

DRAWING No.	SHT	LINE No.	REVISIONS							REMARKS
			0	1	2	3	4	5	X0	
GSI-375-5121	41	901-6"-PG-1020A-G1 SHT 2/2	17/04/08	13/05/08	16/05/08	07/06/10				09/04/12
GSI-375-5121	42	901-6"-PG-1021A-G1 SHT 1/3	17/04/08	16/05/08	07/06/10	02/03/11	17/03/11 05/05/11			09/04/12
GSI-375-5121	43	901-6"-PG-1021A-G1 SHT 2/3	17/04/08	07/06/10	17/03/11					09/04/12
GSI-375-5121	44	901-2"-PG-1022A-G1-PP	17/04/08	07/06/10						09/04/12
GSI-375-5121	45	901-3"-PG-1023A-G1	17/04/08	30/04/08	07/06/10					09/04/12
GSI-375-5121	46	901-3"-PG-1024A-D1	17/04/08	07/06/10						09/04/12
GSI-375-5121	47	901-2"-PG-1025A-E1-PP	17/04/08	07/06/10						09/04/12
GSI-375-5121	48	901-2"-PG-1026A-G1	17/04/08	07/06/10						09/04/12
GSI-375-5121	49	901-3"-PG-1030A-E1-PP	17/04/08	07/06/10						09/04/12
GSI-375-5121	50	901-3"-PG-1031A-D1	17/04/08	07/06/10						09/04/12
GSI-375-5121	51	901-2"-PG-1032A-G1-PP	17/04/08	07/06/10						09/04/12
GSI-375-5121	52	901-12"-VFH-1001A-A1 SHT 1/6	30/04/08	07/06/10						09/04/12
GSI-375-5121	53	901-12"-VFH-1001A-A1 SHT 2/6	30/04/08	07/06/10						09/04/12
GSI-375-5121	54	901-12"-VFH-1001A-A1 SHT 3/6	30/04/08	07/06/10						09/04/12
GSI-375-5121	55	901-12"-VFH-1001A-A1 SHT 4/6	30/04/08	07/06/10						09/04/12
GSI-375-5121	56	901-12"-VFH-1001A-A1 SHT 5/6	30/04/08	07/06/10						09/04/12
GSI-375-5121	57	901-12"-VFH-1001A-A1 SHT 6/6	30/04/08	07/06/10						09/04/12
GSI-375-5121	58	901-10"-VFH-1002A-1-A1	30/04/08	07/06/10						09/04/12
GSI-375-5121	59	901-10"-VFH-1002A-2-A1	30/04/08	07/06/10						09/04/12
GSI-375-5121	60	901-10"-VFH-1003A-A1	30/04/08	07/06/10						09/04/12
GSI-375-5121	61	901-10"-VFH-1004A-1-A1	30/04/08	07/06/10	01/12/11					09/04/12
GSI-375-5121	62	901-10"-VFH-1004A-2-A1	30/04/08	07/06/10	01/12/11					09/04/12
GSI-375-5121	63	901-10"-VFH-1005A-1-A1	30/04/08	07/06/10	01/12/11					09/04/12

X0	AS BUILT	REV.	RAGU	SD	09.04.12
18	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	LYC	SD 01.12.11
17	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	BS	SD 26.08.11
16	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	BS	SD 12.07.11
15	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	BS	SD 05.05.11
14	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	BS	SD 20.04.11
13	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	BS	SD 17.03.11
12	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	BS	SD 07.05.10
11	AS BUILT		FT	BS	SD 02.03.11
10	REVISED SHT 94,96 & 98		EC	BS	SD 12.01.09
9	REVISED AS SHOWN		EC	BS	SD 17.09.08
8	ADDED SHT 170 TO 196		EC	BS	SD 11.09.08
7	REVISED ISO SHT 09		EC	BS	SD 20.08.08
REV. NO.	DESCRIPTION OF Revision		PX	QWIK	ADRS

**"AS - BUILT"**



FPSO CIDADE DE ITAJAÍ

TITLE:		CLASS :	
		ABS	
		TODAY DRAWING NO: 7000-04-L-26-XN-05121	
PIPING ISOMETRIC INDEX			
SHT 1 OF 4			
<b>GSI DISCIPLINE SIGN</b> PROCESS      AR → MECHANICAL    VC → PIPING        MH → STRUCTURAL    WKH → E & I          AK → PROJECT       EG →		<b>APPROVED BY</b> SD BS RAGU N.T.S. JOB NO: G375	
DRAWN BY  Wasco		Gas Services International (S) Pte Ltd	
GSI INV. NO: GSI-6375-5121		REV: X0	
<b>JURONG SHIPYARD PTE LTD</b> (A subsidiary of SembCorp Marine Ltd)  SINGAPORE			
ENGINEERING DEPARTMENT		XXX	SECTION
  			
<small>ISO 9001 Certified Number: L-3163</small>			

DRAWING No.	SHT	LINE No.	REVISIONS						REMARKS
			0	1	2	3	4	XO	
GSI-375-5121	64	901-10"-VFL-1005A-2-A1	28/04/08	07/06/10	01/12/11			09/04/12	
GSI-375-5121	65	901-10"-VFL-1006A-1-A1	28/04/08	07/06/10				09/04/12	
GSI-375-5121	66	901-10"-VFL-1006A-2-A1	28/04/08	07/06/10				09/04/12	
GSI-375-5121	67	901-2"-VFL-1006A-3-A1	28/04/08	07/06/10				09/04/12	
GSI-375-5121	68	901-10"-VFL-1007A-1-A1	28/04/08	07/06/10				09/04/12	
GSI-375-5121	69	901-10"-VFL-1007A-2-A1	28/04/08	07/06/10				09/04/12	
GSI-375-5121	70	901-8"-PG-1035A-D1(FROM-COMP-B)	14/05/08	12/01/09	07/06/10			09/04/12	
GSI-375-5121	71	901-8"-PG-1036A-D1(TO-COMP-B)	14/05/08	12/01/09	07/06/10			09/04/12	
GSI-375-5121	72	901-2"-PL-1000A-B1	21/06/08	07/06/10				09/04/12	
GSI-375-5121	73	901-2"-PL-1001A-A1	21/06/08	07/06/10	01/12/11			09/04/12	
GSI-375-5121	74	901-2"-PL-1003A-B1	21/06/08	07/06/10	20/04/11			09/04/12	
GSI-375-5121	75	901-2"-PL-1004A-B1	21/06/08	07/06/10	20/04/11	06/07/11	09/04/12		
GSI-375-5121	76	901-2"-PL-1001A-D1	21/06/08	07/06/10	20/04/11			09/04/12	
GSI-375-5121	77	901-2"-PL-1002A-B1 SHT 1/2	21/06/08	07/06/10	20/04/11			09/04/12	
GSI-375-5121	78	901-2"-PL-1002A-B1 SHT 2/2	21/06/08	07/06/10	20/04/11			09/04/12	
GSI-375-5121	79	901-2"-PL-1005A-D1	21/06/08	07/06/10	20/04/11			09/04/12	
GSI-375-5121	80	901-2"-PL-1006A-D1	21/06/08	07/06/10	20/04/11			09/04/12	
GSI-375-5121	81	901-4"-DO-1000A-A1 SHT 1/5	21/06/08	07/06/10				09/04/12	
GSI-375-5121	82	901-4"-DO-1000A-A1 SHT 2/5	21/06/08	07/06/10				09/04/12	
GSI-375-5121	83	901-4"-DO-1000A-A1 SHT 3/5	21/06/08	07/06/10				09/04/12	
GSI-375-5121	84	901-4"-DO-1000A-A1 SHT 4/5	21/06/08	07/06/10				09/04/12	
GSI-375-5121	85	901-4"-DO-1000A-A1 SHT 5/5	21/06/08	07/06/10				09/04/12	
GSI-375-5121	86	901-2"-DC-1001A-A1	21/06/08	07/06/10	07/03/11	20/04/11 01/12/11	09/04/12		
GSI-375-5121	87	901-2"-DC-1002A-A1	21/06/08	07/06/10	07/03/11	20/04/11 01/12/11	09/04/12		
GSI-375-5121	88	901-2"-DC-1003A-A1	21/06/08	07/06/10	07/03/11	20/04/11 01/12/11	09/04/12		
GSI-375-5121	89	901-2"-DC-1004A-A1	21/06/08	07/06/10	07/03/11	20/04/11 01/12/11	09/04/12		
GSI-375-5121	90	901-1"-LO-1001A-A1 SHT 1/2	23/06/08	07/06/10				09/04/12	
GSI-375-5121	91	901-1"-LO-1001A-A1 SHT 2/2	23/06/08	24/07/08	07/06/10			09/04/12	
GSI-375-5121	92	901-3/4"-LO-1002A-A1	23/06/08	24/07/08	07/06/10			09/04/12	
GSI-375-5121	93	901-3"-LO-1003A-A3	23/06/08	07/06/10				09/04/12	
GSI-375-5121	94	901-3"-LO-1004A-A3	23/06/08	07/06/10	01/12/11			09/04/12	
GSI-375-5121	95	901-3"-LO-1005A-A3	23/06/08	07/06/10				09/04/12	
GSI-375-5121	96	901-3"-LO-1006A-A3	23/06/08	07/06/10				09/04/12	
GSI-375-5121	97	901-3"-LO-1007A-A3	23/06/08	07/06/10				09/04/12	
GSI-375-5121	98	901-3"-LO-1008A-A3	23/06/08	07/06/10				09/04/12	
GSI-375-5121	99	901-3"-LO-1009A-A3	23/06/08	07/06/10				09/04/12	
GSI-375-5121	100	901-3"-LO-1010A-A3	23/06/08	07/06/10				09/04/12	
GSI-375-5121	101	901-3"-LO-1011A-A3 SHT 1/2	23/06/08	07/06/10				09/04/12	

DRAWING No.	SHT	LINE No.	REVISIONS						REMARKS
			0	1	XO				
GSI-375-5121	102	901-3"-LO-1011A-A3 SHT 2/2	23/06/08	07/06/10	09/04/12				
GSI-375-5121	103	901-3"-LO-1012A-A3	23/06/08	07/06/10	09/04/12				
GSI-375-5121	104	901-1½"-LO-1013A-A3	23/06/08	07/06/10	09/04/12				
GSI-375-5121	105	901-3/4"-LO-1014A-A3 SHT 1/2	23/06/08	07/06/10	09/04/12				
GSI-375-5121	106	901-3/4"-LO-1014A-A3 SHT 2/2	23/06/08	07/06/10	09/04/12				
GSI-375-5121	107	901-3/4"-LO-1015A-A3 SHT 1/2	23/06/08	07/06/10	09/04/12				
GSI-375-5121	108	901-3/4"-LO-1015A-A3 SHT 2/2	23/06/08	07/06/10	09/04/12				
GSI-375-5121	109	901-1½"-LO-3625A-A3	23/06/08	07/06/10	09/04/12				
GSI-375-5121	110	901-2"-LO-3690A-A1	23/06/08	07/06/10	09/04/12				
GSI-375-5121	111	901-3"-WFR-1001A-A1 SHT 1/2	23/06/08	07/06/10	09/04/12				
GSI-375-5121	112	901-3"-WFR-1001A-A1 SHT 2/2	23/06/08	07/06/10	09/04/12				
GSI-375-5121	113	901-3"-WFR-1002A-A1 SHT 1/2	23/06/08	07/06/10	09/04/12				
GSI-375-5121	114	901-3"-WFR-1002A-A1 SHT 2/2	23/06/08	07/06/10	09/04/12				
GSI-375-5121	115	901-1"-WCS-1000A-A1	24/06/08	07/06/10	09/04/12				
GSI-375-5121	116	901-2"-WCS-1001A-A1 SHT 1/2	24/06/08	07/06/10	09/04/12				
GSI-375-5121	117	901-2"-WCS-1001A-A1 SHT 2/2	24/06/08	07/06/10	09/04/12				
GSI-375-5121	118	901-1"-WCS-1004A-A1	25/06/08	07/06/10	09/04/12				
GSI-375-5121	119	901-2"-WCR-1002A-A1 SHT 1/2	24/06/08	07/06/10	09/04/12				
GSI-375-5121	120	901-2"-WCR-1002A-A1 SHT 2/2	24/06/08	07/06/10	09/04/12				
GSI-375-5121	121	901-1"-WCR-1003A-A1	24/06/08	07/06/10	09/04/12				
GSI-375-5121	122	901-2"-AI-1000A-A3 SHT 1/10	10/07/08	07/06/10	09/04/12				
GSI-375-5121	123	901-2"-AI-1000A-A3 SHT 2/10	10/07/08	07/06/10	09/04/12				
GSI-375-5121	124	901-2"-AI-1000A-A3 SHT 3/10	10/07/08	07/06/10	09/04/12				
GSI-375-5121	125	901-2"-AI-1000A-A3 SHT 4/10	10/07/08	07/06/10	09/04/12			</td	

DRAWING No.	SHT	LINE No.	REVISIONS				REMARKS
			0	1	2	X0	
GSI-G375-5121	127	901-2"-AI-1000A-A3 SHT 6/10	10/07/08	07/06/10		09/04/12	
GSI-G375-5121	128	901-2"-AI-1000A-A3 SHT 7/10	10/07/08	07/06/10		09/04/12	
GSI-G375-5121	129	901-2"-AI-1000A-A3 SHT 8/10	10/07/08	07/06/10		09/04/12	
GSI-G375-5121	130	901-2"-AI-1000A-A3 SHT 9/10	10/07/08	07/06/10		09/04/12	
GSI-G375-5121	131	901-2"-AI-1000A-A3 SHT 10/10	10/07/08	07/06/10		09/04/12	
GSI-G375-5121	132	901-1½"-DO-1005A-A1 SHT 1/2	10/07/08	17/09/08	07/06/10	09/04/12	
GSI-G375-5121	133	901-1½"-DO-1005A-A1 SHT 2/2	10/07/08	07/06/10		09/04/12	
GSI-G375-5121	134	901-1½"-DO-1006A-A1 SHT 1/2	10/07/08	17/09/08	07/06/10	09/04/12	
GSI-G375-5121	135	901-1½"-DO-1006A-A1 SHT 2/2	10/07/08	07/06/10		09/04/12	
GSI-G375-5121	136	901-1½"-DO-1007A-A1 SHT 1/2	10/07/08	17/09/08	07/06/10	09/04/12	
GSI-G375-5121	137	901-1½"-DO-1007A-A1 SHT 2/2	10/07/08	17/09/08	07/06/10	09/04/12	
GSI-G375-5121	138	901-1"-DO-1008A-A1	10/07/08	07/06/10		09/04/12	
GSI-G375-5121	139	901VG101A VESSEL TRIM SHT 1/7	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	140	901VG101A VESSEL TRIM SHT 2/7	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	141	901VG101A VESSEL TRIM SHT 3/7	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	142	901VG101A VESSEL TRIM SHT 4/7	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	143	901VG101A VESSEL TRIM SHT 5/7	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	144	901VG101A VESSEL TRIM SHT 6/7	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	145	901VG101A VESSEL TRIM SHT 7/7	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	146	901VG102A VESSEL TRIM SHT 1/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	147	901VG102A VESSEL TRIM SHT 2/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	148	901VG102A VESSEL TRIM SHT 3/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	149	901VG102A VESSEL TRIM SHT 4/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	150	901VG102A VESSEL TRIM SHT 5/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	151	901VG103A VESSEL TRIM SHT 1/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	152	901VG103A VESSEL TRIM SHT 2/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	153	901VG103A VESSEL TRIM SHT 3/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	154	901VG103A VESSEL TRIM SHT 4/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	155	901VG103A VESSEL TRIM SHT 5/5	22/07/08	07/06/10		09/04/12	
GSI-G375-5121	156	901VG104A VESSEL TRIM SHT 1/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	157	901VG104A VESSEL TRIM SHT 2/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	158	901VG104A VESSEL TRIM SHT 3/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	159	901VG104A VESSEL TRIM SHT 4/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	160	901VG104A VESSEL TRIM SHT 5/5	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	161	901TG102A VESSEL TRIM SHT 1/2	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	162	901TG102A VESSEL TRIM SHT 2/2	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	163	901TB101A VESSEL TRIM SHT 1/2	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	164	901TB101A VESSEL TRIM SHT 2/2	21/07/08	07/06/10		09/04/12	
GSI-G375-5121	165	901-1½"-DO-1010A-A1 SHT 1/2	17/09/08	07/06/10		09/04/12	
GSI-G375-5121	166	901-1½"-DO-1010A-A1 SHT 2/2	17/09/08	07/06/10		09/04/12	

DRAWING No.	SHT	LINE No.	REVISIONS				REMARKS
			0	1	2	X0	
GSI-G375-5121	167	901-1½"-DO-1009A-A1 SHT 1/2	17/09/08	07/06/10		09/04/12	
GSI-G375-5121	168	901-1½"-DO-1009A-A1 SHT 2/2	17/09/08	07/06/10		09/04/12	
GSI-G375-5121	169	SPARE					
GSI-G375-5121	170	901-6"-WF-1001A-A5 SHT 1/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	171	901-6"-WF-1001A-A5 SHT 2/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	172	901-6"-WF-1001A-A5 SHT 3/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	173	901-6"-WF-1001A-A5 SHT 4/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	174	901-6"-WF-1001A-A5 SHT 5/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	175	901-6"-WF-1001A-A5 SHT 6/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	176	901-6"-WF-1001A-A5 SHT 7/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	177	901-6"-WF-1001A-A5 SHT 8/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	178	901-6"-WF-1001A-A5 SHT 9/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	179	901-6"-WF-1001A-A5 SHT 10/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	180	901-6"-WF-1001A-A5 SHT 11/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	181	901-6"-WF-1001A-A5 SHT 12/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	182	901-6"-WF-1001A-A5 SHT 13/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	183	901-6"-WF-1001A-A5 SHT 14/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	184	901-6"-WF-1001A-A5 SHT 15/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	185	901-6"-WF-1001A-A5 SHT 16/27	11/09/08	07/06/10	12/07/11	09/04/12	
GSI-G375-5121	186	901-6"-WF-1001A-A5 SHT 17/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	187	901-6"-WF-1001A-A5 SHT 18/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	188	901-6"-WF-1001A-A5 SHT 19/27	11/09/08	07/06/10		09/04/12	
GSI-G375-5121	189	901-6"-WF-1001A-A5 SHT 20/27	11/09/08	07/06/10		09/04/12	

Paw

X0	AS BUILT	AR	RAGU	SD	11.07.11
5	MODIFIED & ISSUED FOR CONSTRUCTION	RAGU	BS	SD	11.07.11
4	AS BUILT	RAGU	BS	SD	07.06.10
3	ADDED SHT 165 TO 168 & REVISED AS NOTED	RAGU	BS	SD	17.09.08
2	ADDED SHT 170 TO 189 & REVISED AS NOTED	RAGU	BS	SD	11.09.08
1	ADDED SHT 139 TO 164	FT	BS	SD	21.07.08
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	10.07.08
REV. NO.	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE
CLIENT : <img alt="OOG TK FPSO logo" data-bbox					

**"AS - BUILT"**

XO	AS BUILT	AR	RAGU	SD	09.04.12
6	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	LYC	SD 01.12.11
5	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	BS	SD 05.05.11
4	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	BS	SD 20.04.11
3	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	BS	SD 17.03.11
2	MODIFIED & ISSUED FOR CONSTRUCTION		RAGU	BS	SD 07.03.11
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	11.09.08
REV. NO.	DESCRIPTION OF REVISION	BY	CHK'D	APP'D	DATE
CLIENT : <b>OOG K</b> FPSO					
PROJECT : <b>FPSO CIDADE DEITAJAÍ</b>				JOB NO.	21-9791
				QUANTITY:	1
TITLE: <b>PIPING ISOMETRIC INDEX</b> <b>SHT 4 OF 4</b>				CLASS #	ABS
				TIPL DRAWNS. NO.	7000-04-L-26-XN-05121
GSI DISCIPLINE SIGN		APPROVED BY SD	 <b>WASCO</b> Gas Services International (S) Pte Ltd		
PROCESS	AR	CHECKED BY BS			
MECHANICAL	VC	DRAWN BY RAGU			
PIPEING	MH	SCALE N.T.S			
STRUCTURAL	WKH	E & I AK			
PROJECT	EG	ACAD DBG : G375-5121-04_XD			
		JOB NO: G375	GSI DBG. NO: GSI-G375-5121	SHT 04	REV X0
<b>JURONG SHIPYARD PTE LTD</b> (A subsidiary of SembCorp Marine Ltd) 					
ENGINEERING DEPARTMENT XXX SECTION   <b>END SHEET</b> <small>Certified by [Signature] Date [Signature]</small>					

N

## BILL OF MATERIAL

FABRICATION MATERIALS					
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY	
1	PIPE SMLS BE XS A106 GR. B, NACE	14	B1	0.7M	
2	PIPE SMLS BE SCH 80 A106 GR. B, NACE	2	B1	1.8M	
3	WELDLET XS A105, NACE	14 x 2	B1		
4	WELDLET XS x SCH 160 A105, NACE	14 x 3/4	B1		
5	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	2	B1	2	
6	FLANGE 300LB WN RF XS A105, NACE	14	B1	2	
7	FLANGE 300LB WN RF SCH 80 A105, NACE	2	B1	2	

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
8	SPEC BLIND 300LB RF 34mm THK A105, NACE	14	B1	1
9	75mm LG PIPE NIPPLE TDE SCH 160 A106 GR. B, NACE	3/4	B1	1
10	PLUG SCRD 3000LB A105, NACE	3/4	B1	1
11	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER 1/3mm THK CS CENTERING RING, ZINC COATED	14	B1	4
12	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER 1/3mm THK CS CENTERING RING, ZINC COATED	2	B1	2
13	224 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1, 1/8	B1	20
14	185 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1, 1/8	B1	20
15	95 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	B1	16
16	BALL VALVE 300LB RF, BV-26 (FB)	14	B1	1
17	BALL VALVE THREADED (LC) PER PIPING SPEC. B1	3/4	B1	1
18	901SDV 110	14		1
19	901SDV 111	2		1
<hr/> <b>SUPPORTS</b> <hr/>				
20	STD TTI CLAMP	14	B1	1
21	STD TTI CLAMP	2	B1	1

**"AS - BUILT"**

XO	AS BUILT	AR	RAGU	SD	09.04.12
3	AS BUILT	FT	BS	SD	07.06.10
2	REVISED DUE TO TIE-IN POINT LOCATION	FT	BS	SD	14.05.08
1	REVISED PER P&I D CHANGES	NN	CG	SD	17.04.08
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV NO	DESCRIPTION OF PROVISION	PV	CWHD	APPN	DATE



PROJECT:		JOB NO.
		21-8791
TITLE:		QUANTITY:
PIPING ISOMETRIC		1
LINE NO.		CLASS:
901-14"-PG-1000A-B1 (SHT.1/2)		ABS
901-14"-PG-1000B-B1 (SHT.1/2)		TYP DRAWING, MD. 7000-04-I-26-XN-05121

DESIGN DATA FOR MAIN LINE		GSI DISCIPLINE SIGN	APPROVED BY	SD	 <b>Wasco</b> Gas Services International (S) Pte Ltd
PROCESS	AR	CHECKED BY	BS		
MECHANICAL	VC	DESIGN BY	BS		
PIPING	MWH	RAGU			
STRUCTURAL	WKH	SCALE	N.T.S		
E & I	AK	ACAD Dwg #	G375	JOB BD#	
PROJECT	EG	6375-5121-04_X0		GSI DES. NO#	
				GSI-6375-5121	

 **JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)  
SINGAPORE

ENGINEERING DEPARTMENT XXX SECTION

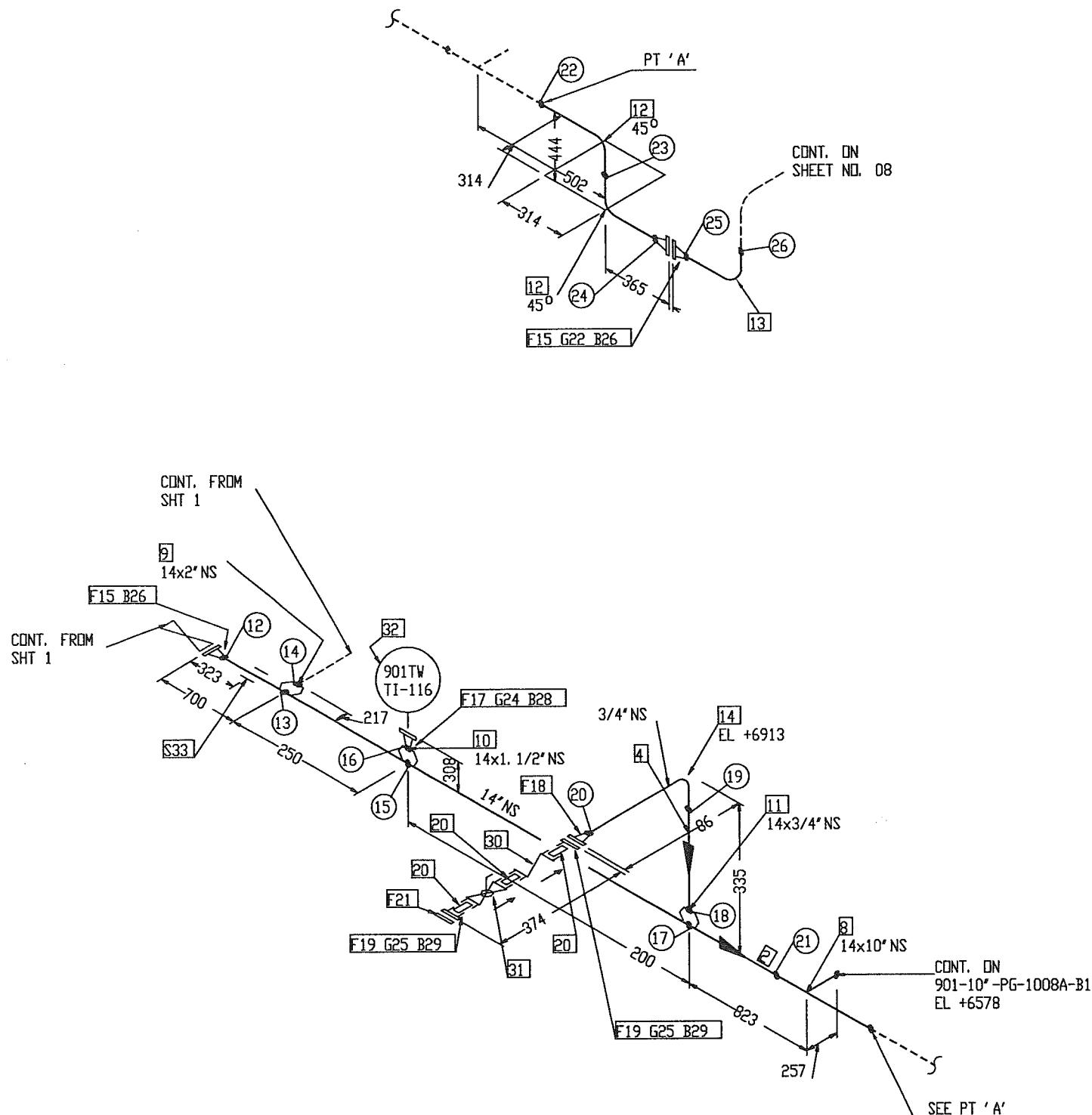
  
**ANAB**  
Accredited  
by  
SVA  
CSC

  
**ISO 9001**  
Certified Under 31003

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
  2. WELD NO. (1) TO (11)

# BILL OF MATERIAL



DESIGN DATA	
DESIGN PRESSURE	: 43.8 BARG
OPERATING TEMPERATURE	: 49° C
HYDROSTATIC TEST PRESSURE	: 65.7 BARG
CORROSION ALLOWANCE	: 1/8"
RADIOGRAPHY	: 100%
INSULATION	: NO
INSPECTION BY	: GSI (QC)
PWHT	: NO

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. (12) TO (26)

