL THIRD PARTY :-		REF No.	NOT FOR CONSTRUCTION		LINE CONDITIONS AND LINE DATA	
HOLD		HOLD	PLATFORM NORTH		DESIGN OPERATING TEST	
			4		PRESS BAR G NONE NONE NONE	
			<1922>		TEMP (°C) NONE NONE NONE	
			A		TEST TYPE NONE	
			A		INSULATION TYPE A	
			A		INSULATION THK 78mm	
			A		HEAT TRACING PART	
			A		STRESS RELIEVE NO	
			A		STRESS ANALYSIS NO	
			A		WELD INSIP CLASS I	
			A		STRESS SKETCH	
			A		RADIOGRAPHY NO	
			A		ULTRASONIC TEST N/A	
			A		PRESSURE EQUIPMENT REGULATION: PER SPOOL CATEGORY	
			A		DYE PEN/MP	
			A		CLASS/TYPE	
			A		PAINTING SYSTEM	
			A		CORRUP	
			A		P & ID	
			A		GENERAL ARRANGEMENTS	
			A		DETAILS	
			A		REFERENCE DRAWINGS	

LINE No. SG-11002-360-101

WORLEYPARSONS DRAWING NUMBER 6 JUN 2005 15:50

CLIENT DRAWING NUMBER NONE

SPEC. E3A

MATERIALS 25% CR. DUPLEX

CLIENT REV. WP REV. R1

THIS IS A C.A.D. PRODUCED DRAWING AND MUST NOT BE MODIFIED MANUALLY