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	DELETED			
2	PIPE SMLS BE XS A106 GR. B, NACE	14	B1	3.8M
3	DELETED			
4	PIPE SMLS BE SCH 160 A106 GR. B, NACE	3/4	B1	0.1M
5	DELETED			
6	DELETED			
7	DELETED			
8	REDUCING TEE BW XS A234 GR. WPB, NACE	14 x 10	B1	1
9	WELDOLET XS A105, NACE	14 x 2	B1	1
10	WELDOLET XS x SCH 160 A105, NACE	14 x 1. 1/2	B1	1
11	WELDOLET XS x SCH 160 A105, NACE	14 x 3/4	B1	1
12	45 DEG ELBOW SMLS BW XS A234 GR. WPB, NACE	14	B1	2
13	90 DEG ELBOW SMLS BW XS A234 GR. WPB, NACE	14	B1	1
14	90 DEG LR ELBOW SMLS BW SCH 160 A234 GR. WPB, NACE	3/4	B1	1
15	FLANGE 300LB WN RF XS A105, NACE	14	B1	3
16	DELETED			
17	FLANGE 600LB WN RF SCH 160 A105, NACE	1. 1/2	B1	1
18	FLANGE 300LB WN RF SCH 160 A105, NACE	3/4	B1	1
19	FLANGE 300LB SCRD RF SCH 160 A105, NACE	3/4	B1	2
ERCTION MATERIALS				
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
20	75MM LG PIPE NIPPLE TBE S160 A106 GR. B, NACE	3/4	B1	3
21	BLIND FLANGE 300LB RF A105, NACE	3/4	B1	1
22	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	14	B1	1
23	DELETED			
24	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	1. 1/2	B1	1
25	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	3/4	B1	2
26	185 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/8	B1	40
27	DELETED			
28	115 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	B1	4
29	80 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	B1	8
30	CHECK VALVE THREADED PER PIPING SPEC. B1	3/4	B1	1
31	BALL VALVE THREADED PER PIPING SPEC. B1	3/4	B1	1
32	901TW TI-116	1. 1/2		1
33	SUPPORTS STD TII CLAMP	14	B1	4

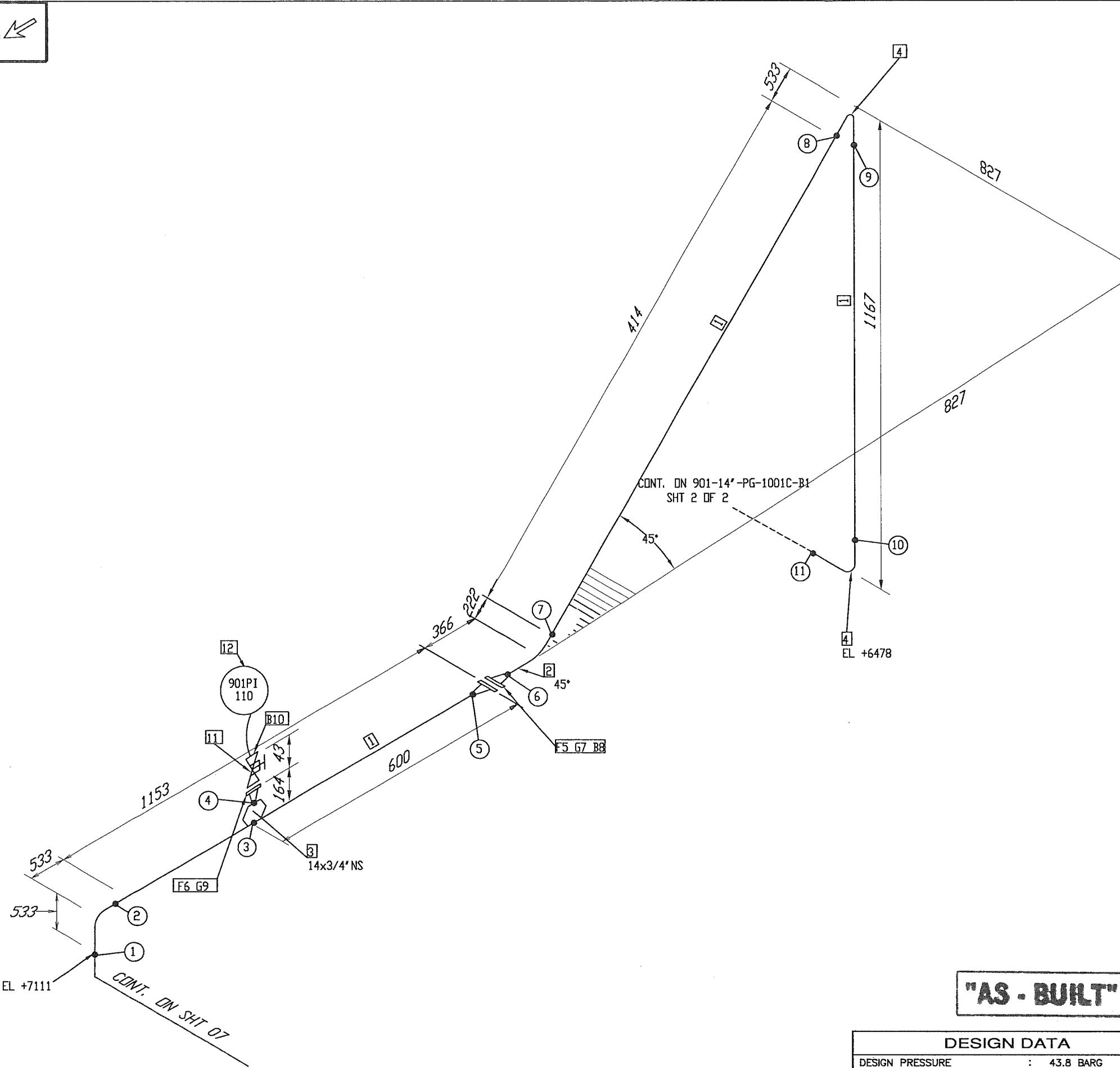
XO	AS BUILT	AR	RAGU	SD	09.04.12
4	MODIFIED & ISSUED FOR CONSTRUCTION	RAGU	BS	SD	02.03.11
3	AS BUILT	FT	BS	SD	07.06.10
2	REVISED DUE TO TIE-IN POINT LOCATION	NN	CG	SD	14.05.08
1	REVISED PER P&ID CHANGES	NN	CG	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT : **OOG K**  
FPSO

PROJECT:	LINE NO.	CLASS :
FPSO CIDADE DEITAJÁI	21-9791	
	QUANTITY	1
TITLE: PIPING ISOMETRIC	LINE NO. 901-14"-PG-1000A-B1 (SHT.2/2) 901-14"-PG-1000B-B1 (SHT.2/2)	ABS

GSI DISCIPLINE SIGN	APPROVED BY	SD	<b>U</b>  <b>WASCO</b> Gas Services International (S) Pte Ltd
PROCESS	AR	CHECKED BY BS	
MECHANICAL	VC	DRAWN BY RAGU	
PIPEING	MH	SCALE N.T.S	
STRUCTURAL	WCH	ACAD DWG I	
E & I	AK	JOB NO. 6375-5121-07-XD	JURONG SHIPYARD PTE LTD (A subsidiary of SembCorp Marine Ltd)
PROJECT	EG	6375	ENGINERING DEPARTMENT XXX SECTION
		6375	REV. 07 X0
		GSI-G375-5121	ISO 9001 CERTIFIED NUMBER: 31020
			ENR 9001 CERTIFICATE NUMBER: 31020

# BILL OF MATERIAL



## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. ① TO ⑪

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE XS A106 GR. B, NACE	14	B1	1, 6M
2	45 DEG LR ELBOW SMLS BW XS A234 GR. WPB, NACE	14	B1	1
3	WELDOLET XS x SCH 160 A105, NACE	14 x 3/4	B1	1
4	90 DEG LR ELBOW SMLS BW XS A234 GR. WPB, NACE	14	B1	2
5	FLANGE 300LB WN RF SCH 160 A105, NACE	14	B1	2
6	FLANGE 300LB WN RF SCH 160 A105, NACE	3/4	B1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
7	Spiral wound gasket 300LB RF 4.5mm THK SS316 winding/graphite filler w/3mm THK CS centering ring, zinc coated	14	B1	1
8	185 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/8	B1	20
9	Spiral wound gasket 300LB RF 4.5mm THK SS316 winding/graphite filler w/3mm THK CS centering ring, zinc coated	3/4	B1	1
10	123 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	B1	4
11	DB&B SLIM-LINE INSTRUMENT MONOFLANGE 300LB 901PI 110	3/4	B1	1
12	901PI 110	3/4	B1	1

X0	AS BUILT	AK	RAGU	SD	09.04.12
4	MODIFIED & ISSUED FOR CONSTRUCTION	RAGU	BS	SD	02.03.11
3	AS BUILT	FT	BS	SD	07.06.10
2	REDRAWN PER GSI'S COMMENTS	NN	CG	SD	14.05.08
1	REVISED PER P&ID CHANGES	NN	CG	SD	17.04.08
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

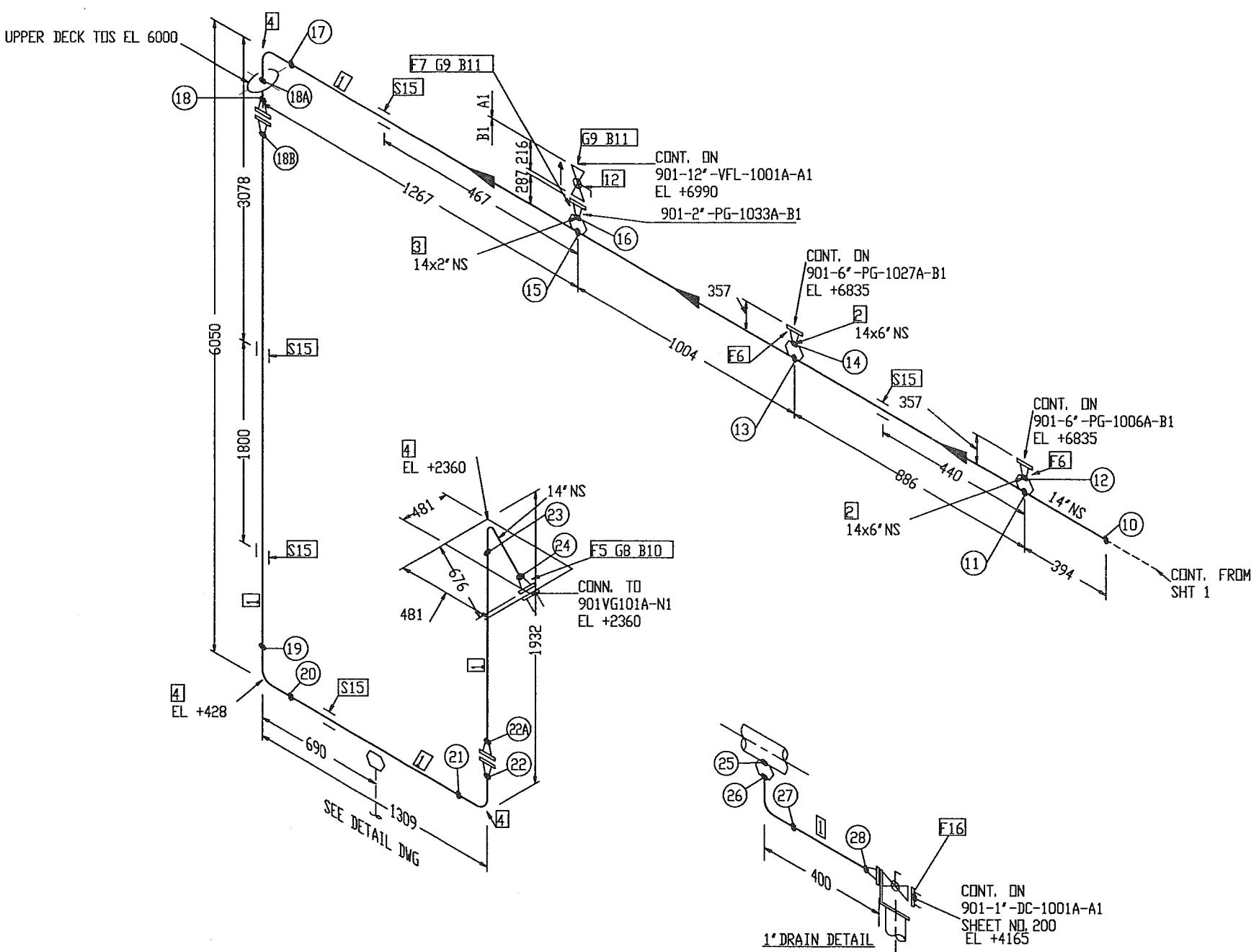
Client: *Pao Ho*

OOG TK  
FPSO

PROJECT:	JOB NO.	21-9791
	QUANTITY:	1
TITLE:	LINE NO.	ABS
PIPING ISOMETRIC	901-14"-PG-1001A-B1 (SHT.1/2)	7000-04-L-26-XN-05121
	901-14"-PG-1001B-B1 (SHT.1/2)	

GSI DISCIPLINE SIGN		APPROVED BY	U WASCO	Gas Services International (S) Pte Ltd
PROCESS	AK	SD		
MECHANICAL	VC	BS		
PIPEING	MH	RAGU		
STRUCTURAL	WKH	N.T.S		
E & I	AK	SD		
ADAD END 1	G375-5121-08_XD	JOB NO.	G375	GSI NO.
PROJECT	EE	SHT NO.	6375	GSI-6375-5121
		REV.		SHT 08 X0
<b>JURONG SHIPYARD PTE LTD</b>		(A subsidiary of SembCorp Marine Ltd) SINGAPORE		
<b>JSL</b>		Engineering Department XXX SECTION		
<b>SMAG</b>		SINGAPORE JULY 2008 DRAFTS DRAWN BY JSL		

# BILL OF MATERIAL



## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE QTY	SPEC.
1	PIPE SMLS BE XS A106 GR. B, NACE	14	B1	9.2M
2	WELDOLET XS A105, NACE	14 x 6	B1	2
3	WELDOLET XS A105, NACE	14 x 2	B1	1
4	90 DEG LR ELBOW SMLS BW XS A234 GR. WPB, NACE	14	B1	4
5	FLANGE 300LB WN RF XS A105, NACE	14	B1	1
6	FLANGE 300LB WN RF SCH 80 A105, NACE	6	B1	2
7	FLANGE 300LB WN RF SCH 80 A105, NACE	2	B1	1
7A	FLANGE 300LB WN RF SCH 160 A105, NACE	1	B1	1
7B	BLIND FLANGE 300LB RF A105 NACE	1	B1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE QTY	SPEC.
8	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	14	B1	1
9	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	2	B1	2
9A	SPIRAL WOUND GASKET 300LB 4.5MM THK SS316 WINDING/GRAFITE FILLER W/3MM THK CS CENTERING RING, ZINC COATED	1	B1	2
10	185 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/8	B1	20
11	95 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	B1	16
11A	85 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	B1	8
12	BALL VALVE 300LB RF, BV-24 (CSC)	2	B1	1
12A	BALL VALVE 300LB RF	1	B1	1
13	WELDOLET SCH 160 A105, NACE	14 X 1	B1	1
14	90 DEG LR ELBOW SMLS BW SCH 160 A234 GR WPB	1	B1	1

## SUPPORTS

15	STD TTI CLAMP	14	B1	5
16	FLANGE 300LB SW RF SCH 160 A105, NACE	1	B1	1

X0	AS BUILT	AR	RAGU	SD	09.04.12
4	REVISED AS SHOWN	RAGU	LYC	SD	01.12.11
3	AS BUILT	FT	BS	SD	07.06.10
2	REVISED AS SHOWN	FT	BS	SD	20.08.08
1	REVISED PER P&ID CHANGES	NN	CG	SD	17.04.08
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT :



PROJECT:	FPSO CIDADE DE ITAJAÍ	JOB NO.	21-9791
QTY:	1	UNITITY:	
TITLE:	PIPING ISOMETRIC	LINE NO.	901-14"-PG-1001A-B1 sht 2/2 901-14"-PG-1001B-B1 sht 2/2
CLASS:	ABS	LINE NO.	7000-04-L-26-XN-05121

## DESIGN DATA

1. DESIGN PRESSURE	: 43.8 BARG
2. OPERATING TEMPERATURE	: 49° C
3. HYDROSTATIC TEST PRESSURE	: 65.7 BARG
4. CORROSION ALLOWANCE	: 1/8"
5. RADIOGRAPHY	: 100%
6. INSULATION	: NO
7. INSPECTION BY	: GSI (QC)
8. PWHT	: NO

GSI DISCIPLINE SIGN	APPROVED BY	SD
PROCESS	AK	
MECHANICAL	VC	CHECKED BY BS
PIPE	W/KH	DRIVEN BY RAGU
STRUCTURAL	W/KH	SCALE N.T.S
E & I	AK	RECD DATE 6375-5121-09_X0
PROJECT	EG	JOB NO. K375
		GSI DATE NO. K375
		GSI DATE NO. GSI-6375-5121
		SHT NO. SHT 09
		REV. NO. X0

**"AS - BUILT"**

WASCO Gas Services International (S) Pte Ltd

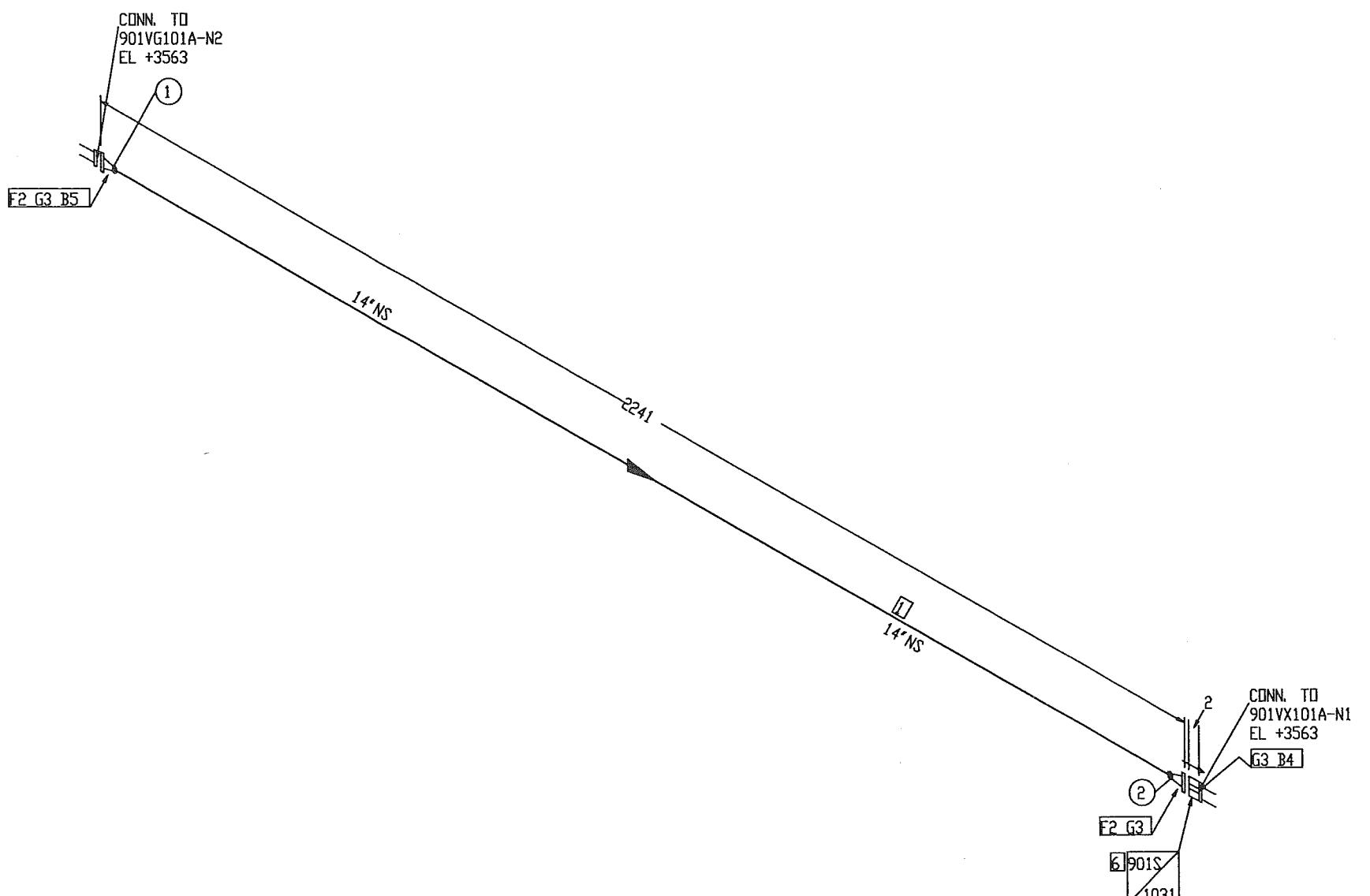
**JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)  
SINGAPORE

Engineering Department XXX Section  
ISO 9001  
Certified Number 21500

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. (10) TO (28)

# BILL OF MATERIAL



**"AS - BUILT"**

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ②

## DESIGN DATA

- |                              |             |
|------------------------------|-------------|
| 1. DESIGN PRESSURE           | : 17 BARG   |
| 2. OPERATING TEMPERATURE     | : 49° C     |
| 3. HYDROSTATIC TEST PRESSURE | : 25.5 BARG |
| 4. CORROSION ALLOWANCE       | : 1/8"      |
| 5. RADIOGRAPHY               | : 100%      |
| 6. INSULATION                | : NO        |
| 7. INSPECTION BY             | : GSI (QC)  |
| 8. PWHT                      | : NO        |

FABRICATION MATERIALS		N.S. (INS)	PIPE SPEC.	QTY
PT NO	COMPONENT DESCRIPTION			
1	PIPE SMLS BE XS A106 GR. B, NACE	14	B1	2.0M
2	FLANGE 300LB WN RF XS A105, NACE	14	B1	2

ERCTION MATERIALS		N.S. (INS)	PIPE SPEC.	QTY
PT NO	COMPONENT DESCRIPTION			
3	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAPHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	14	B1	3
4	200 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/8	B1	20
5	185 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/8	B1	20
6	TEMP. STRAINER 300LB, 901S-1031	14	B1	1

XO	AS BUILT	AR	RAGU	SD	09.04.12
Z	AS BUILT	FT	BS	SD	07.06.10
1	REVISED PER P&ID CHANGES	NN	CG	SD	17.04.08
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT : **OOG TK**  
FPSO

PROJECT:	FPSO CIDADE DEITAJAI	JOB NO.	21-8791
		QUANTITY:	1
TITLE:	LINE NO. PIPING ISOMETRIC 901-14" - PG-1002A-B1 901-14" - PG-1002B-B1	CLASS :	ABS
		TPY DRAWING NO.	7000-04-L-26-XN-05121

GSI DISCIPLINE SIGN	APPROVED BY SD	CHECKED BY BS	DRAWN BY RAGU	SCALE N.T.S	JOB NO. K375	GSI DRS. NO. GSI-G375-5121	SHT 10 X0
PROCESS	AB	VC	MH	RAGU			
MECHANICAL							
PIPEING							
STRUCTURAL							
E & I							
PROJECT							
JSL	<b>JURONG SHIPYARD PTE LTD</b>		(A subsidiary of SembCorp Marine Ltd.)		Gas Services International (S) Pte Ltd		
	SINGAPORE		SINGAPORE		SINGAPORE		
	DRAFTSman's Stamp		DRAFTSman's Stamp		DRAFTSman's Stamp		
	DRAFTSman's Name		DRAFTSman's Name		DRAFTSman's Name		
	Title		Title		Title		
	Date		Date		Date		

ENGINEERING DEPARTMENT XXX SECTION



N

This technical drawing illustrates a complex mechanical assembly, likely a sensor or actuator, with the following key features and dimensions:

- Vertical Column (Left):** A vertical column on the left side contains several components:
  - At the top, a horizontal line labeled "CONT. ON SHT 2" extends from a point at EL +5200.
  - Below this, a section labeled "10° NS" is shown.
  - Further down, a component labeled "11" is connected to a line labeled "10° NS".
  - At the bottom of this column, a component labeled "10" is shown.
- Insulation Section:** A diagonal line labeled "END OF INSULATION" and "EL +2100" indicates the boundary of the insulation. It features two "S19" labels.
- Horizontal Components:** The main horizontal assembly includes:
  - A central vertical line labeled "PP" with a dimension of "1946".
  - A section labeled "10x1, 1/2' NS" with a dimension of "4832".
  - A circular component labeled "901TW 115" with a dimension of "1462" to its right.
  - A circular component labeled "901PZT 115" with a dimension of "265" above it.
  - A section labeled "10x3/4' NS" with a dimension of "300" below it.
  - A component labeled "F7 G10 B13" positioned near the "901TW 115" component.
  - A component labeled "F8 G11" positioned near the "901PZT 115" component.
  - A component labeled "F8 G11" positioned further down the assembly.
  - A component labeled "F6 G9 B12" located at the bottom right.
  - A component labeled "901RD 115" located at the bottom right.
- Bottom Right Area:** This area contains:
  - A vertical line labeled "10° NS" with a dimension of "419".
  - A section labeled "10° NS" with a dimension of "484".
  - A section labeled "10° NS" with a dimension of "242".
  - A section labeled "10° NS" with a dimension of "552".
  - A section labeled "10° NS" with a dimension of "852".
  - A section labeled "10° NS" with a dimension of "498".
  - A section labeled "10° NS" with a dimension of "6".
  - A section labeled "10° NS" with a dimension of "16".
  - A section labeled "10° NS" with a dimension of "5".
  - A section labeled "30°" with a dimension of "5".
  - A label "CONN. TO 901VX102A-N1 EL +585" indicating a connection point.
- Bottom Left Area:** A label "EL +4343" is located at the bottom left.

**"AS - BUILT"**

---

DESIGN DATA

DESIGN DATA	
1. DESIGN PRESSURE	: 43.8 BARG
2. OPERATING TEMPERATURE	: 106° C
3. HYDROSTATIC TEST PRESSURE	: 65.7 BARG
4. CORROSION ALLOWANCE	: 1/8"
5. RADIOGRAPHY	: 100%
6. INSULATION	: PP
7. INSPECTION BY	: GSI (QC)
8. PWHT	: NO

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
  2. WELD NO. (1) TO (11)

GSI DISCIPLINE SIGN		APPROVED BY SD	 <b>WASCO</b>	Gas Services International (S) Pte Ltd		
PROCESS	AB	CHECKED BY CG				
MECHANICAL	VC	DRAINED BY SHU				
PIPELINE	MW MH	SCALE N.T.S.				
STRUCTURAL	WTKH					
E & I	AK					
PROJECT	EG	ACAD DBN # G375-5121-11_X0	JIB NO# IC375	GSI DBN. NO# GSI-G375-5121	SHT 11	REV X0

**JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)

**JSL**

ENGINEERING DEPARTMENT      XXX      SECTION

**ENR SIGN**  
Certified by: [Signature]      Date: [Signature]



FPSO CIDADE DE ITAJAÍ

1

LINE NO.	CLASS #	ABS
901-10"-PG-1003A-B1 (SHT.1/2)	TOP DRAWING NO. 7/000-04-01-26-YN-05121	
901-10"-PG-1003B-B1 (SHT.1/2)		

SD 10-100000-B1 (SIN.172) 1000-04-L-20-XN-03121

28

[View Details](#) | [Edit](#) | [Delete](#)

**wasco** Gas Services International (S) Pte Ltd

**N.T.S.** (Not to Scale)

121-11-X0 JOB NO.: 1975 BSI DBN. NO.: GSI-G375-5121 SHT 11 REV: X0

SHIBYARD PTE LTD

**SHIPYARD PTE LTD**  
subsidiary of SembCorp Marine Ltd

**SINGAPORE**

ENGINEERING DEPARTMENT XXX SECTION

N

## BILL OF MATERIAL

FABRICATION MATERIALS				
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE XS A106 GR. B, NACE	16	B1	1.7M
2	PIPE SMLS BE XS A106 GR. B, NACE	10	B1	7.6M
3	PIPE SMLS BE SCH 80 A106 GR. B, NACE	8	B1	1.0M
4	CAP BW XS A234 GR. WPB, NACE	16	B1	2
5	WELDODLET XS A105, NACE	10 x 4	B1	2
6	WELDODLET XS A105, NACE	10 x 2	B1	1
7	90 DEG LR ELBOW SMLS BW XS A234 GR. WPB, NACE	10	B1	5
8	FLANGE 300LB WN RF XS A105, NACE	10	B1	4
9	FLANGE 300LB WN RF SCH 80 A105, NACE	8	B1	2
10	FLANGE 300LB WN RF SCH 80 A105, NACE	4	B1	2
11	FLANGE 300LB WN RF SCH 80 A105, NACE	2	B1	1
ERCTION MATERIALS				
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
12	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	10	B1	2
13	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	8	B1	2
14	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	2	B1	2
15	165 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1	B1	32
16	145 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	B1	24
17	95 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	B1	16
18	BALL VALVE 300LB RF, BV-24 (CSC)	2	B1	1
SUPPORTS				
19	STD TTI CLAMP	10	B1	2

X0	AS BUILT	AR	RAGD	SD	09.04.12
3	AS BUILT	FT	BS	SD	07.06.10
2	REVISED AS SHOWN	NN	CG	SD	14.05.08
1	REVISED PER P&ID CHANGES	NN	CG	SD	17.04.08
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO.	DESCRIPTION OF REVISION	BY	CHK'D	APPD.	DATE



PROJECT:		JOB NO.
		21-9791
		QUANTITY:
		1
TITLE:	LINE NO.	CLASS:
PIPING ISOMETRIC	901-10"-PG-1003A-B1 (SHT.2/2)	ABS
	901-10"-PG-1003B-B1 (SHT.2/2)	TRIP DRAWING NO. 7000-04-L-26-XN-05121

**"AS - BUILT"**

<b>DESIGN DATA</b>		<b>GSI DISCIPLINE SIGN</b>	<b>APPROVED BY</b>	<b>SD</b>	 <b>WASCO</b> Gas Services International (S) Pte Ltd	
1. DESIGN PRESSURE	: 43.8 BARG	<b>PROCESS</b>	<input checked="" type="checkbox"/>	<b>CHECKED BY</b>		<b>CG</b>
2. OPERATING TEMPERATURE	: 106° C	<b>MECHANICAL</b>	<input checked="" type="checkbox"/>	<b>DRAWN BY</b>		<b>SHU</b>
3. HYDROSTATIC TEST PRESSURE	: 65.7 BARG	<b>PIPE</b>	<input checked="" type="checkbox"/>	<b>SCALE</b>		<b>N.T.S.</b>
4. CORROSION ALLOWANCE	: 1/8"	<b>STRUCTURAL</b>	<input checked="" type="checkbox"/>	<b>E &amp; I</b>		<input checked="" type="checkbox"/>
5. RADIOGRAPHY	: 100%	<b>PROJECT</b>	<input checked="" type="checkbox"/>	<b>ACAD DBN:</b>		<b>JBK RD#:</b>
6. INSULATION	: PP			<b>G375-5121-12_X0</b>		<b>K375</b>
7. INSPECTION BY	: GSI (QC)					<b>GSI DBN. NO:</b>
8. PWHT	: NO				<b>GSI-G375-5121</b>	
					<b>SHT 12</b>	
					<b>REV: X0</b>	

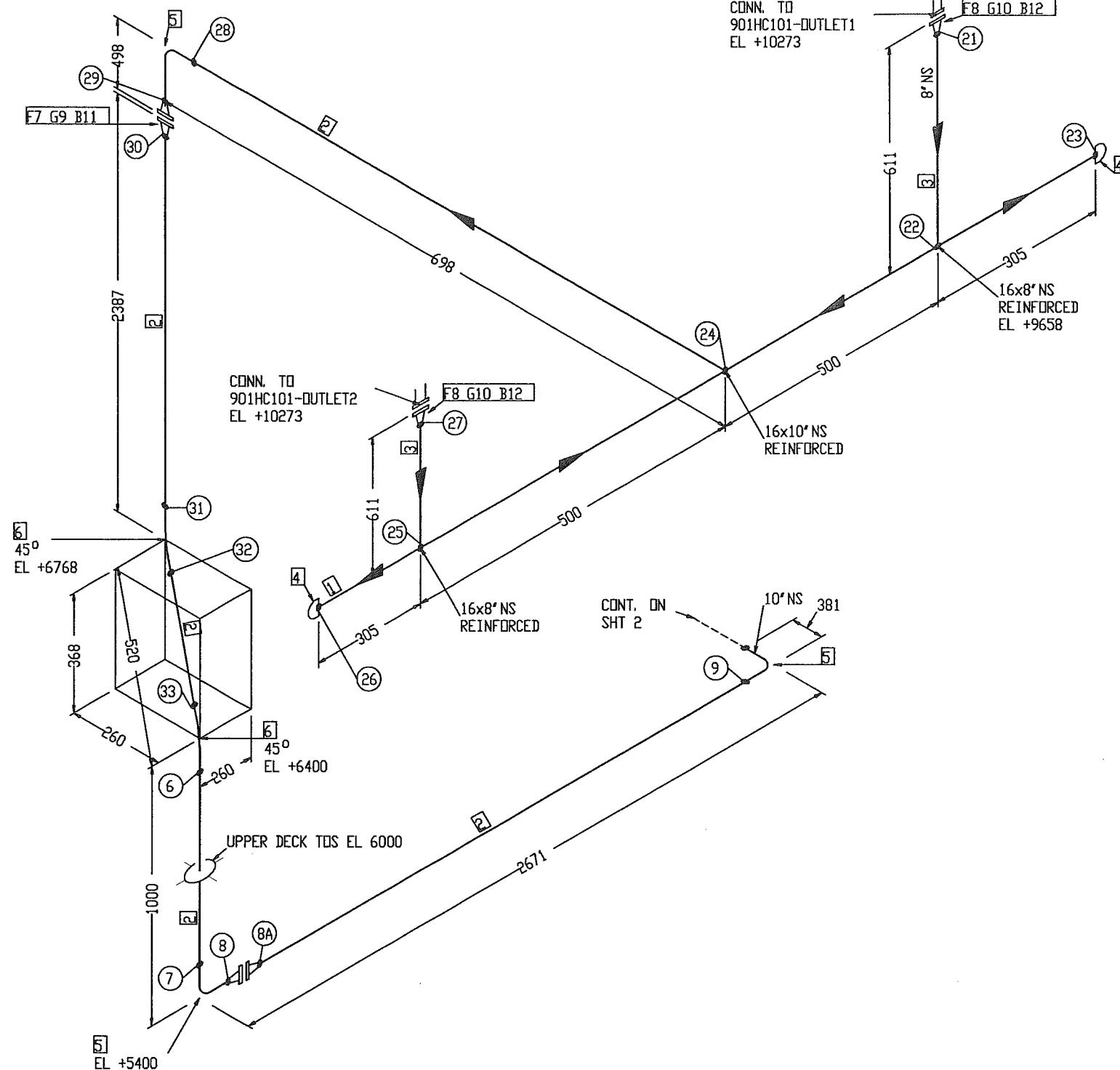
 **JURONG SHIPYARD PTE LTD**  
 (A subsidiary of SembCorp Marine Ltd)  


**ENGINEERING DEPARTMENT** **XXX** **SECTION**

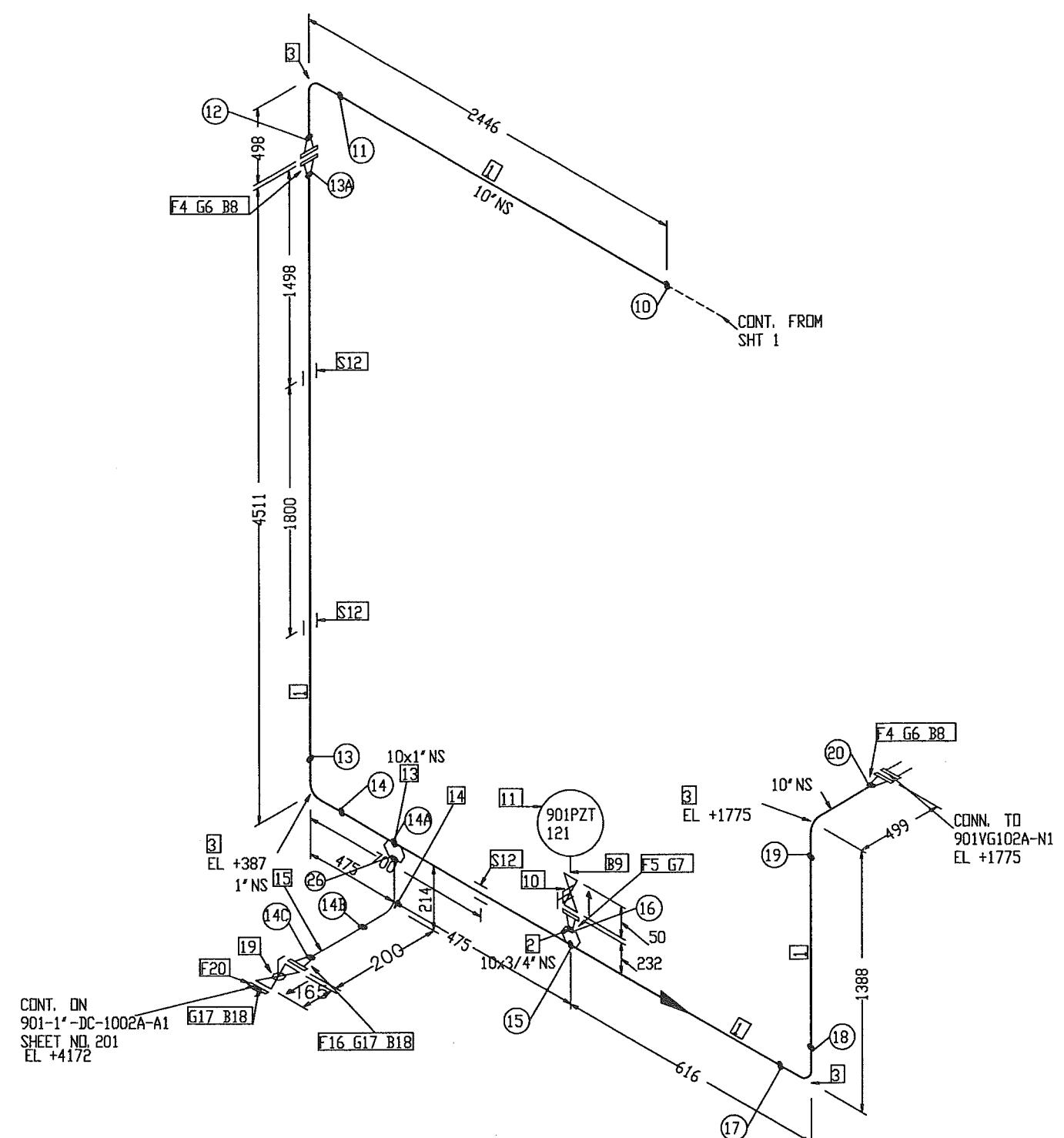



  
**ISO 9001**  
 Certificate Number: 10102

# BILL OF MATERIAL



# BILL OF MATERIAL



PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE XS A106 GR. B, NACE	10	B1	7.6M
2	WELDOLET XS x SCH 160 A105, NACE	10 x 3/4	B1	1
3	90 DEG LR ELBOW SMLS BW XS A234 GR. WPB, NACE	10	B1	4
4	FLANGE 300LB WN RF XS A105, NACE	10	B1	3
5	FLANGE 600LB WN RF SCH 160 A105, NACE	3/4	B1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
6	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAPHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	10	B1	2
7	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAPHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	3/4	B1	1
8	165 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1	B1	32
9	145 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	B1	4
10	DB8B SLIM-LINE INSTRUMENT MONOFLANGE 600LB	3/4	B1	1
11	901PZT 121	3/4		1

## SUPPORTS

12	STD TTI CLAMP	10	B1	3
13	WELDOLET XS x SCH 160 A105, NACE	10 x 1	B1	1
14	90 DEG LR ELBOW SMLS BW SCH 160 A234 GR. WPB, NACE	1	B1	1
15	PIPE SMLS BE SCH 160 A106 GR. B, NACE	1	B1	75MM
16	FLANGE 300LB WN RF SCH 160 A105, NACE	1	B1	1
17	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAPHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	1	B1	2
18	83 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	B1	8
19	BALL VALVE 300# RF, FLGD AS PER PIE SPEC B1	1	B1	1
20	FLANGE 300LB SW RF SCH 160 A105, NACE	1	B1	1

X0	AS BUILT	AR	RAGU	SD	09.04.12
4	REVISED AS SHOWN	RAGU	LYC	SD	01.12.11
3	ADDED LOW POINT DRAIN	RAGU	BS	SD	25.08.11
2	AS BUILT	FT	BS	SD	07.06.10
1	REVISED PER GSI'S COMMENTS	NN	CG	SD	14.05.08
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	BY	CHK'D	APP'D	DATE

Po. No.  
CLIENT : **OOG** FPSO

PROJECT:	LINE NO.	CLASS:
FPSO CIDADE DEITAJAI	21-9791	
	QUANTITY:	1
TITLE: PIPING ISOMETRIC	LINE NO: 901-10"-PG-1004A-B1 sht 2/2 901-10"-PG-1004B-B1 sht 2/2	ABS

BSI DISCIPLINE SIGN	APPROVED BY	SD	U Wasco
PROCESS	AB	SD	
MECHANICAL	VC	BS	
PIPEING	MH	RAGU	
STRUCTURAL	WKH	H.T.S	
E & I	AK	ASAP E&I	
PROJECT	EG	6375-5121-14_X0	
		ISB 101	
		K375	
		BSI DES. NO:	
		GSI-6375-5121	
		SHT 14	
		X0	

## DESIGN DATA

DESIGN PRESSURE	: 43.8 BARG
OPERATING TEMPERATURE	: 49° C
HYDROSTATIC TEST PRESSURE	: 65.7 BARG
CORROSION ALLOWANCE	: 1/8"
RADIOGRAPHY	: 100%
INSULATION	: NO
INSPECTION BY	: GSI (QC)
PWHT	: NO

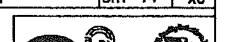
## "AS - BUILT"

### NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ⑩ TO ⑳ & ⑳A

**JURONG SHIPYARD PTE LTD**

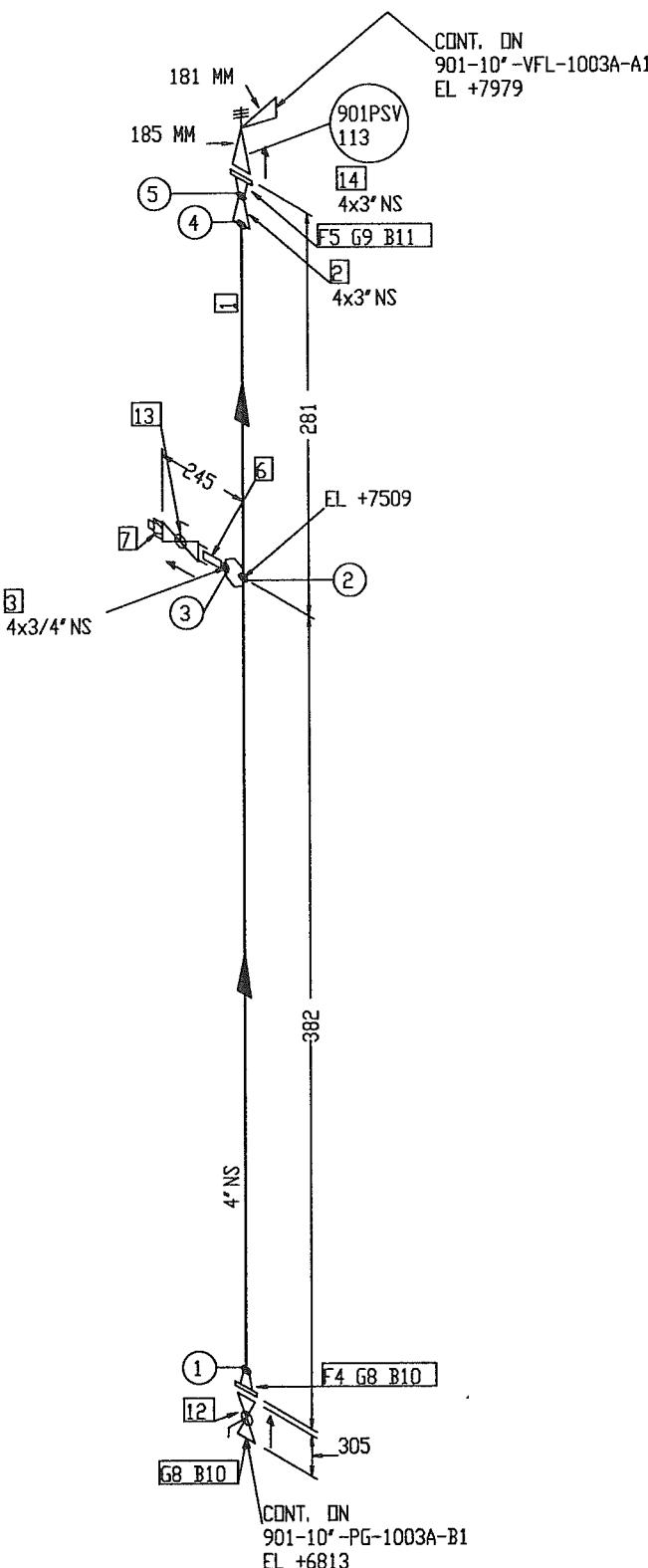
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ENGINEERING DEPARTMENT XXX SECTION



# BILL OF MATERIAL



## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. (1) TO (5)

FABRICATION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC. QTY
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	4	B1 0.4M
2	CONC RED BW SCH 80 A234 GR. WPB, NACE	4 x 3	B1 1
3	WELDOLET SCH 80 x SCH 160 A105, NACE	4 x 3/4	B1 1
4	FLANGE 300LB WN RF SCH 80 A105, NACE	4	B1 1
5	FLANGE 300LB WN RF SCH 80 A105, NACE	3	B1 1

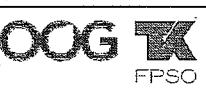
  

ERCTION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC. QTY
6	75mm LG PIPE NIPPLE TDE SCH 160 A106 GR. B, NACE	3/4	B1 1
7	PLUG SCRD 3000LB A105, NACE	3/4	B1 1
8	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	4	B1 2
9	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	3	B1 1
10	120 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	B1 16
11	115 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	B1 8
12	BALL VALVE 300LB RF, BV-24 (FB)(CSD)	4	B1 1
13	BALL VALVE THREADED PER PIPING SPEC. B1	3/4	B1 1
14	901PSV 113	4 x 3	1

XO	AS BUILT	AR	RACD	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	14.05.08
REV. NO	DESCRIPTION OF REVISION	BY	CHK'D	APPD	DATE

CLIENT	 FPSO				
PROJECT	FPSO CIDADE DEITAJAI				
JOB NO.	21-9791				
QUANTITY	1				
TITLE	PIPING ISOMETRIC	LINENo	901-4"-PG-1005A-B1		
			901-4"-PG-1005B-B1		
CLASS	ABS				
TPJ DRAWING NO.	7000-04-L-26-XN-05121				

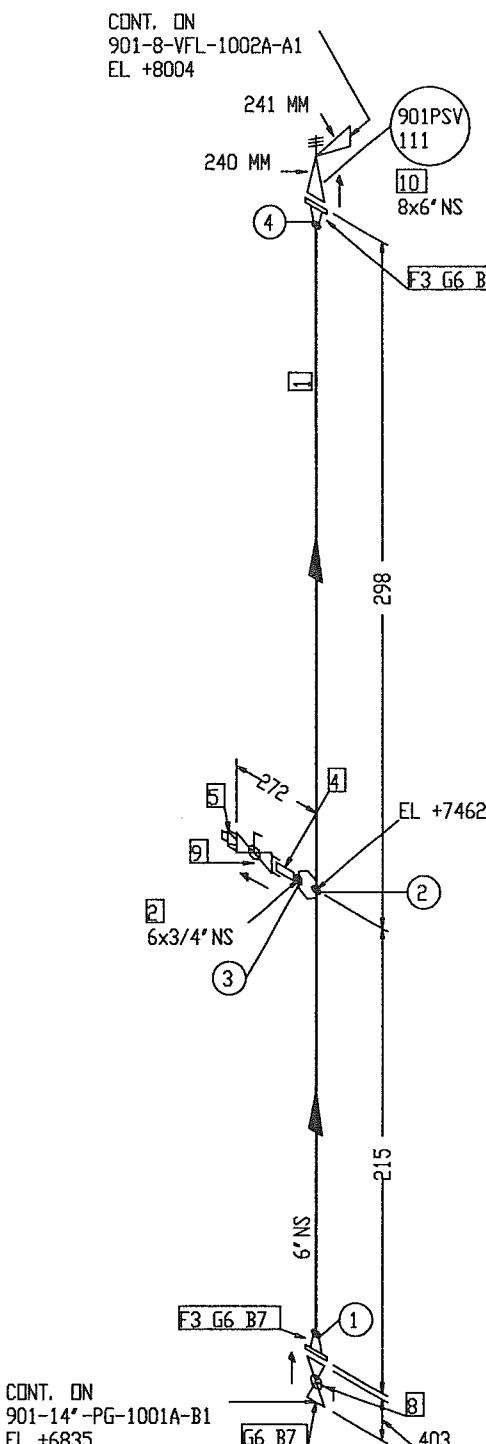
SSI DISCIPLINE SIGN	APPROVED BY	SD	 Wasco					
PROCESS	RE	CHECKED BY		CG				
MECHANICAL	VC	DRAWN BY		SHU				
PIPELINE	MH	SCALE		N.T.S.				
STRUCTURAL	WKH	E & I		AK				
PROJECT	ED	ACAD DNB	G375-5121-15_XD	JOB NO.	K375	SSI DSB. NO.	GSI-G375-5121	REV.

	JURONG SHIPYARD PTE LTD		
(A subsidiary of SembCorp Marine Ltd.)			
SINGAPORE			
ENGINEERING DEPARTMENT XXX SECTION			

# BILL OF MATERIAL

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FABRICATION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	6	B1 0.4M
2	WELDLET SCH 80 x SCH 160 A105, NACE	6 x 3/4	B1 1
3	FLANGE 300LB WN RF SCH 80 A105, NACE	6	B1 2

ERCTION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.
4	75mm LG PIPE NIPPLE TOE SCH 160 A106 GR. B, NACE	3/4	B1 1
5	PLUG SCRD 300LB A105, NACE	3/4	B1 1
6	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	6	B1 3
7	125 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	B1 36
8	BALL VALVE 300LB RF, BV-26 (FB)(CSD)	6	B1 1
9	BALL VALVE THREADED PER PIPING SPEC. B1	3/4	B1 1
10	901PSV 111 8 x 6	8 x 6	1

XO	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	14.05.08
REV. NO.	DESCRIPTION OF REVISION				

CLIENT :

PROJECT: FPSO CIDADE DE ITAJAÍ

JOB NO.	21-9791
QUANTITY:	1
TITLE:	LINE NO. 901-6" - PG-1006A-B1 901-6" - PG-1006B-B1
CLASS:	ABS
TOP DRAWING NO.:	7000-04-L-26-XN-05121

BSI DISCIPLINE SIGN APPROVED BY SD  
PROCESS AR CHECKED BY CG  
MECHANICAL VC DRAWN BY SHU  
PIPEING W MH  
STRUCTURAL W KH SCALE N.T.S  
E & I f AK ACAD DWS 1 JIB EDI K575  
PROJECT EG G375-5121-16\_00 K575 BSI DWS. RDN G375-5121 SHT 16 X0

WASCO Gas Services International (S) Pte Ltd

JURONG SHIPYARD PTE LTD (A subsidiary of SembCorp Marine Ltd)  
SINGAPORE  
ENGINEERING DEPARTMENT XXX SECTION  
 ENR  
 ISO 9001  
Certified Quality Management System  
SGS

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ⑤

## DESIGN DATA

- DESIGN PRESSURE : XX Barg
- OPERATING TEMPERATURE : XX C
- HYDROSTATIC TEST PRESSURE : XX Barg
- CORROSION ALLOWANCE : 1/8"
- RADIOGRAPHY : 100%
- INSULATION : NO
- INSPECTION BY : GSI (QC)
- PWHT : NO



N

## BILL OF MATERIAL

FABRICATION MATERIALS		N. S. (INS)	PIPE SPEC.	QTY
PT NO	COMPONENT DESCRIPTION			
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	8	D1	8. 2M
2	PIPE SMLS BE SCH 80 A106 GR. B, NACE	4	D1	0. 2M
3	EQUAL TEE BW SCH 80 A234 GR. WPB, NACE	8 x 8	D1	1
4	COND RED BW SCH 80 A234 GR. WPB, NACE	8 x 4	D1	1
5	REDUCING TEE BW SCH 80 A234 GR. WPB, NACE	8 x 4	D1	1
6	WELDOLET SCH 80 x SCH 160 A105, NACE	8 x 2	D1	1
7	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	8	D1	4
8	FLANGE 600LB WN RF SCH 80 A105, NACE	8	D1	1
9	FLANGE 600LB WN RF SCH 80 A105, NACE	4	D1	2
10	FLANGE 600LB WN RF SCH 160 A105, NACE	2	D1	1

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FRICTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
11	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	8	D1	1
12	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	2	D1	2
13	195 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1, 1/8	D1	12
14	115 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	D1	16
15	BALL VALVE 600LB RF, BV-29 (CSC)	2	D1	1

## SUPPRTS

16 STD TTI CLAMP 8 D1 2

X0	AS BUILT	ARK	RAGU	SD	09.04.12
2	AS BUILT	FT	BS	SD	07.06.10
1	REVISED PER P&ID CHANGES	NN	CG	SD	14.04.08
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	PV	CHKD	APRD	DATE



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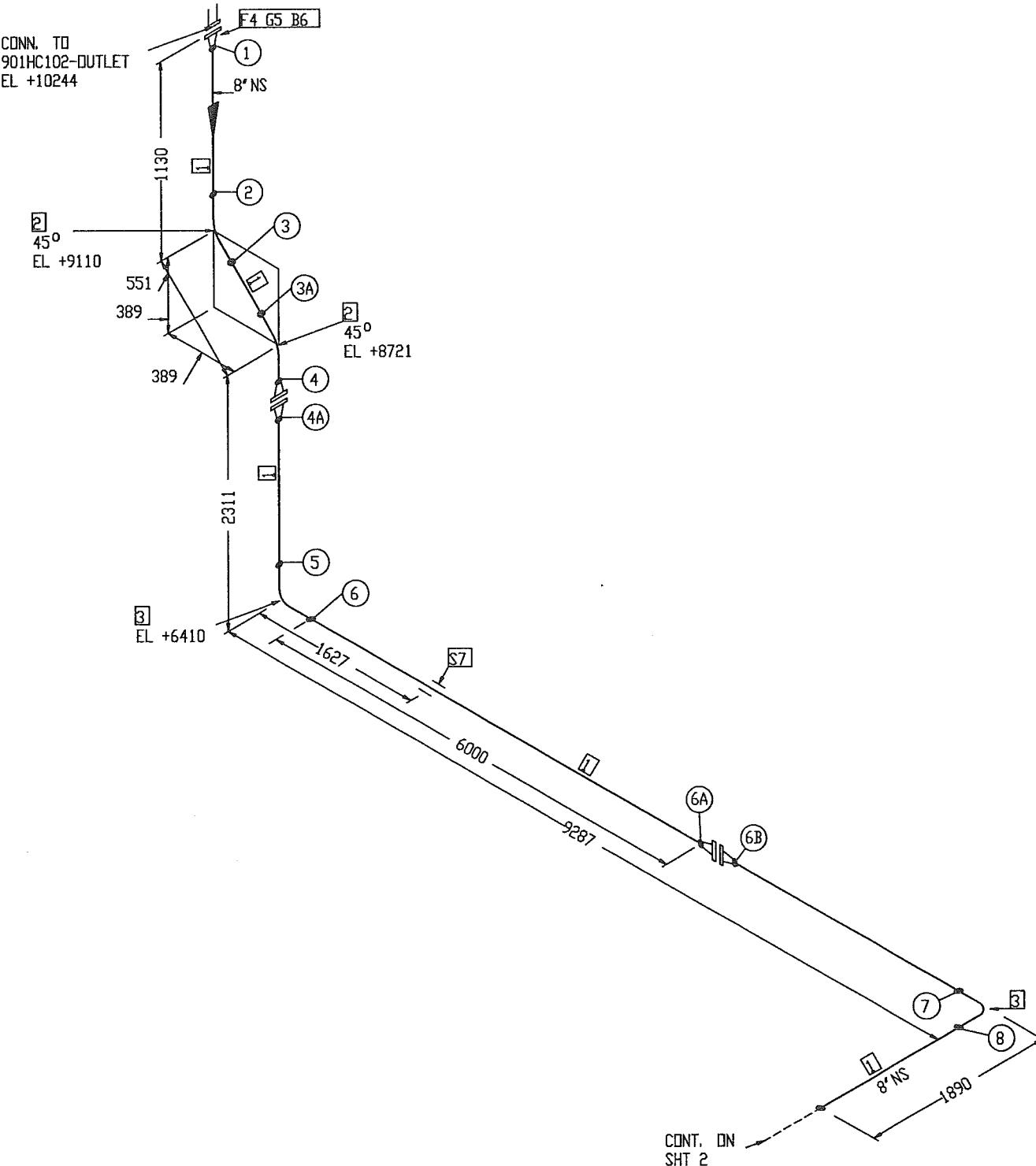
1100-01040E-BETRAYAL		QUANTITY:	1
TITLE:	LINE NO.	CLASS #	
PIPING ISOMETRIC	901-8"-PG-1009A-D1 (SHT.2/2) 901-8"-PG-1009B-D1 (SHT.2/2)	ABS	TECH DRAWING NO. 7000-04-L-26-XN-05121

**"AS - BUILT"**

DESIGN DATA		JURONG SHIPYARD PTE LTD (SHT.2/2)		7000-04-L-26-XN-05121	
1. DESIGN PRESSURE : 56.2 BARG 2. OPERATING TEMPERATURE : 98° C 3. HYDROSTATIC TEST PRESSURE : 84.3 BARG 4. CORROSION ALLOWANCE : 1/8" 5. RADIOGRAPHY : 100% 6. INSULATION : PP 7. INSPECTION BY : GSI (QC) 8. PWHT : NO		<b>GSI DISCIPLINE SIGN</b> APPROVED BY SD PROCESS AP CHECKED BY CG MECHANICAL VC PIPING NV MH DRAWN BY SHU STRUCTURAL WKH SCALE N.T.S. E & I AK		 <b>Wasco</b> Gas Services International (S) Pte Ltd	
		ACAD DB 1 PROJECT EB G375-5121-18_XD		JOB BD1 K375 GSI DSG. NO# GSI-G375-5121 SHT 18 REV X0	
		<b>JURONG SHIPYARD PTE LTD</b> <small>(A subsidiary of SembCorp Marine Ltd)</small> 		  	
				ENGINEERING PROJECT NAME: XXX DATE: 10/05/2024	

# BILL OF MATERIAL

N ↙



"AS - BUILT"

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. (1) TO (8) & (3A)

## DESIGN DATA

- |                              |             |
|------------------------------|-------------|
| 1. DESIGN PRESSURE           | : 56.2 BARG |
| 2. OPERATING TEMPERATURE     | : 49° C     |
| 3. HYDROSTATIC TEST PRESSURE | : 84.3 BARG |
| 4. CORROSION ALLOWANCE       | : 1/8"      |
| 5. RADIOGRAPHY               | : 100%      |
| 6. INSULATION                | : NO        |
| 7. INSPECTION BY             | : GSI (QC)  |
| 8. PWHT                      | : NO        |

XO	AS BUILT	AR ✓	RAGU	SD	09.04.12
2	AS BUILT	FT	BS	SD	07.06.10
1	REVISED PER P&ID CHANGES	NN	CG	SD	14.04.08
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

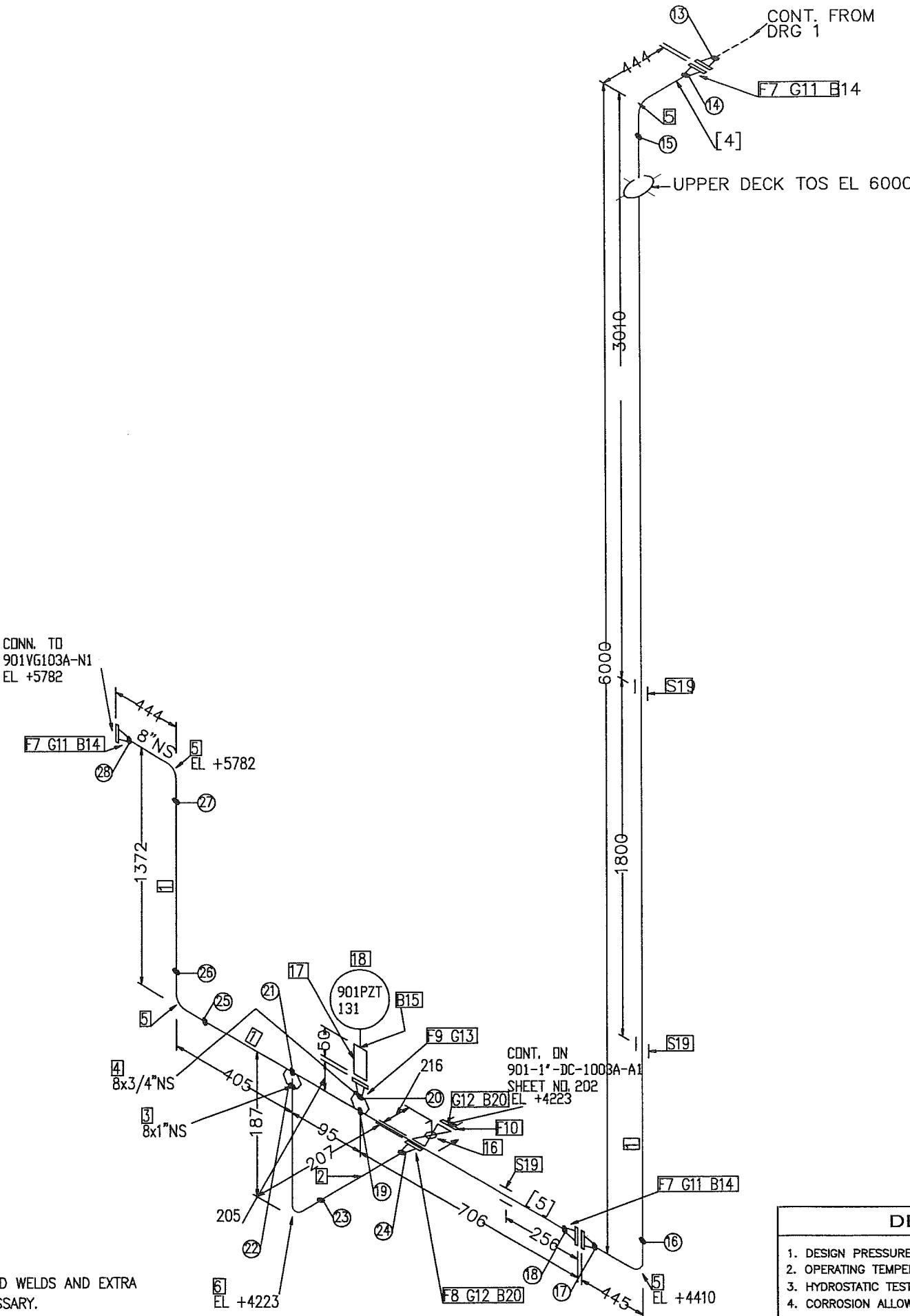
CLIENT: **OOG K**  
FPSO

PROJECT: FPSO CIDADE DE ITAJAÍ	JOB NO. 21-8791
	QUANTITY: 1
TITLE: PIPING ISOMETRIC	LINE NO. 901-B-PG-1010A-D1 (SHT.1/2) 901-B-PG-1010B-D1 (SHT.1/2)
	CLASS # ABS TOP DRAWING NO. 7000-04-L-26-XN-05121

GSI DISCIPLINE SIGN PROCESS: AR ✓ MECHANICAL: VC STRUCTURAL: WKH E & I: AK PROJECT: EG	APPROVED BY SD CHECKED BY CG DRAWN BY SHU SCALE: N.T.S. ACAD DWS: G375-5121-19_XO	Wasco Gas Services International (S) Pte Ltd		
		JOB NO: K375	EST. DWS. NO: GSI-G375-5121	SHT 19 REV X0
<b>JURONG SHIPYARD PTE LTD</b> (A subsidiary of SembCorp Marine Ltd)				
JSL		ENGINEERING DEPARTMENT XXX	SECTION	



# BILL OF MATERIAL



## DESIGN DATA

1. DESIGN PRESSURE : 56.2 Barg
2. OPERATING TEMPERATURE : 49° C
3. HYDROSTATIC TEST PRESSURE : 84.3 Barg
4. CORROSION ALLOWANCE : 1/8"
5. RADIOGRAPHY : 100%
6. INSULATION : NO
7. INSPECTION BY : GSI (QC)
8. PWHT : NO

GSI DISCIPLINE SIGN		APPROVED BY	SD
PROCESS	AV	CHEKED BY	BS
MECHANICAL	VC	DRAWN BY	RAGU
PIPEING	MH	SCALE	N.T.S
STRUCTURAL	WKH	ACAD DWS	I
E & I	AK	JOB ID#	G375
PROJECT	EG	GSI DOB. NO#	G375
		GSI-G375-5121	SHT 20 REV X0

**JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)  
Engineering Department  
ADDED LOW POINT DRAIN

**WASCO** Gas Services International (S) Pte Ltd

**INNO 2000** Corr/Flame Retardant 2000

X0	AS BUILT	AR	RAGU	SD	09.04.12
3	REVISED AS SHOWN	RAGU	BS	SD	01.12.11
2	ADDED LOW POINT DRAIN	RAGU	BS	SD	25.08.11
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT: **OOG K**  
FPSO

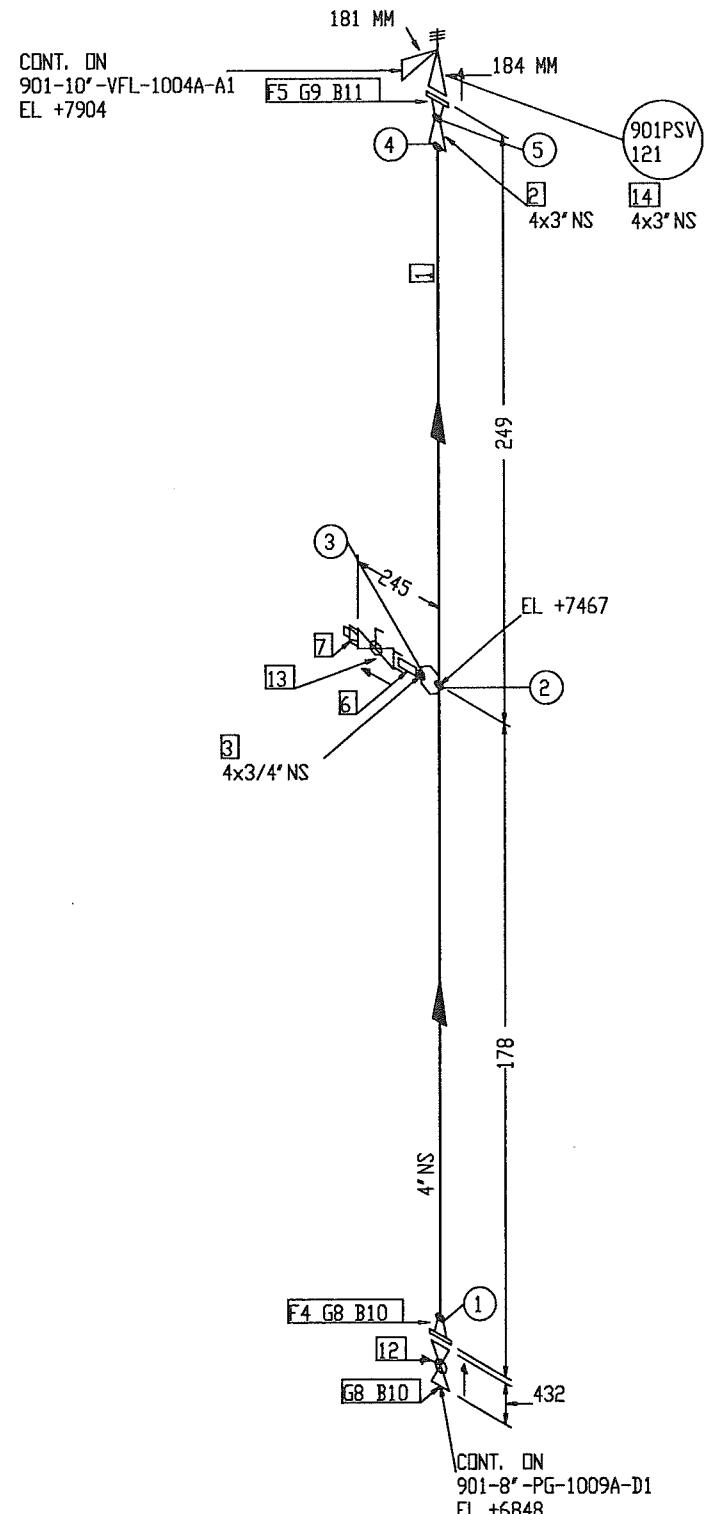
PROJECT: **FPSO CIDADE DEITAJAI**  
JOB NO. 21-8791  
QUANTITY: 1  
TITLE: LINE NO.  
PIPING ISOMETRIC 901-8"-PG-1010A-D1 (SHT.2/2)  
901-8"-PG-1010B-D1 (SHT.2/2)  
CLASS: ABS  
TYP DRAWING NO.  
7000-04-L-26-XN-05121

**JSL** JURONG SHIPYARD PTE LTD  
(A subsidiary of SembCorp Marine Ltd)  
Engineering Department  
ADDED LOW POINT DRAIN

XXX SECTION

**INNO 2000** Corr/Flame Retardant 2000

# BILL OF MATERIAL



## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	4	D1	0.2M
2	CONC RED BW SCH 80 A234 GR. WPB, NACE	4 x 3	D1	1
3	WELDOLET SCH 80 x SCH 160 A105, NACE	4 x 3/4	D1	1
4	FLANGE 600LB WN RF SCH 80 A105, NACE	4	D1	1
5	FLANGE 600LB WN RF SCH 80 A105, NACE	3	D1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
6	75mm LG PIPE NIPPLE TOE SCH 160 A106 GR. B, NACE	3/4	D1	1
7	PLUG SCRD 3000LB A105, NACE	3/4	D1	1
8	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	4	D1	2
9	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	3	D1	1
10	150 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	D1	16
11	135 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	D1	8
12	BALL VALVE 600LB RF, BV-29 (FB)(CSD)	4	D1	1
13	BALL VALVE THREADED PER PIPING SPEC. D1	3/4	D1	1
14	901PSV 121	4 x 3		1

XO	AS BUILT	AR	RADG	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT :  OOG FPSO

PROJECT:	FPSO CIDADE DEITAJÁI	JOB NO.	21-9791
QUANTITY:	1	CLASS :	ABS
TITLE:	PIPING ISOMETRIC	LINN ID:	901-4"-PG-1011A-D1 901-4"-PG-1011B-D1
PROJECT:	JSL	REV:	05121

GS1 DISCIPLINE SIGN	APPROVED BY	SD	U
PROCESS	AR	CHECSED BY	
MECHANICAL	VC	DESIGN BY	SHU
PIPING	MM	SCALE	
STRUCTURAL	WKH	NTS	
E & I	AK	ACAO D&I	
PROJECT	ED	GS75-5121-21_XD	JOB NO. I375 GS1 DISC. NO. GS1-G375-5121 SHT 21 REV X0
JSL	JURONG SHIPYARD PTE LTD	(A subsidiary of SembCorp Marine Ltd)	
ENGINEERING DEPARTMENT	SECTION	XXX	
END SHEET			

## NOTES:

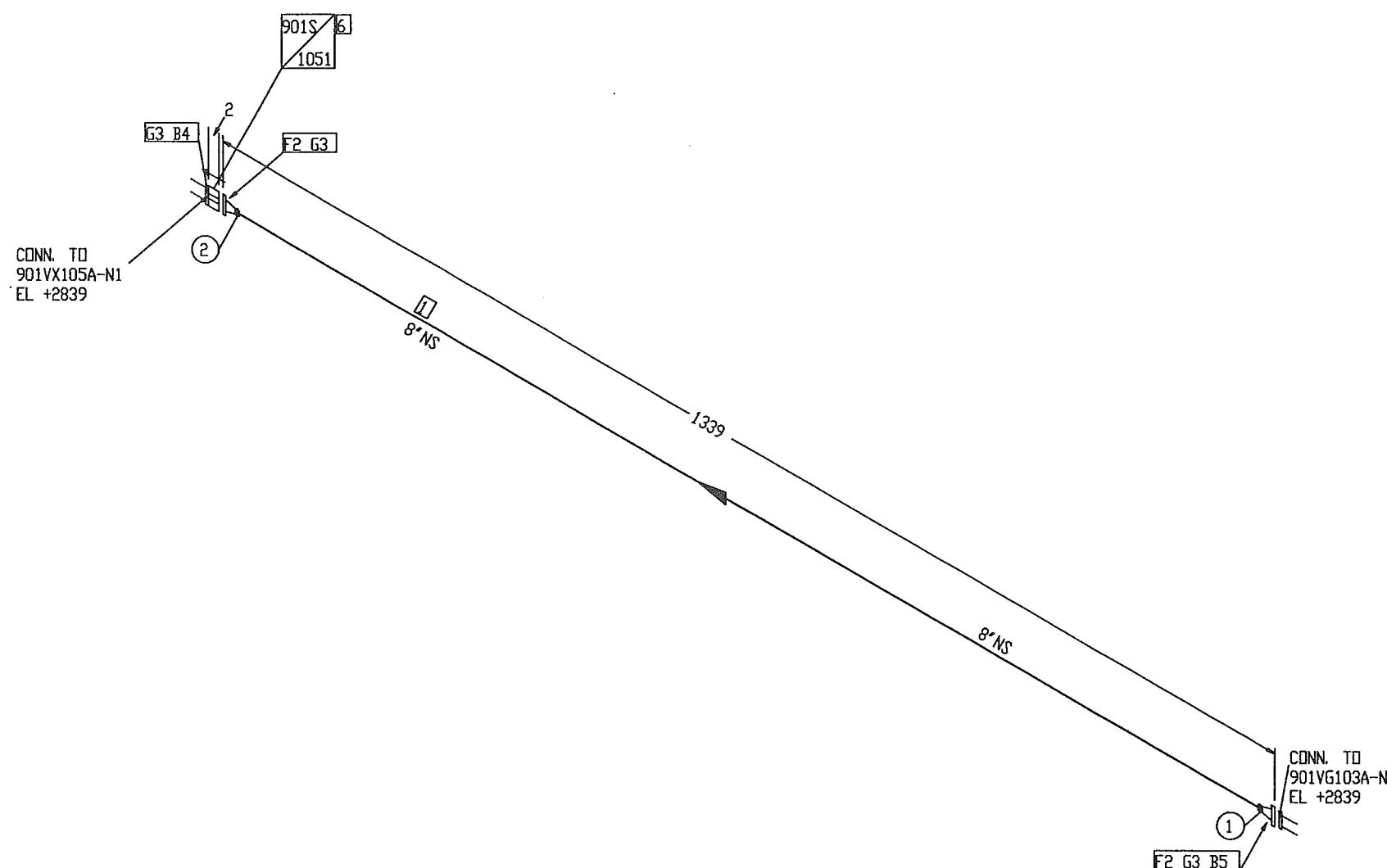
1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. ① TO ④

## DESIGN DATA

1. DESIGN PRESSURE : XX Borg
2. OPERATING TEMPERATURE : XX° C
3. HYDROSTATIC TEST PRESSURE : XX Borg
4. CORROSION ALLOWANCE : 1/8"
5. RADIOGRAPHY : 100%
6. INSULATION : NO
7. INSPECTION BY : GSI (QC)
8. PWHT : NO



# BILL OF MATERIAL



"AS - BUILT"

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. (1) TO (2)

FABRICATION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC. QTY
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	8	D1 1.1M
2	FLANGE 600LB WN RF SCH 80 A105, NACE	8	D1 2
ERCTION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC. QTY
3	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	8	D1 3
4	220 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1, 1/8	D1 12
5	195 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1, 1/8	D1 12
6	TEMP. STRAINER 600LB 901S 1051	8	1

X0	AS BUILT	AR	RAGU	SD	09.04.12
2	AS BUILT	FT	BS	SD	07.06.10
1	REVISED PER TT'S RECOMMENDATION	NN	CG	SD	14.05.08
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV.NO	DESCRIPTION OF REVISION				

CLIENT:

PROJECT: FPSO CIDADE DEITAJÁI	JOB NO. 21-9791
	QUANTITY: 1
TITLE: PIPING ISOMETRIC	LINE NO. 901-8"-PG-1012A-D1 901-8"-PG-1012B-D1
	CLASS: ABS TYP DRAWING NO. 7000-04-L-26-XN-05121

DESIGN DATA	APPROVED BY SD	
PROCESS	AR	
MECHANICAL	VC	
PIPE	YMH	
STRUCTURAL	WKH	
E & I	AK	
PROJECT	EC	
	GSI DRS NO. 6375-5121-22-XD	
	JOB NO. K375	
	GSI DRS NO. GSI-6375-5121	

**JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)  
SINGAPORE  
Engineering Department XXX Section

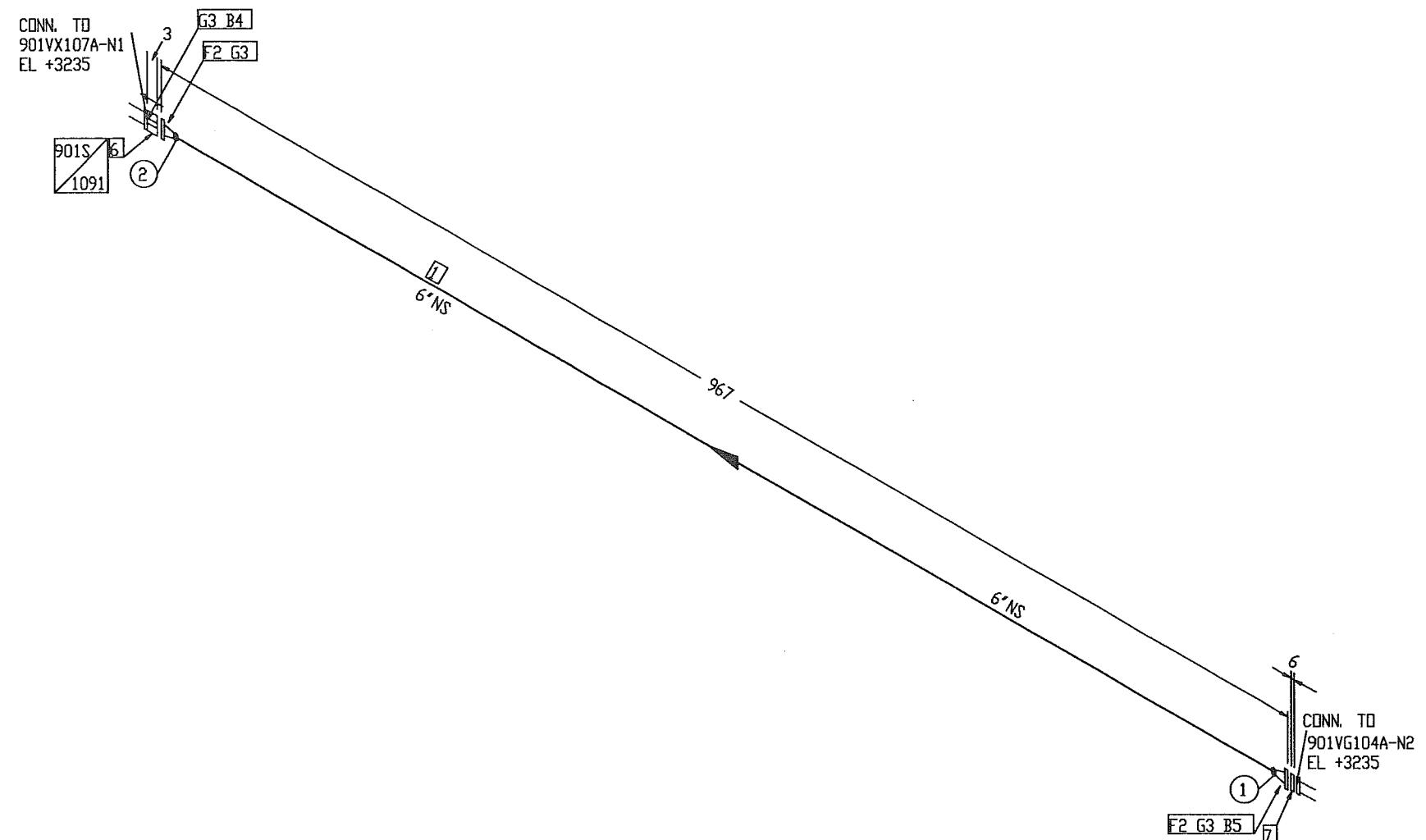
**JSL**  
Engineering Department XXX Section

**DNV GL**  
Engineering Department XXX Section

**ISO 9001**  
Engineering Department XXX Section

# BILL OF MATERIAL

N ↗



XO	AS BUILT	AR	RAGU SD 09.04.12
3	AS BUILT	FT	BS SD 07.06.10
2	REVISED PIPE SCH	NN	BS SD 14.05.08
1	REVISED PER P&ID CHANGES	NN	CG SD 17.04.08
0	APPROVED FOR CONSTRUCTION	SHU	CG SD 27.03.08
REV. NO.	DESCRIPTION OF REVISION	BY	CHKD APPD DATE

"AS - BUILT"

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ②

## DESIGN DATA

- | PROCESS    | APPROVED BY     | SD            |
|------------|-----------------|---------------|
| MECHANICAL | CHEMED BY       | CG            |
| PIPEING    | DRAWN BY        | SHU           |
| STRUCTURAL | W.H.            | N.T.S         |
| E & I      | SCALE           |               |
| PROJECT    | ACAD.DWG #      | JOB NO.       |
|            | G375-5121-23_XD | K375          |
|            |                 | GSI.DWG.ND    |
|            |                 | GSI-G375-5121 |
|            |                 | SHT 23 REV X0 |
1. DESIGN PRESSURE : 92 BARG  
 2. OPERATING TEMPERATURE : 49° C  
 3. HYDROSTATIC TEST PRESSURE : 138 BARG  
 4. CORROSION ALLOWANCE : 1/8"  
 5. RADIOGRAPHY : 100%  
 6. INSULATION : NO  
 7. INSPECTION BY : GSI (QC)  
 8. PWHT : NO

OOG K  
FPSO

PROJECT: FPSO CIDADE DE ITAJAÍ

JOB NO. 21-9791

QUANTITY: 1

CLASS: ABS

TPJ DRAWING NO. 7000-04-L-26-XN-05121

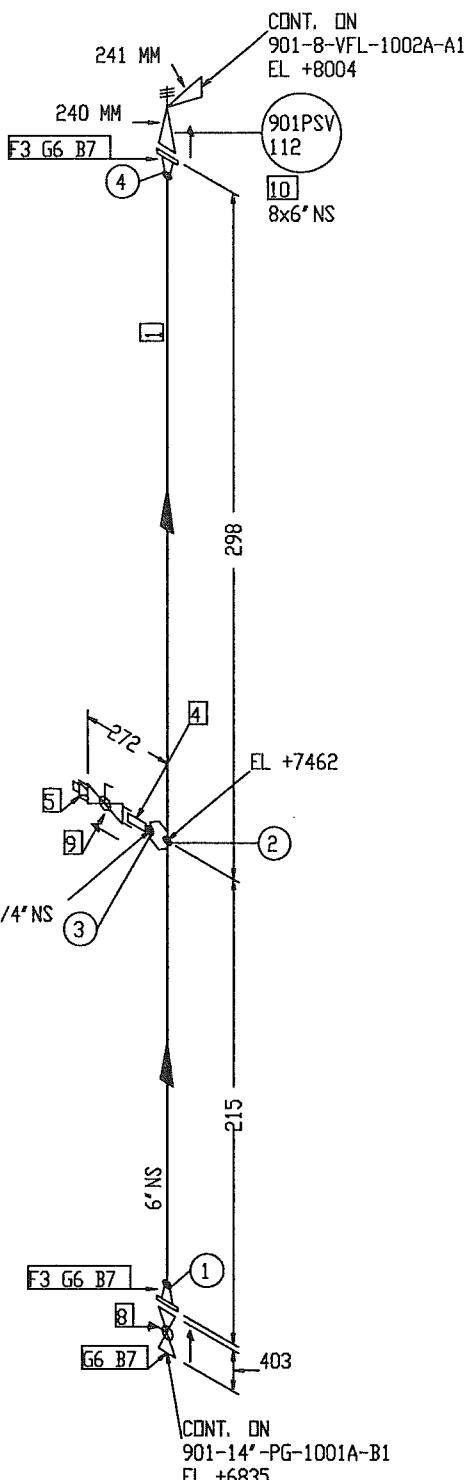
U  
WASCO Gas Services International (S) Pte Ltd

JURONG SHIPYARD PTE LTD  
(A subsidiary of SembCorp Marine Ltd)



ENGINEERING DEPARTMENT XXX SECTION

# BILL OF MATERIAL



FABRICATION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC. QTY
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	6	B1 0.4M
2	WELDOLET SCH 80 x SCH 160 A105, NACE	6 x 3/4	B1 1
3	FLANGE 300LB WN RF SCH 80 A105, NACE	6	B1 2

ERCTION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC. QTY
4	75MM LG PIPE NIPPLE TOE SCH 160 A106 GR. B, NACE	3/4	B1 1
5	PLUG SCRD 3000LB A105, NACE	3/4	B1 1
6	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAPHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	6	B1 3
7	125 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	B1 36
8	BALL VALVE 300LB RF, BV-26 (FB)(CSC)	6	B1 1
9	BALL VALVE THREADED PER PIPING SPEC. B1	3/4	B1 1
10	901PSV 112	8 x 6	1

XO	AS BUILT	AR/	RAGU	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO.	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT :  FPSO

PROJECT:	FPSO CIDADE DE ITAJAI	JOB NO. 21-9791
		QUANTITY: 1
TITLE:	LINE NO. 901-6"-PG-1027A-B1 901-6"-PG-1027B-B1	CLASS: ABS
		TOP DRAWING NO. 7000-04-L-26-XN-05121

SSI DISCIPLINE SIGN	APPROVED BY SD	 <b>Wasco</b> Gas Services International (S) Pte Ltd
PROCESS	AK ✓	
MECHANICAL	VC	
PIPEING	W MH	
STRUCTURAL	WTK	
E & I	f AK	
PROJECT	EE	ACAD DWS & GS75-5121-2A_XD
		JOB NO. K575
		SSI. DS. NO. GS1-GS75-5121
		SHT 24 REV X0

	JURONG SHIPYARD PTE LTD	(A subsidiary of SembCorp Marine Ltd)
ENGINEERING DEPARTMENT	XXX SECTION	
		Certified Drawing No. 21-9791

## NOTES:

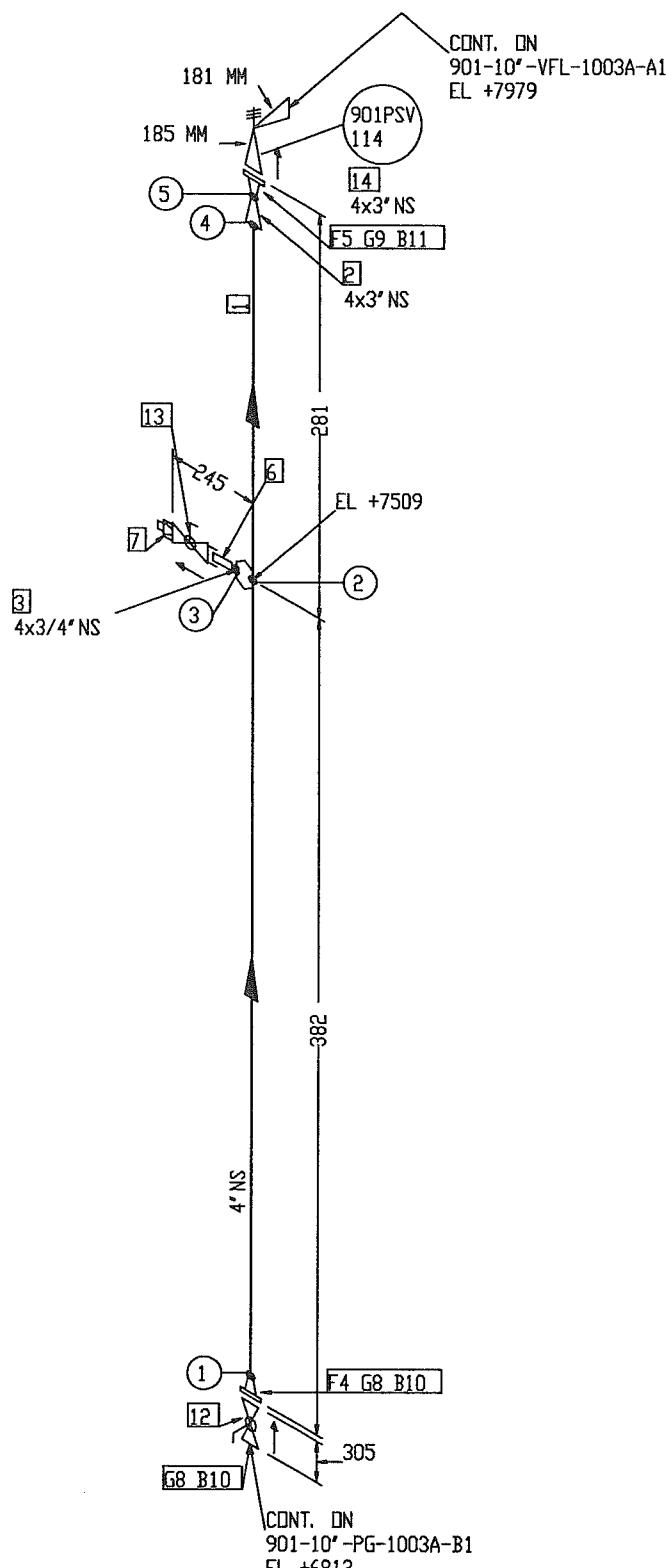
- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ④

## DESIGN DATA

- |                              |            |
|------------------------------|------------|
| 1. DESIGN PRESSURE           | : XX Barg  |
| 2. OPERATING TEMPERATURE     | : XX C     |
| 3. HYDROSTATIC TEST PRESSURE | : XX Barg  |
| 4. CORROSION ALLOWANCE       | : 1/8"     |
| 5. RADIOGRAPHY               | : 100%     |
| 6. INSULATION                | : NO       |
| 7. INSPECTION BY             | : GSI (QC) |
| 8. PWHT                      | : NO       |



# BILL OF MATERIAL



## DESIGN DATA

1. DESIGN PRESSURE : XX Barg
2. OPERATING TEMPERATURE : XX° C
3. HYDROSTATIC TEST PRESSURE : XX Barg
4. CORROSION ALLOWANCE : 1/8"
5. RADIOGRAPHY : 100%
6. INSULATION : NO
7. INSPECTION BY : GSI (QC)
8. PWHT : NO

### FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	4	B1	0.4M
2	CONC RED BW SCH 80 A234 GR. WPB, NACE	4 x 3	B1	1
3	WELDOLLET SCH 80 x SCH 160 A105, NACE	4 x 3/4	B1	1
4	FLANGE 300LB WN RF SCH 80 A105, NACE	4	B1	1
5	FLANGE 300LB WN RF SCH 80 A105, NACE	3	B1	1

### ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
6	75mm LG PIPE NIPPLE TOE SCH 160 A106 GR. B, NACE	3/4	B1	1
7	PLUG SCRD 3000LB A105, NACE	3/4	B1	1
8	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	4	B1	2
9	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	3	B1	1
10	120 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	B1	16
11	115 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	B1	8
12	BALL VALVE 300LB RF, BV-24 (FB)(CSC)	4	B1	1
13	BALL VALVE THREADED PER PIPING SPEC. B1	3/4	B1	1
14	901PSV 114	4 x 3		1

XO	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT : 

PROJECT:	FPSO CIDADE DE ITAJAI	JOB NO.:	21-9791
		QUANTITY:	1
TITLE:	LINE NO. 901-4" - PG-1028A-B1 901-4" - PG-1028B-B1	CLASS:	ABS
		TOP DRAWING NO.:	7000-04-L-26-XN-05121

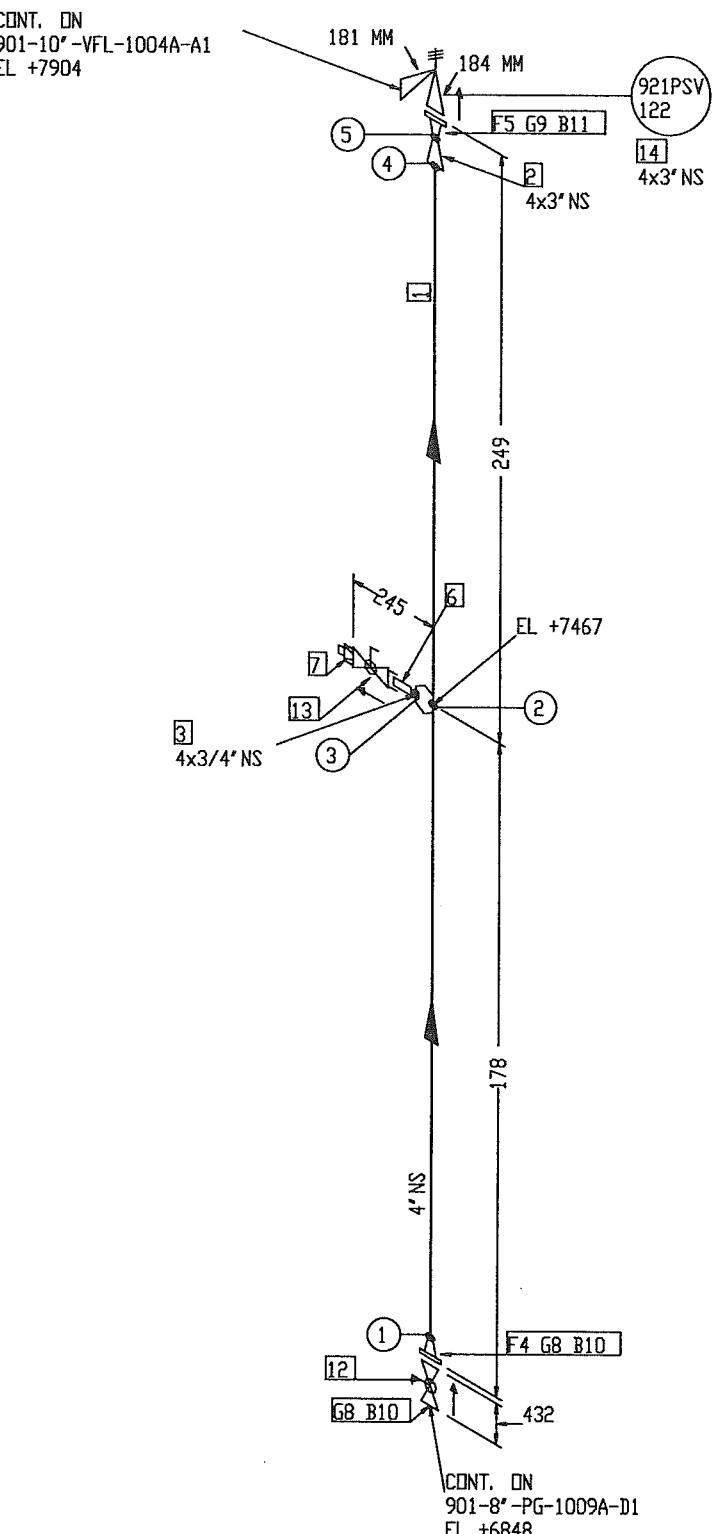
"AS - BUILT"

GSI DISCIPLINE SIGN	APPROVED BY	
	AR	SD
PROCESS	CHEMED BY	CO
MECHANICAL	VC	
PIPEING	VMH	DRIVEN BY
STRUCTURAL	WKM	SHU
E & I	AK	SCALE
PROJECT	EG	ACAD DBN # GS75-5121-25_00
		JOB NO. K375
		GSI DBN NO. K375
		REV. 25
		XO
JURONG SHIPYARD PTE LTD		
(A subsidiary of Sembcorp Marine Ltd)		
SINGAPORE		
ENRAC		
ISO 9001		
Certified by Bureau Veritas		

### NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. ① TO ⑤

# BILL OF MATERIAL



FABRICATION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	4	D1
2	CONC RED BW SCH 80 A234 GR. WPB, NACE	4 x 3	D1
3	WELDDELET SCH 80 x SCH 160 A105, NACE	4 x 3/4	D1
4	FLANGE 600LB WN RF SCH 80 A105, NACE	4	D1
5	FLANGE 600LB WN RF SCH 80 A105, NACE	3	D1

ERCTION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.
6	75MM LG PIPE NIPPLE TDE SCH 160 A106 GR. B, NACE	3/4	D1
7	PLUG SCRD 3000LB A105, NACE	3/4	D1
8	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	4	D1
9	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	3	D1
10	150 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	D1
11	135 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	D1
12	BALL VALVE 600LB RF, BV-29 (FB)(CSC)	4	D1
13	BALL VALVE THREADED PER PIPING SPEC. D1	3/4	D1
14	921PSV 122	4 x 3	1

XO	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT :  FPSO

PROJECT:	FPSO CIDADE DEITAJAI	JOB NO.	21-9791
QUANTITY:	1	CLASS :	ABS
TITLE:	LINE NO. 901-4"-PG-1029A-D1 901-4"-PG-1029B-D1	TOP DRAWING NO.	7000-04-L-26-XN-05121

DESIGN DATA		APPROVED BY SD CHECKED BY CG DRAWN BY SHU SCALE N.T.S E & I AK PROJECT ED ACAD DBN # G375-5121-26_XD	JOB NO. K375 EDD DBN NO. GSI-G375-5121 SHT 26 EVN XO
PROCESS	MECHANICAL		
PIPING	STRUCTURAL	W.M.H	W.M.H
E & I	PROJECT	AK	ED

**JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)  
SINGAPORE

Engineering Department XXX Section

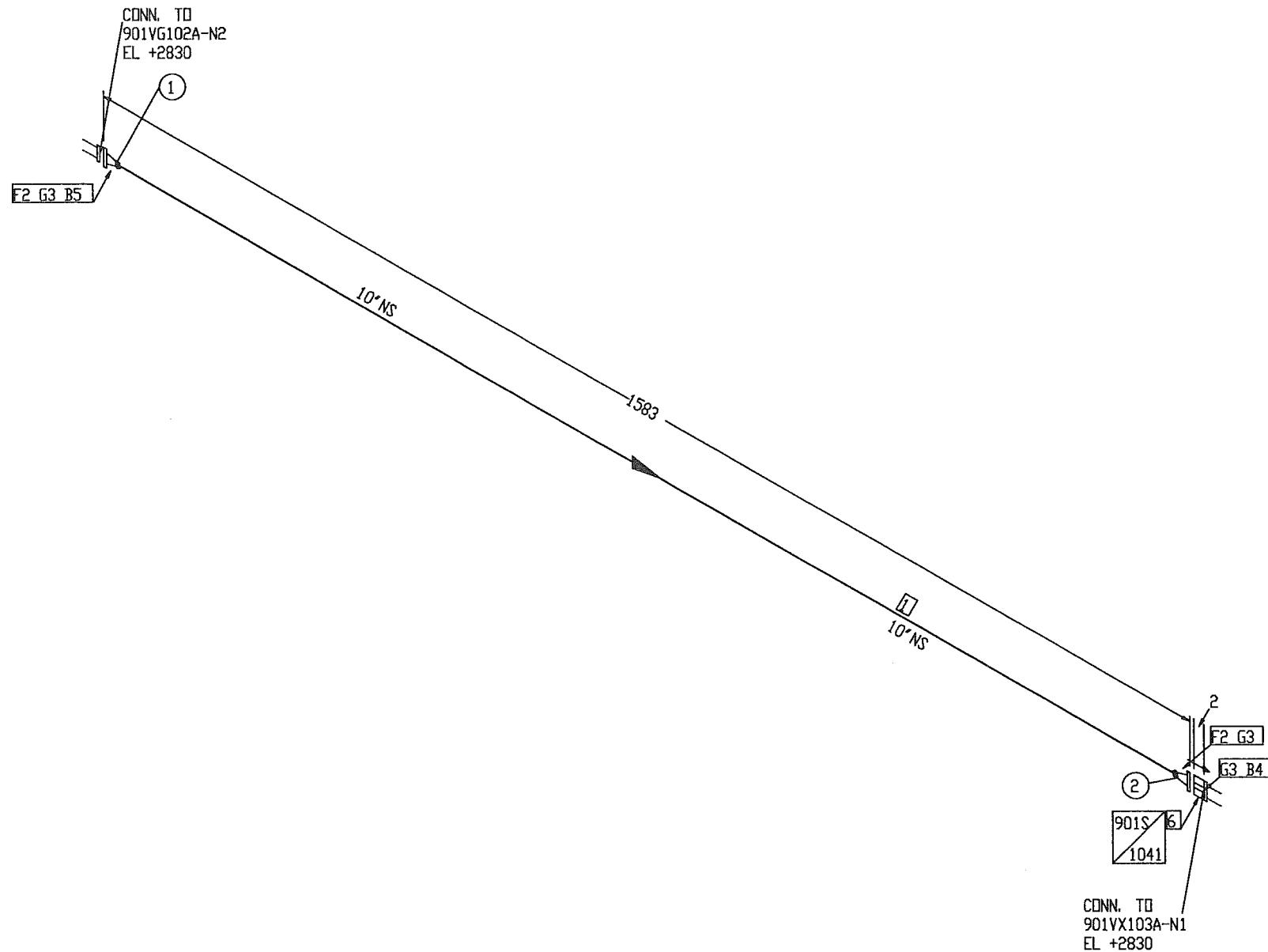
ISO 9001  
Certified by Bureau Veritas

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. (1) TO (5)

"AS - BUILT"

# BILL OF MATERIAL



"AS - BUILT"

## DESIGN DATA

1. DESIGN PRESSURE : 43.8 BARG
2. OPERATING TEMPERATURE : 49° C
3. HYDROSTATIC TEST PRESSURE : 65.7 BARG
4. CORROSION ALLOWANCE : 1/8"
5. RADIOGRAPHY : 100%
6. INSULATION : NO
7. INSPECTION BY : GSI (QC)
8. PWHT : NO

GSI DISCIPLINE SIGN		APPROVED BY	SD
PROCESS	MECHANICAL	checked by	
	VC		CG
PIPING	W&H	drawn by	SHU
STRUCTURAL	W&H	scale	N.T.S.
E & I	JAK	project	ACAD DWG I
PROJECT	EG	job no.	K375
		EST. DWG. NO.	GSI-G375-5121
		SHT	27
		REV.	X0

**WASCO** Gas Services International (S) Pte Ltd

**JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)

**JSL**

Engineering Department XXX Section

ANAB Approved Product Certificate No. 27403

ISO 9001 Certified

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. ① TO ②

X0	AS BUILT	AR	RAGU	SD	09.04.12
3	AS BUILT	FT	BS	SD	07.06.10
2	REVISED PER TT's RECOMMENDATION	NN	CG	SD	14.05.08
1	REVISED PER P&ID CHANGES	NN	CG	SD	17.04.08
0	APPROVED FOR CONSTRUCTION	SHU	CG	SD	27.03.08
REV. NO	DESCRIPTION OF REVISION	BY	CHK'D	APPD	DATE

CLIENT:	<b>OOG K</b> FPSO
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PROJECT:	FPSO CIDADE DEITAJAI	JOB NO.	21-9791
		QUANTITY:	1
TITLE:	LINN ID 901-10"-PG-1038A-B1 901-10"-PG-1038B-B1	CLASS:	ABS
		TPJ DRAWING NO.	7000-04-L-26-XN-05121

<b>WASCO</b> Gas Services International (S) Pte Ltd
<b>JURONG SHIPYARD PTE LTD</b> (A subsidiary of SembCorp Marine Ltd)
<b>JSL</b>

## BILL OF MATERIAL

N

N 

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 120 A106 GR. B, NACE	6	E1	24M
2	ECC RED BW SCH 120 A234 GR. WPB, NACE	10 x 4	E1	1
3	EQUAL TEE BW SCH 120 A234 GR. WPB, NACE	6 x 6	E1	1
4	ECC RED BW SCH 120 A234 GR. WPB, NACE	6 x 4	E1	1
5	WELDODLET SCH 120 x SCH 160 A105, NACE	6 x 3/4	E1	1
6	90 DEG LR ELBOW SMLS BW SCH 120 A234 GR. WPB, NACE	6	E1	3
7	FLANGE 900LB WN RTJ SCH 120 A105, NACE	10	E1	1
8	FLANGE 900LB WN RTJ SCH 120 A105, NACE	6	E1	5
9	FLANGE 900LB WN RTJ SCH 120 A105, NACE	4	E1	2

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
10	75mm LG PIPE NIPPLE TOE SCH 160 A106 GR. B, NACE	3/4	E1	1
11	PLUG SCRD 6000LB A105, NACE	3/4	E1	1
12	R53 OVAL RING SOFT IRON BHN90 ZINC COATED	10	E1	2
13	R45 OVAL RING SOFT IRON BHN90 ZINC COATED	6	E1	5
14	R37 OVAL RING SOFT IRON BHN90 ZINC COATED	4	E1	2
15	240 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 3/8	E1	32
16	205 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/8	E1	60
17	180 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/8	E1	16
18	BALL VALVE 900LB RTJ, BV-34 (FB)	10	E1	1
19	BALL VALVE 900LB RTJ, BV-34 (LC)	6	E1	1
20	BALL VALVE 900LB RTJ, BV-34 (FB)	6	E1	1
21	BALL VALVE THREADED (LC) PER PIPING SPEC. E1	3/4	E1	1
22	901 PV-112	4		1

## SUPPORTS

REV. NO.	DESCRIPTION OF REVISION	BY	CHKD BY	APPR'D BY	DATE
X0	AS BUILT	AR	RAGU	SD	09.04.00
3	AS BUILT	FT	BS	SD	07.06.00
2	REVISED DUE TO INTERFERENCE WITH MONORAIL	EC	CG	SD	28.07.00
1	REVISED PER GSI'S COMMENTS	NN	CG	SD	12.05.01
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	17.04.02



**"AS-BUILT"**

## NOTES

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
  2. WELD NO. (1) TO (18)

DESIGN DATA	
1. DESIGN PRESSURE	: 95
2. OPERATING TEMPERATURE	: 100
3. HYDROSTATIC TEST PRESSURE	: 142
4. CORROSION ALLOWANCE	: 1/8
5. RADIOGRAPHY	: 100%
6. INSULATION	: PP
7. INSPECTION BY	: GSI
8. PWHT	: NO

BSI DISCIPLINE SIGN	APPROVED BY	SD	 <b>Wasco</b>	Gas Services International (S) Pte Ltd	
PROCESS	AIR	CHECKED BY			CG
MECHANICAL	VC	DRIVEN BY			NN
PIPELINE	MH	SCALE			N.T.S.
STRUCTURAL	WICH				
E & I	X AK				
PROJECT	EG	ACAD DBG #	K575	BSI DBS. NO:	
		G375-5121-28_XD		GSI-G375-5121	
			SHT 28	REV X	

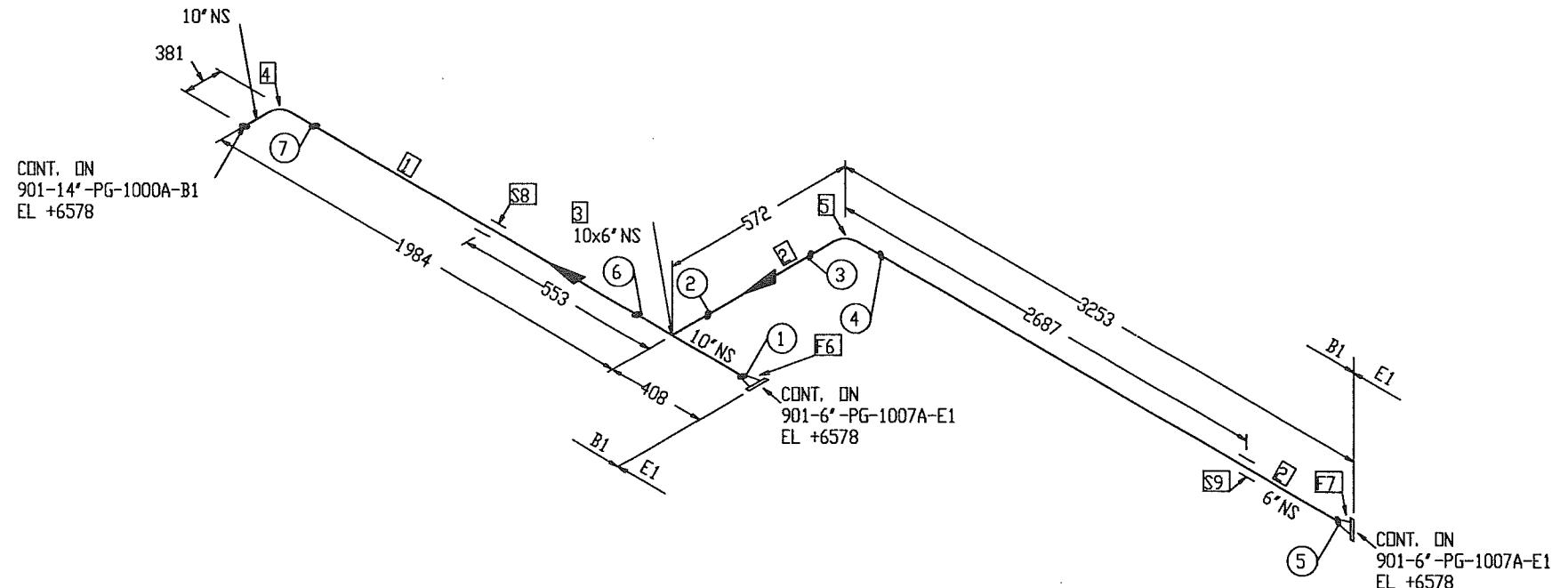
# BILL OF MATERIAL

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE XS A106 GR. B, NACE	10	B1	1.4M
2	PIPE SMLS BE SCH 80 A106 GR. B, NACE	6	B1	3.1M
3	REDUCING TEE BW XS A234 GR. WPB, NACE	10 x 6	B1	1
4	90 DEG LR ELBOW SMLS BW XS A234 GR. WPB, NACE	10	B1	1
5	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	6	B1	1
6	FLANGE 900LB WN RTJ XS A105, NACE	10	B1	1
7	FLANGE 900LB WN RTJ SCH 80 A105, NACE	6	B1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
<b>SUPPORTS</b>				
8	STD TTI CLAMP	10	B1	1
9	STD TTI CLAMP	6	B1	1



"AS - BUILT"

## DESIGN DATA

- |                              |             |
|------------------------------|-------------|
| 1. DESIGN PRESSURE           | : 43.8 BARG |
| 2. OPERATING TEMPERATURE     | : 60° C     |
| 3. HYDROSTATIC TEST PRESSURE | : 65.7 BARG |
| 4. CORROSION ALLOWANCE       | : 1/8"      |
| 5. RADIOGRAPHY               | : 100%      |
| 6. INSULATION                | : NO        |
| 7. INSPECTION BY             | : GSI (QC)  |
| 8. PWHT                      | : NO        |

XO	AS BUILT	AR	RAGU	SD	09.04.12
2	AS BUILT	FT	BS	SD	07.06.10
1	REVISED PER GSI'S COMMENTS	FT	BS	SD	14.05.08
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT :  FPSO

PROJECT:	FPSO CIDADE DE ITAJAÍ	ITEM NO.	21-9781
QTY:	1	CLASS :	ABS
TOP DRAWING NO.	7000-04-L-26-XN-05121	LINE NO.	901-10"-PG-1008A-B1 901-10"-PG-1008B-B1

GSI DISCIPLINE SIGN	APPROVED BY	SD	WASCO
PROCESS	AK	CHECKED BY	
MECHANICAL	VC	DRIVEN BY	
PIPELINE	W/MH	DRIVEN BY	
STRUCTURAL	W/KH	SCALE	Gas Services International (S) Pte Ltd
E & I	AK	IN.LTS	
PROJECT	EG	ACAO DRG #	
		6375-5121-29_00	JOB NO. K375
			GI. DRG. NO. K375
			GI. DRG. NO. K375
			GI. DRG. NO. K375

JURONG SHIPYARD PTE LTD  
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SINGAPORE  
Engineering Department XXX SECTION  
ISO 9001  
Certified by Bureau Veritas  
BV

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ⑦

N

## BILL OF MATERIAL

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 120 A106 GR. B, NACE	6	E1	5, 2M
2	WELDOLET SCH 120 x SCH 160 A105, NACE	6 x 1.1/2	E1	1
3	WELDOLET SCH 120 x SCH 160 A105, NACE	6 x 3/4	E1	1
4	90 DEG LR ELBOW SMLS BW SCH 120 A234 GR. WPB, NACE	6	E1	3
5	FLANGE 900LB WN RTJ SCH 120 A105, NACE	6	E1	4
6	FLANGE 1500LB WN RTJ SCH 160 A105, NACE	1. 1/2	E1	1
7	FLANGE 1500LB WN RTJ SCH 160 A105, NACE	3/4	E1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
8	R45 OVAL RING SOFT IRON BHN90 ZINC COATED	6	E1	4
9	R20 OVAL RING SOFT IRON BHN90 ZINC COATED	1. 1/2	E1	1
10	R14 OVAL RING SOFT IRON BHN90 ZINC COATED	3/4	E1	1
11	220 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/8	E1	12
12	205 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/8	E1	12
13	145 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1	E1	4
14	170 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	E1	4
15	DB&B SLIM-LINE INSTRUMENT MONOFLANGE 1500LB PER PIPING SPEC. E1	3/4	E1	1
16	901RD 133	6		1
17	901TW 135	1. 1/2		1
18	901PZT 135	3/4		1
	SUPPORTS			
19	SPD TEE CLAMP			

X0	AS BUILT	AR	RAGD	SD	09.04.12
4	AS BUILT	FT	BS	SD	07.06.10
3	REVISED DUE TO INTERFERENCE WITH MONORAIL	EC	BS	SD	28.07.08
2	ADDED FLANGES PER GSI COMMENTS & REVISED AS NOTED	EC	BS	SD	28.05.08
1	REVISED AS NOTED	NN	CG	SD	14.05.08
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	17.04.08
REV. NO.	DESCRIPTION OF REVISION	RY	CHKN	APRD	DATE



EPSO CIDADE DEITA IAÍ

PROJECT:	FPSO CIDADE DEITAJÁÍ	JOB NO.:	21-9791
		QUANTITY:	1
TITLE:	LINE NO.	CLASS :	
PIPING ISOMETRIC	901-6"-PG-1013A-E1 (SHT.1/3)	ABS	
	901-6"-PG-1013B-E1 (SHT.1/3)	TOP DRAWINGS, NO. 7000-04-1-26-XN-05121	

**"AS - BUILT"**

<b>DESIGN DATA</b>		<b>SSI DISCIPLINE SIGN</b>	<b>APPROVED BY</b>	<b>SD</b>	 <b>Wasco</b> Gas Services International (S) Pte Ltd	
1. DESIGN PRESSURE	: 92 BARG	PROCESS		CHECKED BY		CG
2. OPERATING TEMPERATURE	: 100° C	MECHANICAL	VC	DRAINED BY		NN
3. HYDROSTATIC TEST PRESSURE	: 138 BARG	PIPING		SCALE		N.T.S
4. CORROSION ALLOWANCE	: 1/8"	STRUCTURAL	WCH	E & I		
5. RADIOGRAPHY	: 100%	ACAD DWS 1 GS375-5121-30_X0		JOB NO:		SSI DIS. NO:
6. INSULATION	: PP			GS375		GSI-G375-5121
7. INSPECTION BY	: GSI (QC)			SHT 30		REV X0
8. PWHT	: NO					

**JURONG SHIPYARD PTE LTD**  
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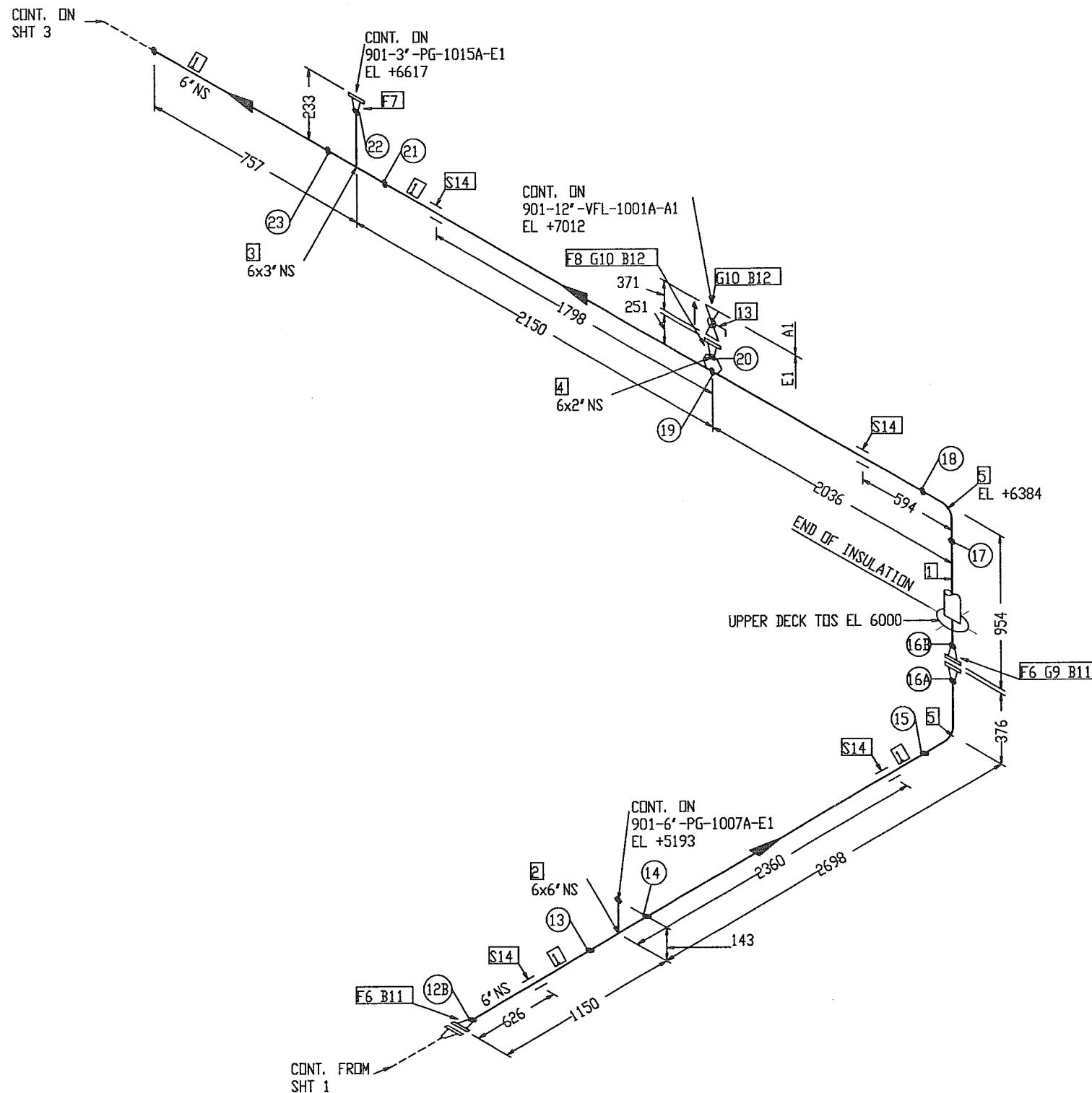
**ASME**  
BEST. 1890


**NQA**  
INT'L. ASSOCIATION  
FOR QUALITY


**ISO 9001**  
INT'L. STANDARDS  
ORGANIZATION

ENGINEERING DEPARTMENT      XXX      SECTION

# BILL OF MATERIAL



## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 120 A106 GR. B, NACE	6	E1	8.2M
2	EQUAL TEE BW SCH 120 A234 GR. WPB, NACE	6 x 6	E1	1
3	REDUCING TEE BW SCH 120 x SCH 160 A234 GR. WPB, NACE	6 x 3	E1	1
4	WELDLET SCH 120 x SCH 160 A105, NACE	6 x 2	E1	1
5	90 DEG LR ELBOW SMLS BW SCH 120 A234 GR. WPB, NACE	6	E1	2
6	FLANGE 900LB WN RTJ SCH 120 A105, NACE	6	E1	3
7	FLANGE 900LB WN RTJ SCH 160 A105, NACE	3	E1	1
8	FLANGE 1500LB WN RTJ SCH 160 A105, NACE	2	E1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
9	R45 OVAL RING SOFT IRON BHN90 ZINC COATED	6	E1	1
10	R24 OVAL RING SOFT IRON BHN90 ZINC COATED	2	E1	2
11	205 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1.1/8	E1	24
12	150 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	E1	16
13	BALL VALVE 900LB RTJ, BV-32 (CSC)	2	E1	1
	SUPPORTS			
14	STD TTI CLAMP	6	E1	4

X0	AS BUILT	AR	RAGU	SD	09.04.12
3	AS BUILT	FT	BS	SD	07.06.10
2	REVISED DUE TO INTERFERENCE WITH MONORAIL	EC	BS	SD	28.07.08
1	ADDED FLANGE PER GSI COMMENTS	NN	CG	SD	28.05.08
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT : **OOG** FPSO

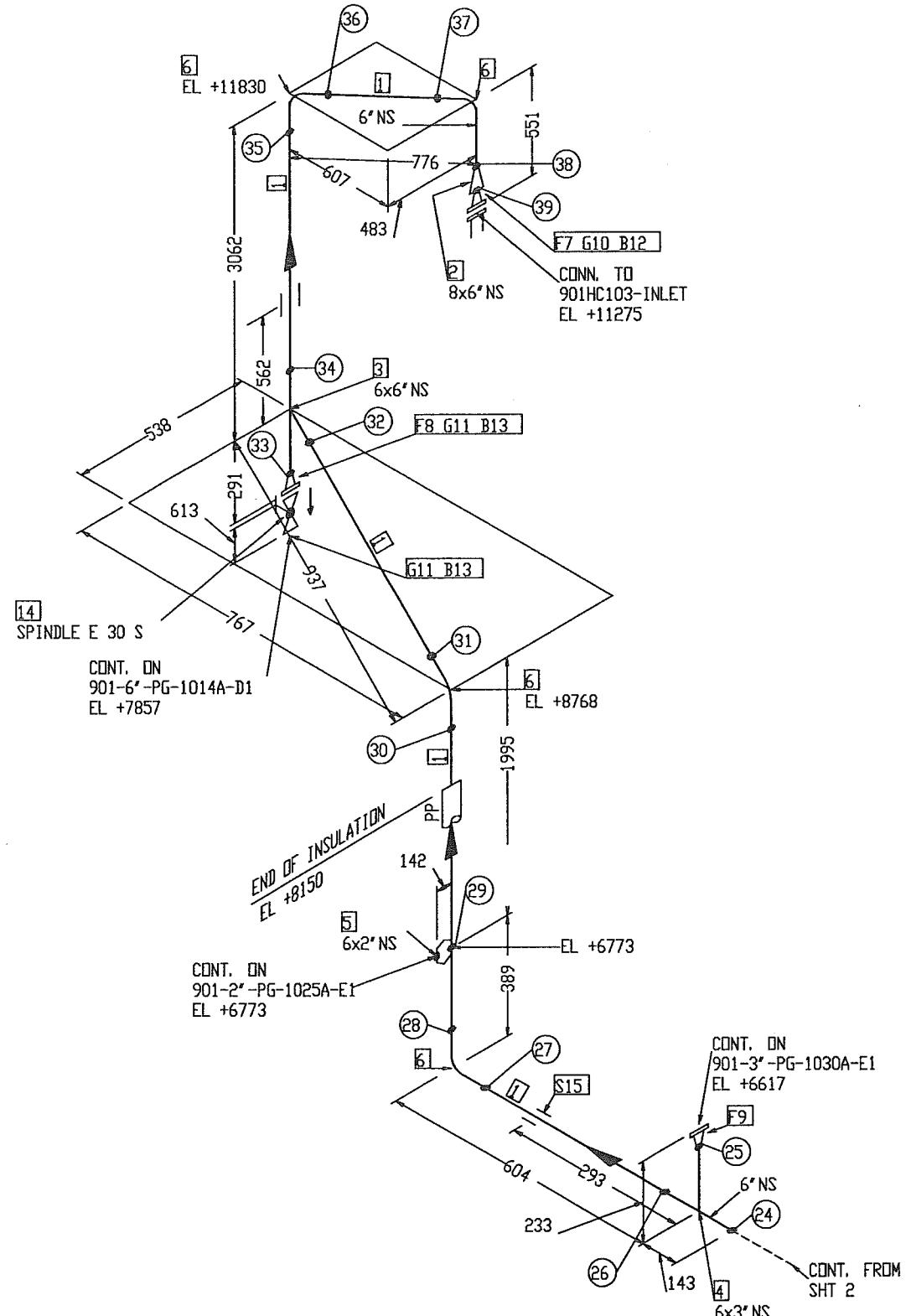
PROJECT: **FPSO CIDADE DE ITAJAÍ** JOB NO. 21-9791  
QUANTITY: 1  
TITLE: LINE NO. 901-6"-PG-1013A-E1 (SHT.2/3)  
PIPING ISOMETRIC CLASS: ABS  
901-6"-PG-1013B-E1 (SHT.2/3) TOP DRAWING NO. 7000-04-L-26-XN-05121

DESIGN DATA		 <b>WASCO</b> Gas Services International (S) Pte Ltd	
1. DESIGN PRESSURE	: 92 BARG		
2. OPERATING TEMPERATURE	: 100° C		
3. HYDROSTATIC TEST PRESSURE	: 138 BARG		
4. CORROSION ALLOWANCE	: 1/8"		
5. RADIOGRAPHY	: 100%		
6. INSULATION	: PP		
7. INSPECTION BY	: GSI (QC)		
8. PWHT	: NO		
PROCESS	APPROVED BY SD CHECKED BY CG		
MECHANICAL	VC		
PIPELINE	W.H.H		
STRUCTURAL	W.H.H		
E & I	N.T.S		
PROJECT	ACAD DES : 6375-5121-31_XD		
	JOB NO: IC375		
	631 DES. NO: GSI-G375-5121		
	SHT 31 X0		
<b>JURONG SHIPYARD PTE LTD</b> (A subsidiary of SembCorp Marine Ltd) SINGAPORE			
ISO 9001 Engineering Department XXX SECTION			
ISO 14001 Environmental Management System			
ISO 45001 Occupational Health and Safety Management System			

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. (12) TO (23)

# BILL OF MATERIAL



"AS - BUILT"

## DESIGN DATA

- DESIGN PRESSURE : 92 BARG
- OPERATING TEMPERATURE : 100° C
- HYDROSTATIC TEST PRESSURE : 138 BARG
- CORROSION ALLOWANCE : 1/8"
- RADIOGRAPHY : 100%
- INSULATION : PP
- INSPECTION BY : GSI (QC)
- PWHT : NO

GSI DISCIPLINE SIGN		APPROVED BY	SD	WASCO Gas Services International (S) Pte Ltd
PROCESS	AK	CHECKED BY	CG	
MECHANICAL	VC	DRAWN BY	MN	
PIPELINE	VMH	DESIGNED BY	HN	
STRUCTURAL	WKH	SCALE	N.T.S	
E & I	AK	ACAD DWS	I	
PROJECT	ES	JOB ID#	K375	
		GSI DWS. NO#	GSI-G375-5121	

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ISO 9001  
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Engineering Department XXX Section

X0	AS BUILT	AR	RAGU	SD	09.04.12
2	AS BUILT	FT	BS	SD	07.06.10
1	ADDED SUPPORT PER TTI'S RECOMMENDATION	EC	BS	SD	28.07.08
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT : OOG K FPSO

PROJECT: FPSO CIDADE DE ITAJAÍ

JOB NO.	21-5791
QUANTITY:	1
CLASS #	ABS
LINN NO.	901-6"-PG-1013A-E1 (SHT.3/3)
TPJ DRAWING NO.	901-6"-PG-1013B-E1 (SHT.3/3)
7000-04-L-26-XN-05121	

DESIGN DATA	APPROVED BY	SD	WASCO	Gas Services International (S) Pte Ltd
1. DESIGN PRESSURE : 92 BARG	SD	SD		
2. OPERATING TEMPERATURE : 100° C	CG	CG		
3. HYDROSTATIC TEST PRESSURE : 138 BARG	MN	MN		
4. CORROSION ALLOWANCE : 1/8"	N.T.S	N.T.S		
5. RADIOGRAPHY : 100%				
6. INSULATION : PP				
7. INSPECTION BY : GSI (QC)				
8. PWHT : NO				

JSL

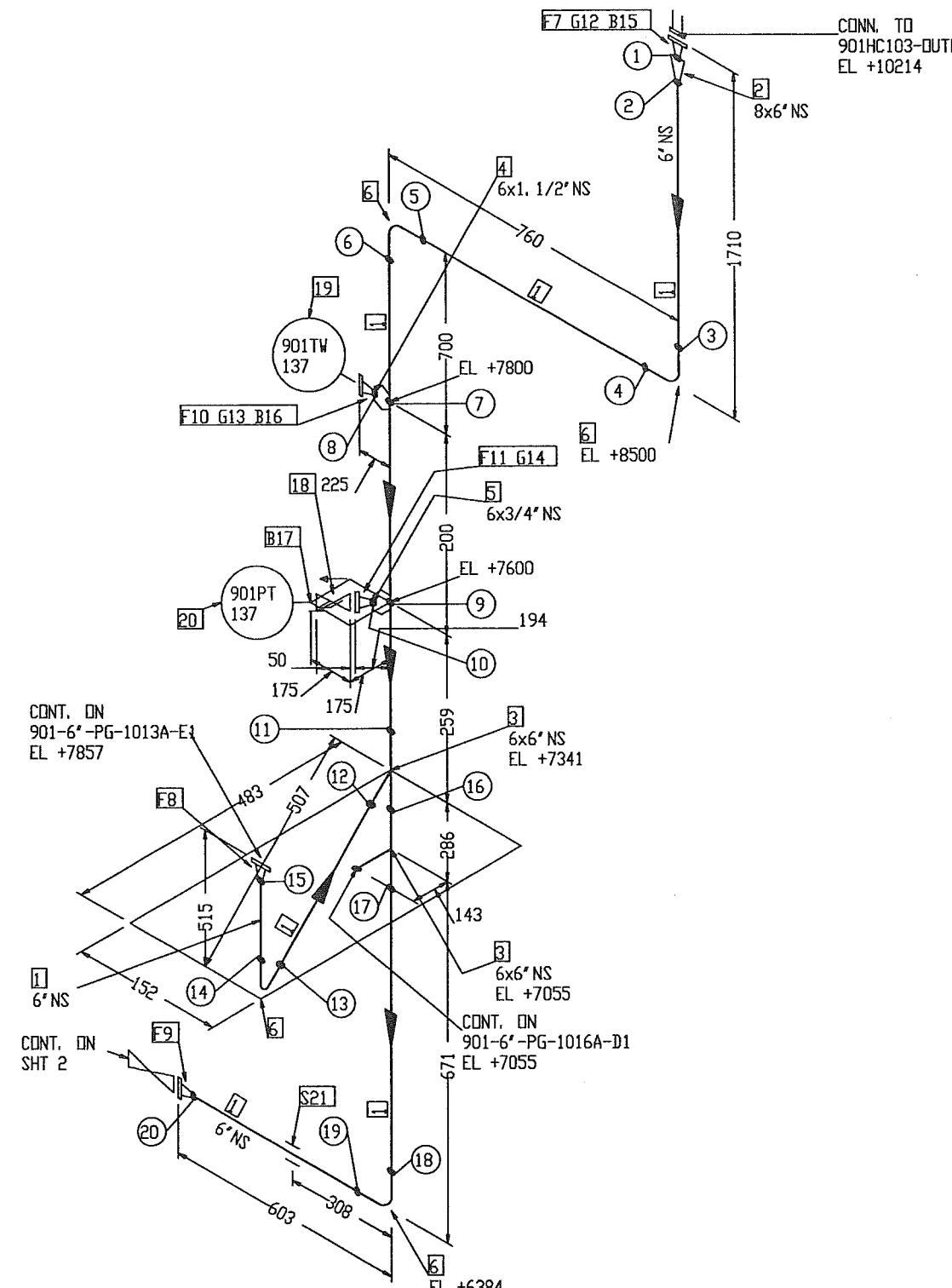
JURONG SHIPYARD PTE LTD  
(A subsidiary of SembCorp Marine Ltd)

ISO 9001  
Certified Quality Management System

Engineering Department XXX Section

N

## BILL OF MATERIAL



"AS - BUILT

DESIGN DATA

- |                              |   |          |
|------------------------------|---|----------|
| 1. DESIGN PRESSURE           | : | 92 BARG  |
| 2. OPERATING TEMPERATURE     | : | 100° C   |
| 3. HYDROSTATIC TEST PRESSURE | : | 138 BAR  |
| 4. CORROSION ALLOWANCE       | : | 1/8"     |
| 5. RADIOGRAPHY               | : | 100%     |
| 6. INSULATION                | : | PP       |
| 7. INSPECTION BY             | : | GSI (QC) |
| 8. PWHT                      | : | NO       |

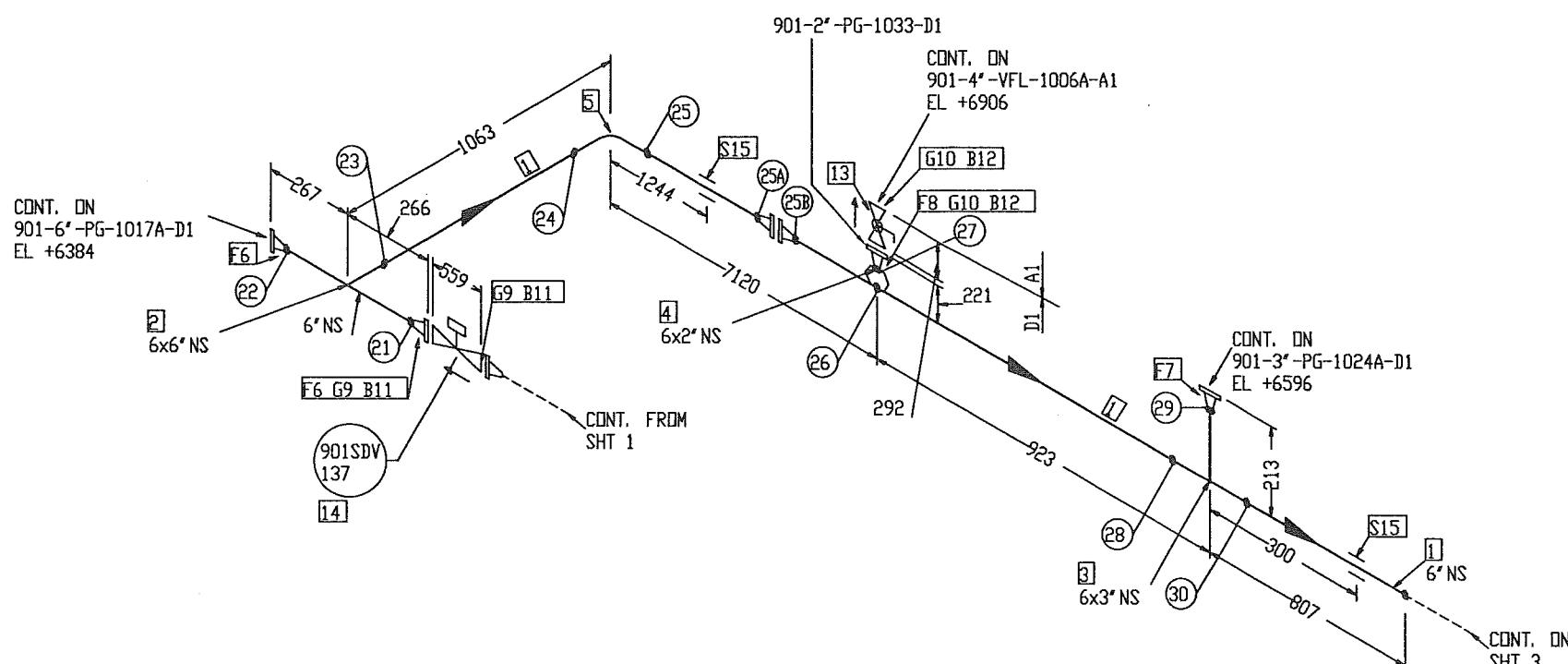
DESIGN DATA		GSI DISCIPLINE SIGN	APPROVED BY	SD	 <b>WASCO</b> Gas Services International (S) Pte Ltd	
PROCESS	AB	MECHANICAL	VC	CHECKED BY		CG
PIPING	MH	STRUCTURAL	WKH	DRAINED BY		FT
E & I	AK	SCALE		N.T.S.		
PROJECT	ED	ACAD FILE NO.	G375-5121-33_XD	JOB NO:		I375
				ESI DRAW. NO:		GSI-G375-5121
				SHT 33		REV X0

 **JURONG SHIPYARD PTE LTD**  
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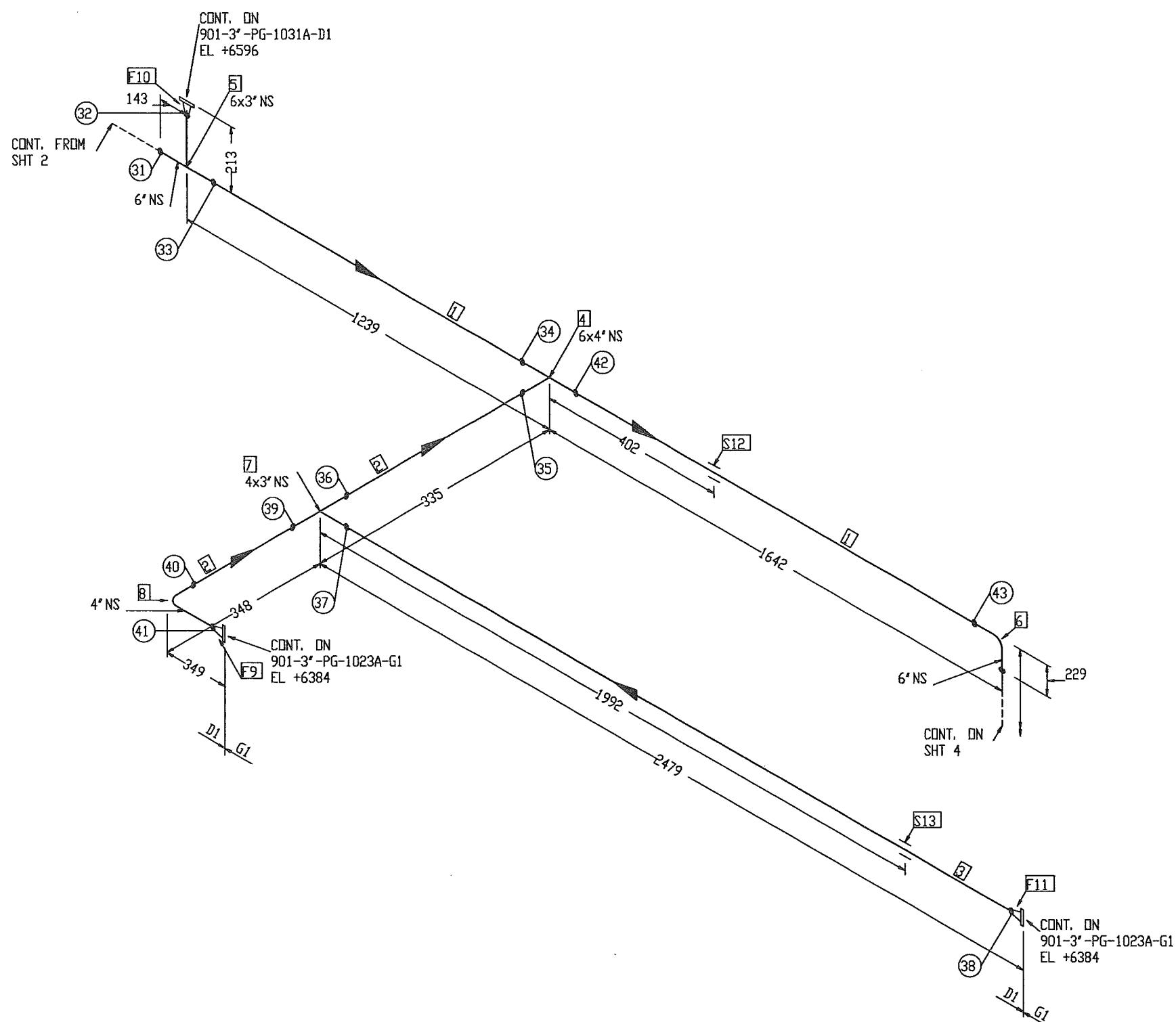
  
 ENGINEERING DEPARTMENT XXX SECTION

    
**ISO 9001**  
 DNV GL - BV - LR

# BILL OF MATERIAL



# BILL OF MATERIAL



## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. (31) TO (43)

## DESIGN DATA

1. DESIGN PRESSURE	: 92 BARG
2. OPERATING TEMPERATURE	: 49° C
3. HYDROSTATIC TEST PRESSURE	: 138 BARG
4. CORROSION ALLOWANCE	: 1/8"
5. RADIOPHGRAPHY	: 100%
6. INSULATION	: PP
7. INSPECTION BY	: GSI (QC)
8. PWHT	: NO

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	6	D1	2.3M
2	PIPE SMLS BE SCH 80 A106 GR. B, NACE	4	D1	0.2M
3	PIPE SMLS BE SCH 80 A106 GR. B, NACE	3	D1	2.3M
4	REDUCING TEE BW SCH 80 A234 GR. WPB, NACE	6 x 4	D1	1
5	REDUCING TEE BW SCH 80 A234 GR. WPB, NACE	6 x 3	D1	1
6	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	6	D1	1
7	REDUCING TEE BW SCH 80 A234 GR. WPB, NACE	4 x 3	D1	1
8	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	4	D1	1
9	FLANGE 2500LB WN RTJ SCH 80 A105, NACE	4	D1	1
10	FLANGE 600LB WN RF SCH 80 A105, NACE	3	D1	1
11	FLANGE 2500LB WN RTJ SCH 80 A105, NACE	3	D1	1

## ERECTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
<b>SUPPORTS</b>				
12	STD TTI CLAMP	6	D1	1
13	STD TTI CLAMP	3	D1	1

X0	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	FT	BS	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION				
BY	CHKD	APPD	DATE		

OOG K  
FPSO

PROJECT:	FPSO CIDADE DE ITAJAÍ	JOB NO.	21-9791
QUANTITY:	1	CLASS #	ABS
TITLE:	LINE NO. 901-6"-PG-1014A-D1 (SHT.3/4) 901-6"-PG-1014B-D1 (SHT.3/4)		
TOP DRAWING NO.	7000-04-L-26-XN-05121		

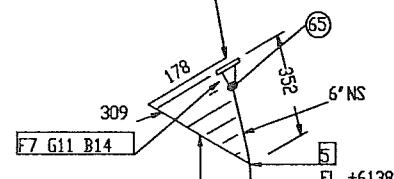
GSI DISCIPLINE SIGN	APPROVED BY SD	 <b>WASCO</b> Gas Services International (S) Pte Ltd
PROCESS	AK	
MECHANICAL	VC	
PIPEING	W.H	
STRUCTURAL	FT	
E & I	N.T.S	
PROJECT	ACAD Dwg # G575-5121-35_X0	JOB EDI K375
		GSI Dwg. NO. GSI-6575-5121
		SHT 35 REV X0

JSL	JURONG SHIPYARD PTE LTD	(A subsidiary of SembCorp Marine Ltd)
SINGAPORE	Engineering Department	XXX SECTION
150 PIONEER ROAD	DET/PLATE NUMBER 31/03	

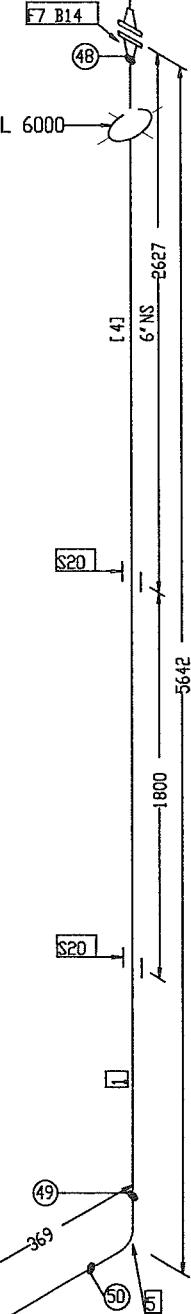
# BILL OF MATERIAL

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CDNN. TO  
901VG104C-N1  
EL +6138



CONT. FROM  
DRG 3



UPPER DECK TDS EL 6000

[4] 6' NS -2627

S20

1800

S20

S20

1800

369

51

50

54

1' NS

6x1' NS

162

216

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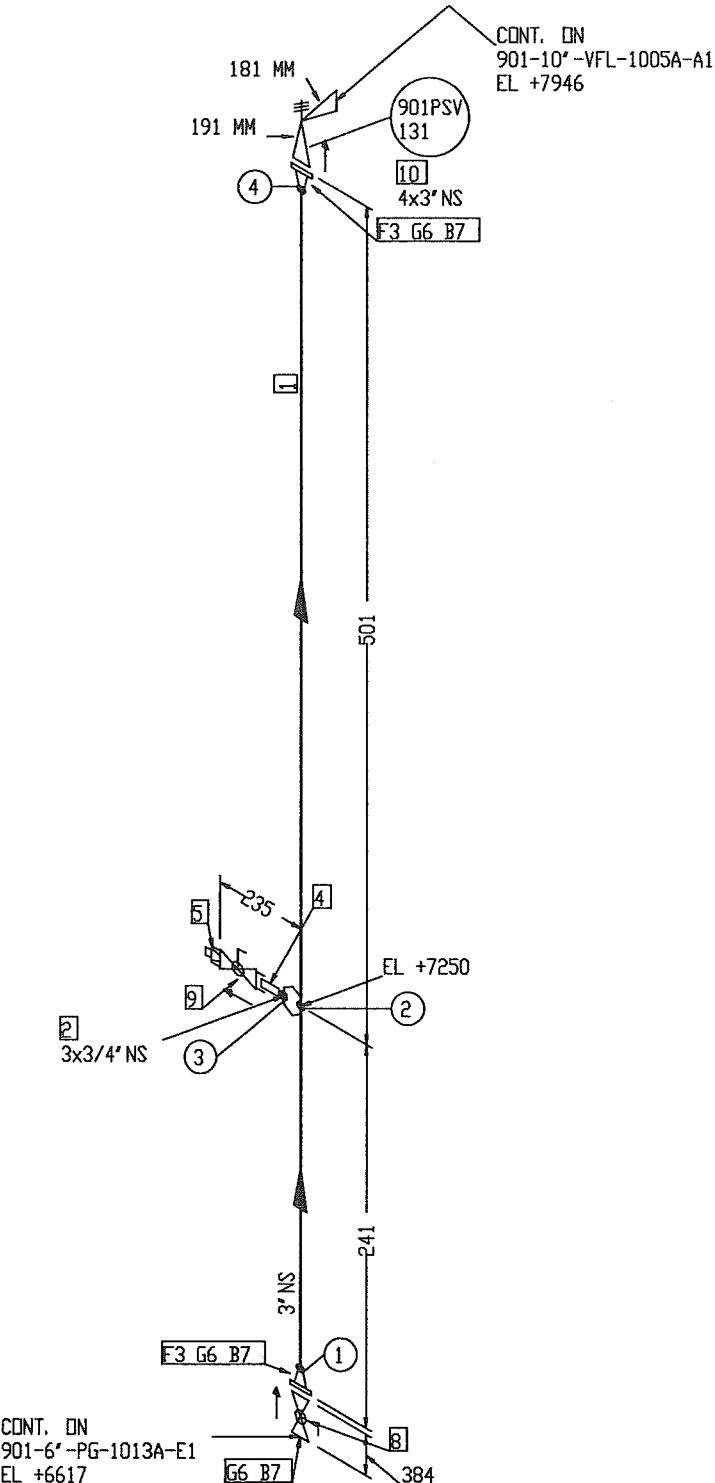
216

216

216

# BILL OF MATERIAL

N ↙



FABRICATION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.
1	PIPE SMLS BE SCH 160 A106 GR. B, NACE	3	E1 0.6M
2	WELDOLET SCH 160 A105, NACE	3 x 3/4	E1 1
3	FLANGE 900LB WN RTJ SCH 160 A105, NACE	3	E1 2

ERCTION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.
4	75MM LG PIPE NIPPLE TOE SCH 160 A106 GR. B, NACE	3/4	E1 1
5	PLUG SCRD 6000LB A105, NACE	3/4	E1 1
6	R31 OVAL RING SOFT IRON BHN90 ZINC COATED	3	E1 3
7	150 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HDT-DIP GALV. COATED	7/8	E1 24
8	BALL VALVE 900LB RTJ, BV-32 (FB) (CSO)	3	E1 1
9	BALL VALVE THREADED PER PIPING SPEC. E1	3/4	E1 1
10	901PSV 131	4 x 3	1

X0	AS BUILT	AR	RAGU	SD	09.04.12					
1	AS BUILT	FT	BS	SD	07.06.10					
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	17.04.08					
REV. NO.	DESCRIPTION OF REVISION									
CLIENT :										
 <b>OOG</b>  FPSO										
PROJECT:										
<b>FPSO CIDADE DE ITAJAÍ</b>					JOB NO. 21-8791					
TITLE:										
PIPING ISOMETRIC					CLASS : ABS					
LINE NO. <b>901-3"-PG-1015A-E1</b> <b>901-3"-PG-1015B-E1</b>										
REV'D DRAWINGS NO. 7000-04-L-26-XN-05121										
GSI DISCIPLINE SIGN APPROVED BY SD										
PROCESS	AK	CHECKED BY	SD							
MECHANICAL	VC	REVIEWED BY	CG							
PIPEING	MH	DRAWN BY	NN							
STRUCTURAL	WKH	SCALE	N.T.S							
E & I	AK	ACAD DNB #								
PROJECT	EG	G375-5121-37_00	K375	REV'D. NO.	X0					
JSL <b>JURONG SHIPYARD PTE LTD</b> (A subsidiary of SembCorp Marine Ltd) SINGAPORE										
ENGINEERING DEPARTMENT XXX SECTION										
 <b>ENR</b>  Society of Petroleum Engineers										

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ④

"AS - BUILT"

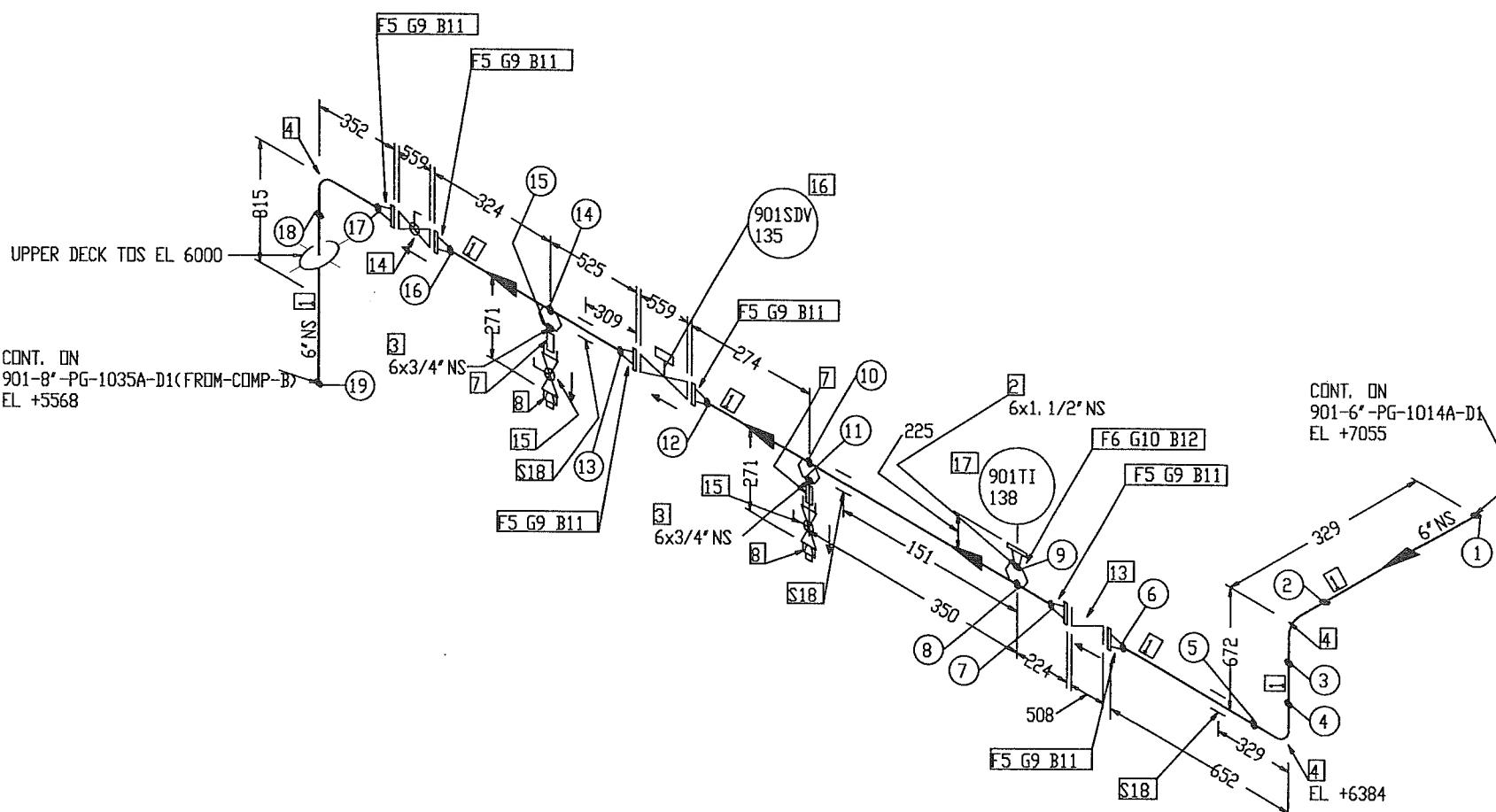
## DESIGN DATA

1. DESIGN PRESSURE	: 92 BARG
2. OPERATING TEMPERATURE	: 100° C
3. HYDROSTATIC TEST PRESSURE	: 138 BARG
4. CORROSION ALLOWANCE	: 1/8"
5. RADIOGRAPHY	: 100%
6. INSULATION	: PP
7. INSPECTION BY	: GSI (QC)
8. PWHT	: NO

JSL **JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)  
SINGAPORE

ENGINEERING DEPARTMENT XXX SECTION

# BILL OF MATERIAL



DESIGN DATA	
1. DESIGN PRESSURE	: 92 BARG
2. OPERATING TEMPERATURE	: 49° C
3. HYDROSTATIC TEST PRESSURE	: 138 BARG
4. CORROSION ALLOWANCE	: 1/8"
5. RADIOGRAPHY	: 100%
6. INSULATION	: NO
7. INSPECTION BY	: GSI (QC)
8. PWHT	: NO

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
  - WELD NO. ① TO ⑯
- \* 1½" 1500# WN FLANGE HAS THE SAME DIMENSIONS AS A 1½" 900# WN FLANGE

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	6	D1	2.5M
2	WELDOLET SCH 80 x SCH 160 A105, NACE	6 x 1. 1/2	D1	1
3	WELDOLET SCH 80 x SCH 160 A105, NACE	6 x 3/4	D1	2
4	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	6	D1	3
5	FLANGE 600LB WN RF SCH 80 A105, NACE	6	D1	6
*6	FLANGE 1500LB WN RTJ SCH 160 A105, NACE	1. 1/2	D1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
7	75MM LG PIPE NIPPLE TOE SCH 160 A106 GR. B, NACE	3/4	D1	2
8	PLUG SCRD 3000LB A105, NACE	3/4	D1	2
9	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAPHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	6	D1	6
10	R20 OVAL RING SOFT IRON BHN90 ZINC COATED	1. 1/2	D1	1
11	180 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1	D1	72
12	145 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1	D1	4
13	NON-SLAM CHECK VALVE 600LB RF PER PIPING SPEC. D1	6	D1	1
14	BALL VALVE 600LB RF, BV-30(FB)	6	D1	1
15	BALL VALVE THREADED (LC) PER PIPING SPEC. D1	3/4	D1	2
16	901SDV 135	6		1
17	901TI 138	1. 1/2		1

## SUPPORTS

18	STD TTI CLAMP	6	D1	3
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X0	AS BUILT	1	VAN	NO
2	AS BUILT	AR	RAGU	SD 09.04.12
1	REVISED PER GSI'S COMMENTS	FT	BS	SD 07.06.10
0	APPROVED FOR CONSTRUCTION	FT	BS	SD 14.05.08
REV. NO	DESCRIPTION OF REVISION	NN	CG	SD 17.04.08
BY	CHKD APPD	DATE		

CLIENT :

PROJECT: FPSO CIDADE DEITAJAI		JOB NO. 21-9791
TITLE: PIPING ISOMETRIC		QUANTITY 1
LINE NO. 901-6"-PG-1016A-D1		CLASS : ABS
901-6"-PG-1016B-D1		ITEM DRAWING NO. 7000-04-L-26-XN-05121

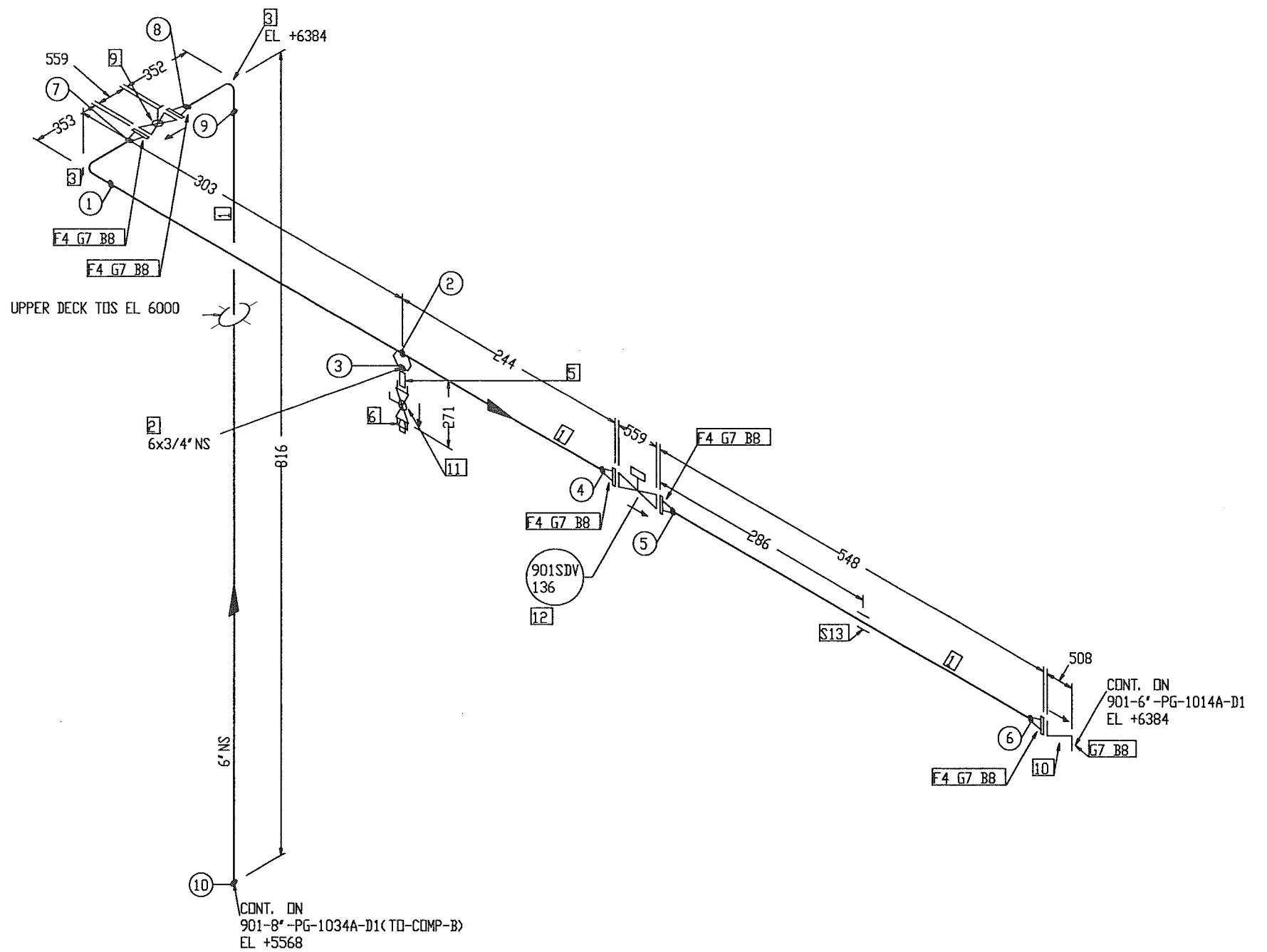
GSI DISCIPLINE SIGN	APPROVED BY SD	U	Wasco	Gas Services International (S) Pte Ltd
PROCESS	CHECKED BY CG			
MECHANICAL	VC	DRIVEN BY NN		
PIPEING	MH	NN		
STRUCTURAL	WICH	SCALE N.T.S		
E & I	AK	ACAD Dwg # ED 0375-5121-30-XD	JOB NO. K375	GSI Dwg. NO. GSI-G375-5121
PROJECT	ED	0375-5121-30-XD	K375	SHT 3B REV. X0

**JSL** JURONG SHIPYARD PTE LTD  
(A subsidiary of SembCorp Marine Ltd)  
Engineering Department XXX SECTION

**ANAB** EVA C. S. ISO 9001  
CERTIFIED MEMBER SINCE 2003

# BILL OF MATERIAL

N ↙



## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	6	D1	1.1M
2	WELDOLET SCH 80 x SCH 160 A105, NACE	6 x 3/4	D1	1
3	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	6	D1	2
4	FLANGE 600LB WN RF SCH 80 A105, NACE	6	D1	5

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
5	75mm LG PIPE NIPPLE TOE SCH 160 A106 GR. B, NACE	3/4	D1	1
6	PLUG SCRD 3000LB A105, NACE	3/4	D1	1
7	SPIRAL WOUND GASKET 600LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	6	D1	6
8	180 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1	D1	72
9	BALL VALVE 600LB RF, BV-30(FB)	6	D1	1
10	NON-SLAM CHECK VALVE 600LB RF PER PIPING SPEC. D1	6	D1	1
11	BALL VALVE THREADED (LC) PER PIPING SPEC. D1	3/4	D1	1
12	901SDV 136	6		1

## SUPPORTS

13	STD TTI CLAMP	6	D1	1
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XO	AS BUILT	RAGU	SD	09.04.12
2	AS BUILT	FT	BS	SD 07.06.10
1	REVISED PER GSI'S COMMENTS	FT	BS	SD 14.05.08
0	APPROVED FOR CONSTRUCTION	NN	CG	SD 17.04.08
REV. NO	DESCRIPTION OF REVISION			
BY	CHKD	APP'D	DATE	

CLIENT : **OOG TK**  
FPSO

PROJECT:	FPSO CIDADE DEITAJAI	JOB NO. 21-9781
QUANTITY 1		
TITLE:	LIN ID 901-6"-PG-1017A-D1 901-6"-PG-1017B-D1	CLASS ABS
TOP DRAWING NO. 7000-04-L-26-XN-05121		

"AS - BUILT"

## DESIGN DATA

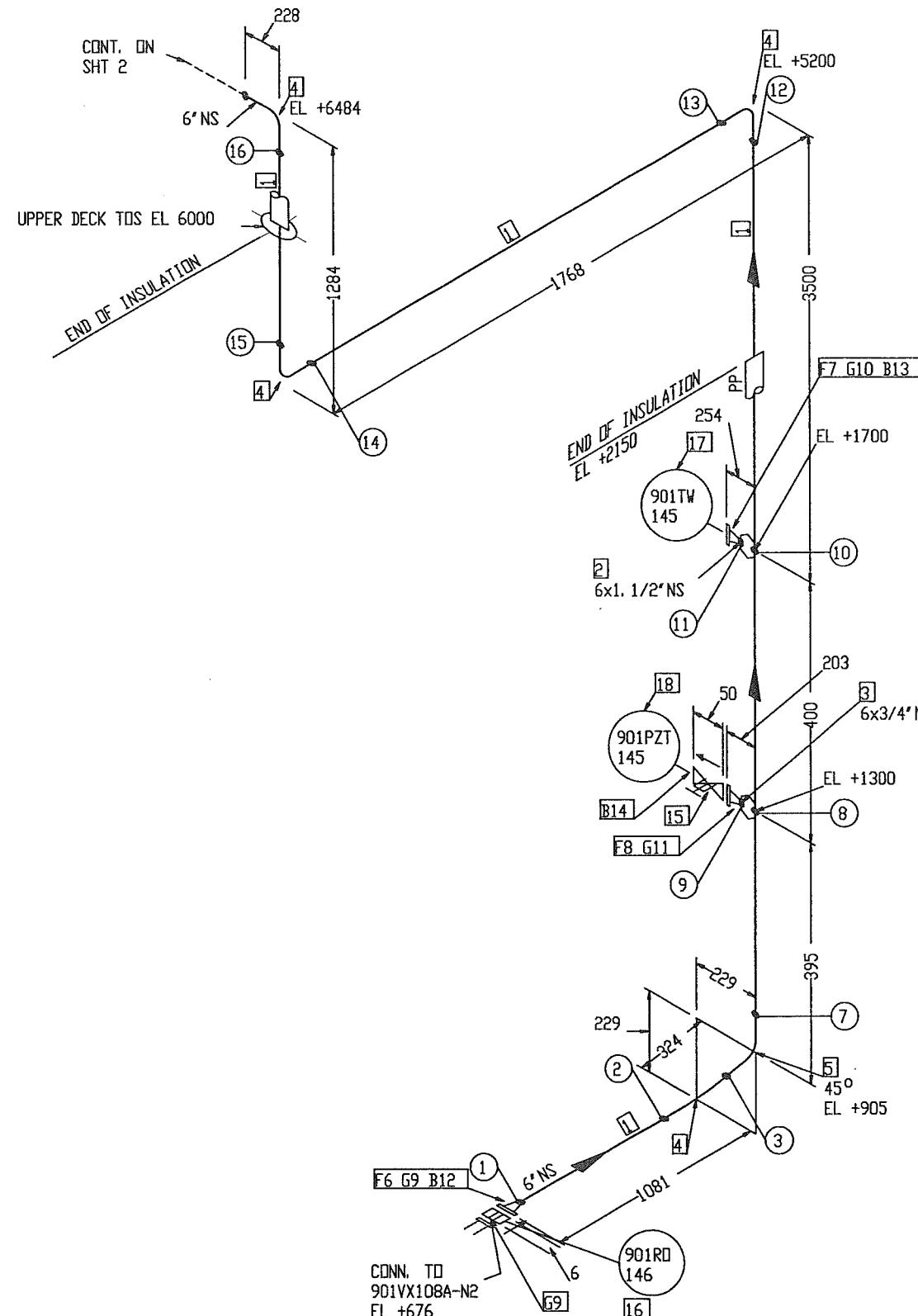
1. DESIGN PRESSURE : 92 BARG
2. OPERATING TEMPERATURE : 49° C
3. HYDROSTATIC TEST PRESSURE : 138 BARG
4. CORROSION ALLOWANCE : 1/8"
5. RADIOGRAPHY : 100%
6. INSULATION : NO
7. INSPECTION BY : GSI (QC)
8. PWHT : NO

GSI DISCIPLINE SIGN	APPROVED BY SD	<b>U</b> WASCO
PROCESS	AK ~ VC	
MECHANICAL	DRAIN BT WCH	
PIPEING	MH IV WCH	NN
STRUCTURAL	WCH	N.T.S
E & I	AK	
PROJECT	EG G375-5121-39_X0	JOB ID# K375 GSI INS. NO. GSI-G375-5121 SHT 39 REV X0
		GSI DISC. SIGN
		JURONG SHIPYARD PTE LTD (A subsidiary of SembCorp Marine Ltd) SINGAPORE
		Engineering Department XXX SECTION
		DNV GL DET NORSKE VERKSTAD Det Norske Verkstad DNV GL GROUP Classification Society Classification Society DNV GL GROUP

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. (1) TO (10)

# BILL OF MATERIAL



## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ⑯

### FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE XXS A106 GR. B, NACE	6	G1	6.7M
2	WELDOLET XXS A105, NACE	6 x 1.1/2	G1	1
3	WELDOLET XXS A105, NACE	6 x 3/4	G1	1
4	90 DEG LR ELBOW SMLS BW XXS A234 GR. WPB	6	G1	4
5	45 DEG ELBOW SMLS BW XXS A234 GR. WPB	6	G1	1
6	FLANGE 2500LB WN RTJ XXS A105, NACE	6	G1	1
7	FLANGE 2500LB WN RTJ XXS A105, NACE	1.1/2	G1	1
8	FLANGE 2500LB WN RTJ XXS A105, NACE	3/4	G1	1

### ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
9	R47 OVAL RING SOFT IRON BHN90 ZINC COATED	6	G1	2
10	R23 OVAL RING SOFT IRON BHN90 ZINC COATED	1.1/2	G1	1
11	R16 OVAL RING SOFT IRON BHN90 ZINC COATED	3/4	G1	1
12	380 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	2	G1	8
13	200 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1.1/8	G1	4
14	185 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	G1	4
15	DB&B SLIM-LINE INSTRUMENT MONOFLANGE 2500LB PER PIPING SPEC. G1	3/4	G1	1
16	901RD 146	6		1
17	901TW 145	1.1/2		1
18	901PZT 145	3/4		1

X0	AS BUILT	AR/C	RAGU	SD	09.04.12
2	AS BUILT	FT	BS	SD	07.06.10
1	REVISED PER GSI'S COMMENTS	FT	BS	SD	14.05.08
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT : FPSO

PROJECT : FPSO CIDADE DE ITAJAÍ

JOB NO.	21-9791
QUANTITY	1
TITLE	LINE NO.
PIPING ISOMETRIC	901-6"-PG-1020A-G1 (SHT.1/2)
	901-6"-PG-1020B-G1 (SHT.1/2)
CLASS	ABS
TIPL DRAWINGS NO.	7000-04-L-26-XN-05121

DESIGN DATA		APPROVED BY SD	DRAWN BY CG	DRIVEN BY NN	SCALE N.T.S.	E & I AK	PROJECT EG	ACAD DWG # 6375-5121-40_X0	JOB BD# IC375	DWG. NO. 6375	REV. X0
PROCESS	MECHANICAL	PIPELINE	STRUCTURAL	E & I							
1. DESIGN PRESSURE : 241.3 BARG	2. OPERATING TEMPERATURE : 128° C	3. HYDROSTATIC TEST PRESSURE : 361.95 BARG	4. CORROSION ALLOWANCE : 1/8"	5. RADIOGRAPHY : 100%	6. INSULATION : PP	7. INSPECTION BY : GSI (QC)	8. PWHT : NO				

**WASCO** Gas Services International (S) Pte Ltd

**JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)  
SINGAPORE

Engineering Department XXX SECTION

ANAB CERTIFIED  
ISO 9001  
Certified Quality System

N

## BILL OF MATERIAL

## FABRICATION MATERIALS

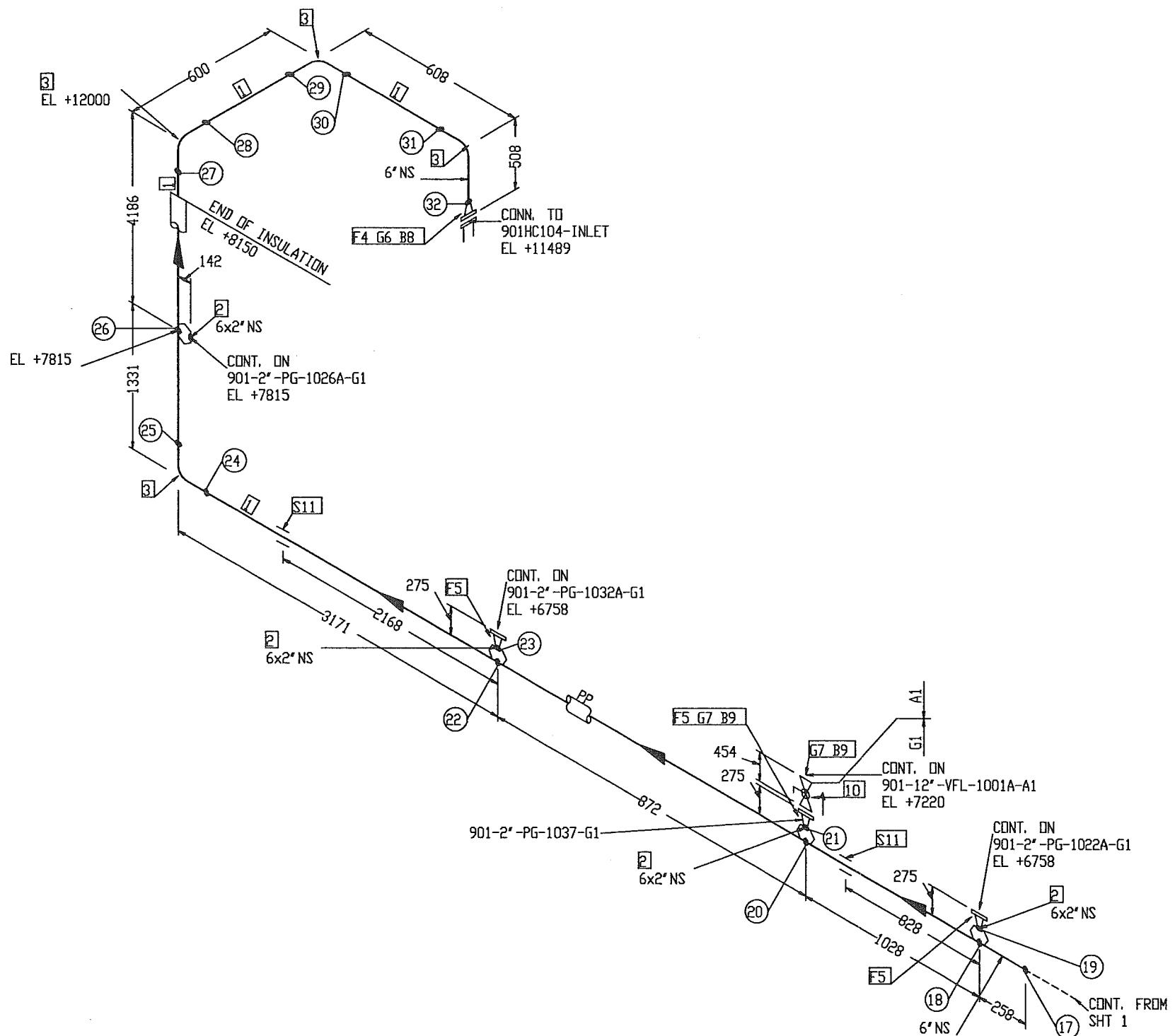
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE XXS A106 GR. B, NACE	6	G1	10.5M
2	WELDDELET XXS A105, NACE	6 x 2	G1	4
3	90 DEG LR ELBOW SMLS BW XXS A234 GR. WPB	6	G1	4
4	FLANGE 2500LB WN RTJ XXS A105, NACE	6	G1	1
5	FLANGE 2500LB WN RTJ XXS A105, NACE	2	G1	3

## ERCTION MATERIALS

<u>PT NO</u>	<u>COMPONENT DESCRIPTION</u>	<u>N. S. (INS)</u>	<u>PIPE SPEC.</u>	<u>QTY</u>
6	R47 DVAL RING SOFT IRON BHN90 ZINC COATED	6	G1	1
7	R26 DVAL RING SOFT IRON BHN90 ZINC COATED	2	G1	2
8	360 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	2	G1	8
9	185 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1	G1	16
10	BALL VALVE 2500LB RTJ. BV-48 (CSC)	?	G1	1

## SUPPORTS

11 STD TTI CLAMP 6 G1 2



**"AS - BUILT"**

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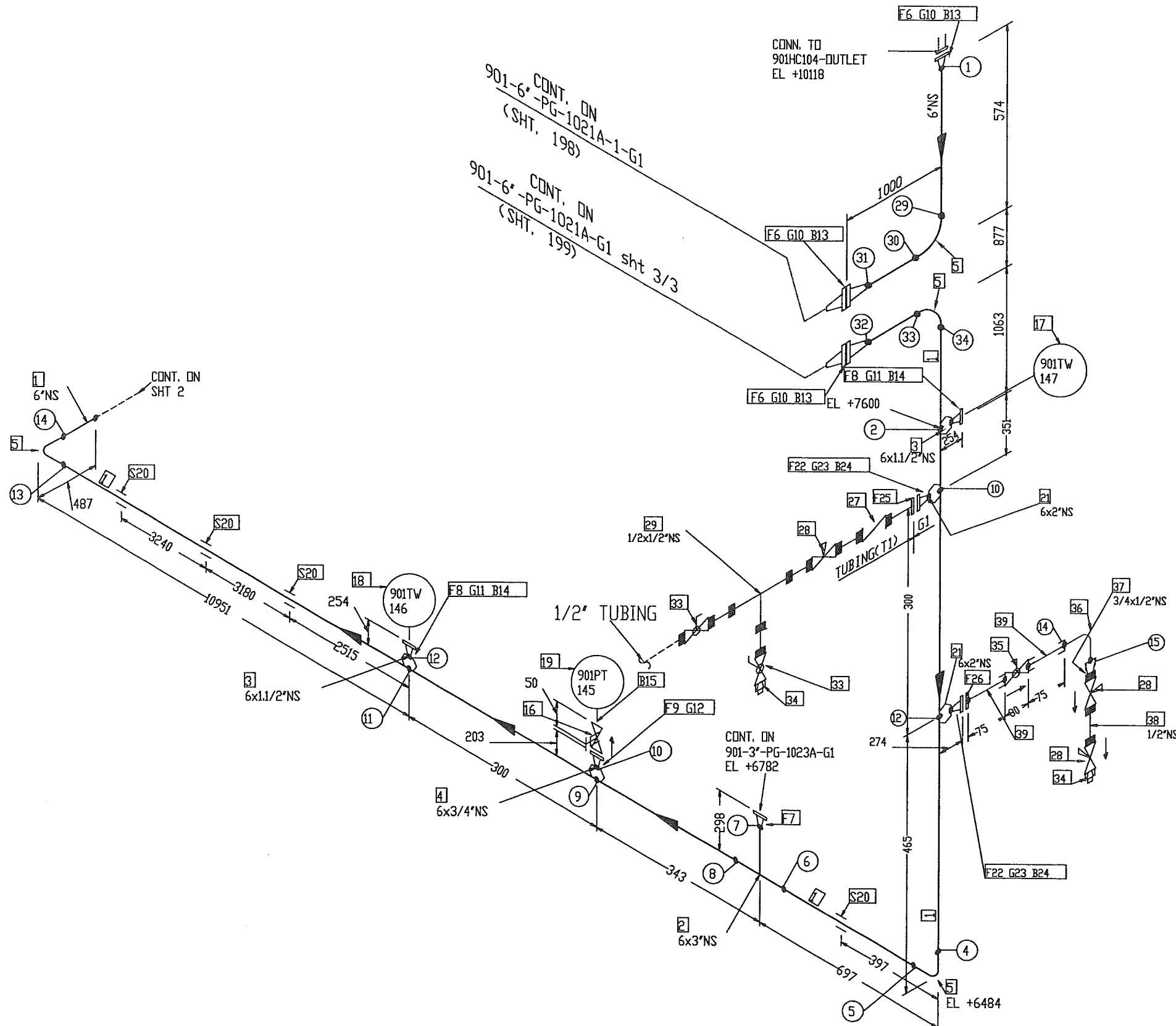
DESIGN DATA

- NOTES:

  1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
  2. WELD NO. (17) TO (32)

DESIGN DATA		BSI DISCIPLINE SIGN	APPROVED BY	SD	 <b>WASCO</b> Gas Services International (S) Pte Ltd	
PROCESS	AR	MECHANICAL	VC	CHECKED BY		CG
PIPING	MH	STRUCTURAL	WCH	DESIGN BY		NB
E & I	AK	PROJECT	EG	SCALE		N.T.S.
		ACAD DBS # G575-5121-41_XD		JOB NO:		K575
				EST. DBS. NO:		GSI-G575-5121
				SHT		41
				REV:		X0
1. DESIGN PRESSURE	: 241.3 BARG					
2. OPERATING TEMPERATURE	: 125° C					
3. HYDROSTATIC TEST PRESSURE	: 361.95 BARG					
4. CORROSION ALLOWANCE	: 1/8"					
5. RADIOGRAPHY	: 100%					
6. INSULATION	: PP					
7. INSPECTION BY	: GSI (QC)					
8. PWHT	: YES (FOR WT. ABOVE 19mm)					

# BILL OF MATERIAL



PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE XXS A106 GR.B, NACE	6	G1	15.0M
2	REDUCING TEE BW XXS A234 GR.WPB, NACE	6 x 3	G1	1
3	VELDOLET XXS A105, NACE	6 x 1 1/2	G1	2
4	VELDOLET XXS A105, NACE	6 x 3/4	G1	1
5	90 DEG LR ELBOW SMLS BW XXS A234 GR.WPB	6	G1	4
6	FLANGE 2500LB WN RTJ XXS A105, NACE	6	G1	3
7	FLANGE 2500LB WN RTJ XXS A105, NACE	3	G1	1
8	FLANGE 2500LB WN RTJ XXS A105, NACE	1 1/2	G1	2
9	FLANGE 2500LB WN RTJ XXS A105, NACE	3/4	G1	1
ERCTION MATERIALS				
PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
10	R47 DVAL RING SOFT IRON BHN90 ZINC COATED	6	G1	3
11	R23 DVAL RING SOFT IRON BHN90 ZINC COATED	1 1/2	G1	2
12	R16 DVAL RING SOFT IRON BHN90 ZINC COATED	3/4	G1	1
13	360 MM LG STUD BOLTS C/W NUTS A193 GR.87/A194 GR.2H HOT-DIP GALV. COATED	2	G1	24
14	200 MM LG STUD BOLTS C/W NUTS A193 GR.87/A194 GR.2H HOT-DIP GALV. COATED	1 1/8	G1	8
15	185 MM LG STUD BOLTS C/W NUTS A193 GR.87/A194 GR.2H HOT-DIP GALV. COATED	3/4	G1	4
16	DB&B SLIM-LINE INSTRUMENT MONOFLANGE 2500LB PER PIPING SPEC. G1	3/4	G1	1
17	90ITW 147	1 1/2		1
18	90ITW 146	1 1/2		1
19	90PT 145	3/4		1
SUPPORTS				
20	STD TTI CLAMP	6	G1	4
21	WELDOLET XXS A105, NACE	6 x 2	G1	2
22	FLANGE 2500LB WN RTJ XXS A105, NACE	2	G1	2
23	R26 DVAL RING SOFT IRON BHN90 ZINC COATED	2	G1	2
24	185 MM LG STUD BOLTS C/W NUTS A193 GR.87/A194 GR.2H HOT-DIP GALV. COATED	1	G1	16
25	BLIND FLANGE 2500LB RTJ A105, W/1/2" NB HOLE	2	G1	1
26	BLIND FLANGE 2500LB RTJ A105, W/3/4" NB HOLE	2	G1	1
27	CHECK VALVE THREADED, CLASS 2500	1/2	G1	1
28	NEEDLE VALVE THREADED, CLASS 2500	1/2	G1	1
29	EQUAL TEE SCRD 6000LB ASTM A105	1/2 x 1/2	G1	1
30	BALL VALVE SCRD 2500, NPT	1/2	G1	2
31	PLUG SCRD 6000LB ASTM A105	1/2	G1	2
32	BALL VALVE SW, CLASS 2500	3/4	G1	1
33	90 DEG ELBOW SV 6000LB A105, NACE	3/4	G1	1
34	CONC SWAGE PEXTE SCH XXS A106 GR.B, NACE	3/4 x 1/2	G1	1
35	75mm LG PIPE NIPPLE TBE SXXS A106 GR.B	1/2	G1	1
36	75mm LG PIPE NIPPLE PBE SXXS A106 GR.B	3/4	G1	1

X0	AS BUILT	AR	RAGU	SD	09.04.12
5	MODIFIED & ISSUED FOR CONSTRUCTION	RAGU	BS	SD	05.05.11
4	MODIFIED & ISSUED FOR CONSTRUCTION	RAGU	BS	SD	17.03.11
3	MODIFIED & ISSUED FOR CONSTRUCTION	RAGU	BS	SD	02.03.11
2	AS BUILT	FT	CG	SD	07.06.10
1	REVISED PWHT	FT	BS	SD	16.05.08
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT :

PROJECT:	FPSO PETROJARL CIDADE DEITAJAI	JOB NO.	21-9791
QUANTITY:	1	CLASS #	ABS
ITEM NO.	7000-04-L-26-XN-05121	TPFJ DRAWINGS NO.	
REV. NO.		DATE	

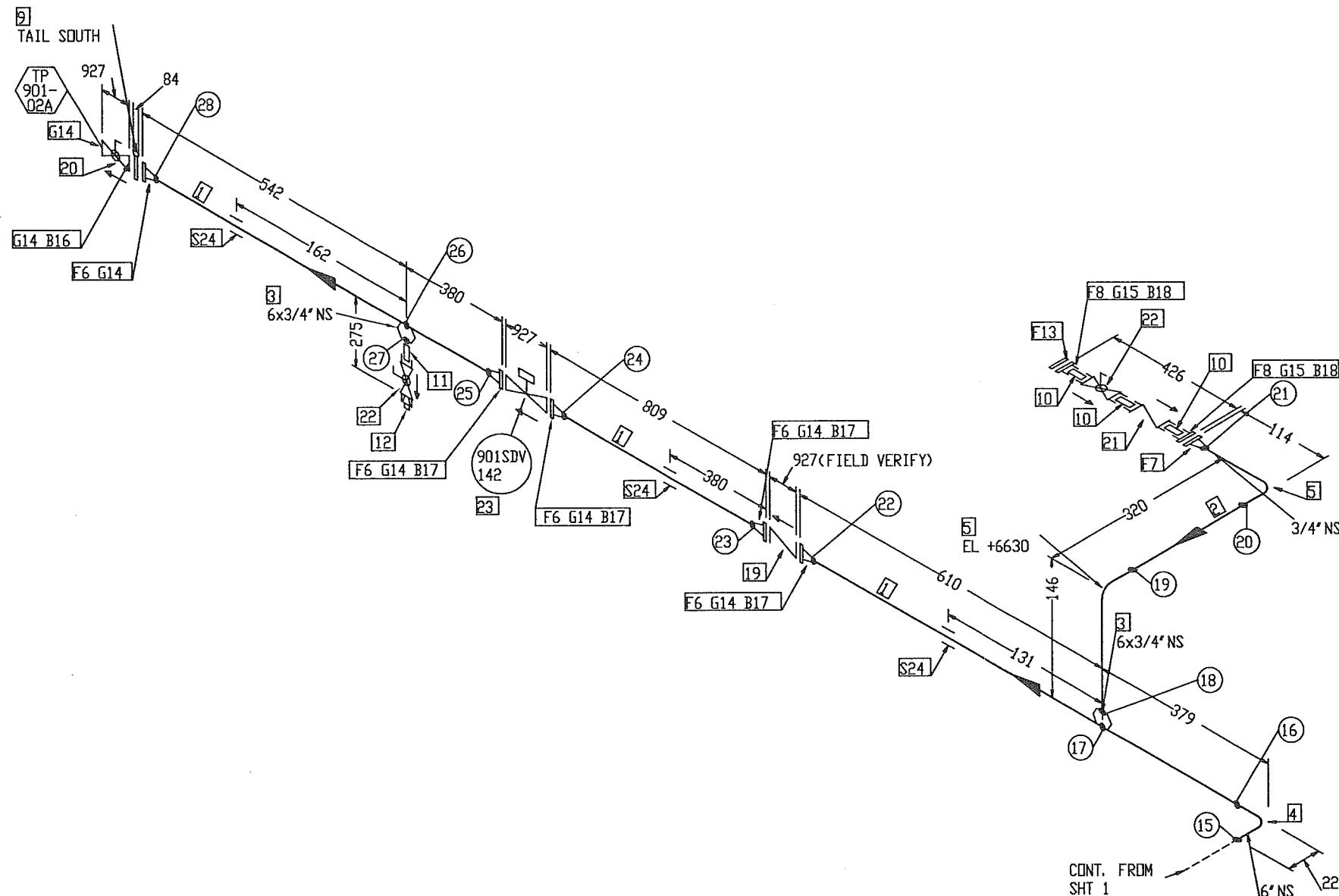
DESIGN DATA		APPROVED BY SD	CHECKED BY BS	DRAWN BY RAGU	SCALE N.T.S	E & I AK	PROJECT 6375-5121-42_X0	JOB NO. 6375	GSI NO. 6375	GSI NO. GSI-6375-5121	SHT NO. 42	REV. X0
1. DESIGN PRESSURE	: 241.3 BARG											
2. OPERATING TEMPERATURE	: 49° C											
3. HYDROSTATIC TEST PRESSURE	: 5248 Psig											
4. CORROSION ALLOWANCE	: 1/8"											
5. RADIOPGRAPHY	: 100%											
6. INSULATION	: NO											
7. INSPECTION BY	: GSI (QC)											
8. PWHT	: YES (FOR W.T. ABOVE 19mm)											
JURONG SHIPYARD PTE LTD (A subsidiary of SembCorp Marine Ltd)												
JSL												
Engineering Department XXX Section												
Sembcorp Marine Ltd. Sembcorp Marine Ltd. Sembcorp Marine Ltd.												

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. (1) TO (14), (29) TO (34)

# BILL OF MATERIAL

N ↙



PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE XXS A106 GR. B, NACE	6	G1	1, 1M
2	PIPE SMLS PE XXS A106 GR. B, NACE	3/4	G1	0, 3M
3	WELDOLET XXS A105, NACE	6 x 3/4	G1	2
4	90 DEG LR ELBOW SMLS BV XXS A234 GR. WPB	6	G1	1
5	90 DEG LR ELBOW SMLS BV XXS A234 GR. WPB, NACE	3/4	G1	2
6	FLANGE 2500LB WN RTJ XXS A105, NACE	6	G1	5
7	FLANGE 2500LB WN RTJ XXS A105, NACE	3/4	G1	1
8	FLANGE 2500LB SCRD RTJ XXS A105, NACE	3/4	G1	2

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
9	SPACER 2500LB RTJ 84mm THK A105, NACE	6	G1	1
10	75mm LG PIPE NIPPLE TBE XXS A106 GR. B, NACE	3/4	G1	3
11	75mm LG PIPE NIPPLE TOE XXS A106 GR. B, NACE	3/4	G1	1
12	PLUG SCRD 6000LB A105, NACE	3/4	G1	1
13	BLIND FLANGE 2500LB RTJ A105, NACE	3/4	G1	1
14	R47 OVAL RING SOFT IRON BHN90 ZINC COATED	6	G1	7
15	R16 OVAL RING SOFT IRON BHN90 ZINC COATED	3/4	G1	2
16	447 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	2	G1	8
17	360 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	2	G1	32
18	135 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	G1	8
19	NON-SLANT CHECK VALVE 2500LB RTJ PER PIPING SPEC G1	6	G1	1
20	BALL VALVE 2500LB RTJ, BV-49 (FB)	6	G1	1
21	CHECK VALVE THREADED PER PIPING SPEC. G1	3/4	G1	1
22	BALL VALVE THREADED PER PIPING SPEC. G1	3/4	G1	2
23	901SDV 142	6	G1	1
24	SUPPORTS			
24	STD TTI CLAMP	6	G1	3

X0	AS BUILT	AR	RAGU	SD	09.04.12
2	MODIFIED & ISSUED FOR CONSTRUCTION	RAGU	BS	SD	17.03.11
1	AS-BUILT	FT	BS	SD	07.06.10
0	ISSUED FOR CONSTRUCTION	FT	BS	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT :  FPSO

PROJECT:	FPSO CIDADE DEITAJÁÍ	JOB NO. 21-9791
		QUANTITY: 1
TITLE:	LINENo. 901-6"-PG-1021A-G1 (SHT.2/3) 901-6"-PG-1021B-G1 (SHT.2/3)	CLASS: ABS
		WPJ DRAWING NO. 7000-04-L-26-XN-05121

BSI DISCIPLINE SIGN	APPROVED BY SD	DECODED BY BS	DRAWN BY RAGU	SCALE N.T.S	E&I TAK	PROJECT EG	ACAD DBS G375-5121-43_XD	JOB NO. 6375	BSI DIS. NO. GSI-G375-5121	SHT 43 REV X0										
 WASCO Gas Services International (S) Pte Ltd																				
 JURONG SHIPYARD PTE LTD (A subsidiary of SembCorp Marine Ltd)																				

REFERENCE

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. 15 TO 28

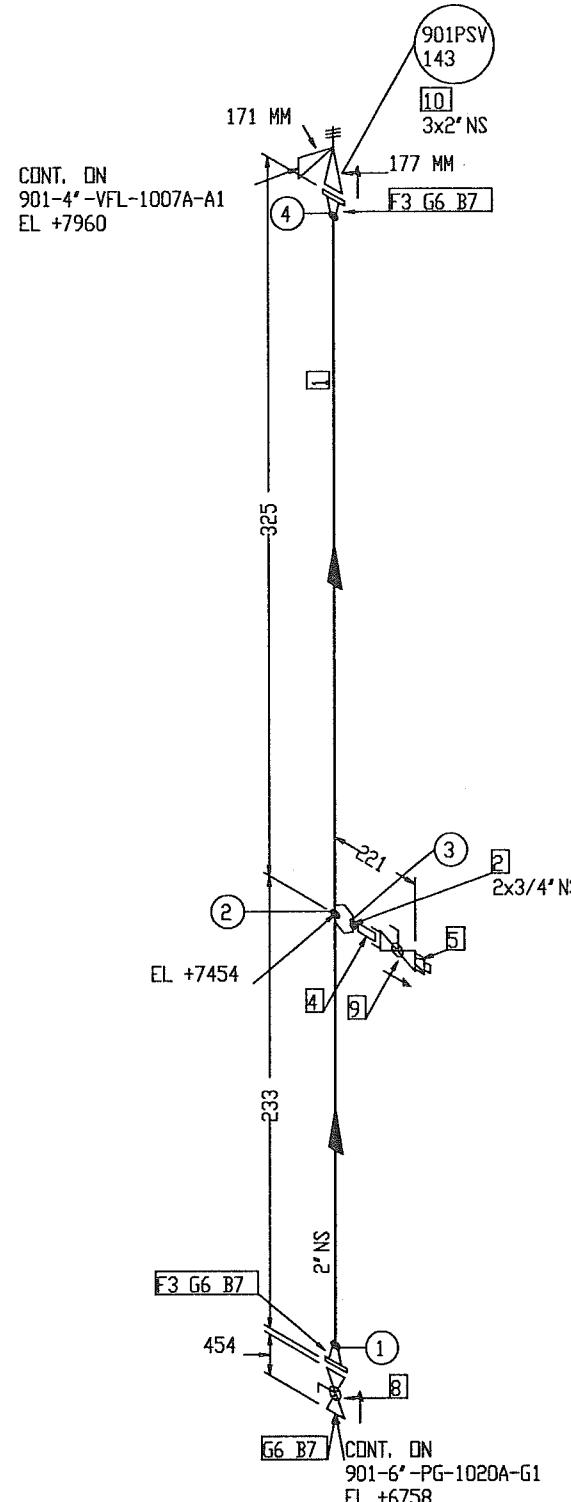
## DESIGN DATA

- DESIGN PRESSURE : 241.30 BARG
- OPERATING TEMPERATURE : 49° C
- HYDROSTATIC TEST PRESSURE : 361.95 BARG
- CORROSION ALLOWANCE : 1/8"
- RADIOGRAPHY : 100%
- INSULATION : NO
- INSPECTION BY : GSI (QC)
- PWHT : NO



# BILL OF MATERIAL

N ↙



FABRICATION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.
1	PIPE SMLS BE XXS A106 GR. B, NACE	2	G1 0.3M
2	WELDLET XXS A105, NACE	2 x 3/4	G1 1
3	FLANGE 2500LB WN RTJ XXS A105, NACE	2	G1 2

ERCTION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.
4	75mm LG PIPE NIPPLE TOE XXS A106 GR. B, NACE	3/4	G1 1
5	PLUG SCRD 6000LB A105, NACE	3/4	G1 1
6	R26 OVAL RING SOFT IRON BHN90 ZINC COATED	2	G1 3
7	185 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1	G1 24
8	BALL VALVE 2500LB RTJ, BV-48 (FB)(CSID)	2	G1 1
9	BALL VALVE THREADED PER PIPING SPEC. G1	3/4	G1 1
10	901PSV 143	3 x 2	1

X0	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	FT	BS	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION				

CLIENT :	OOG K FPSO
PROJECT :	FPSO CIDADE DEITAJAÍ
ITEM NO.	21-9791
QUANTITY:	1
TITLE:	PIPING ISOMETRIC
LINE NO.	901-2"-PG-1022A-G1 901-2"-PG-1022B-G1
CLASS :	ABS
TPJ DEMOS. NO.	7000-04-L-25-XN-05121

GSI DISCIPLINE SIGN	APPROVED BY SD	U WASCO
PROCESS AK	CHECSED BY CG	
MECHANICAL VC	DRAIN BY NN	
PIPING MH	SCALE N.T.S	
STRUCTURAL WKH	E & I AK	
E & I AK	ACAD DBS # 6375-5121-44_X0	
PROJECT EG	JOB NO. K375	
	GSI DBS. NO. GSI-6375-5121	
	SHT 44 REV X0	

JSL	JURONG SHIPYARD PTE LTD (A subsidiary of SembCorp Marine Ltd)
Engineering Department	XXX SECTION

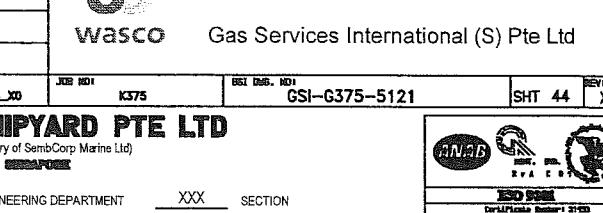
ANAB
ED PRO

## NOTES:

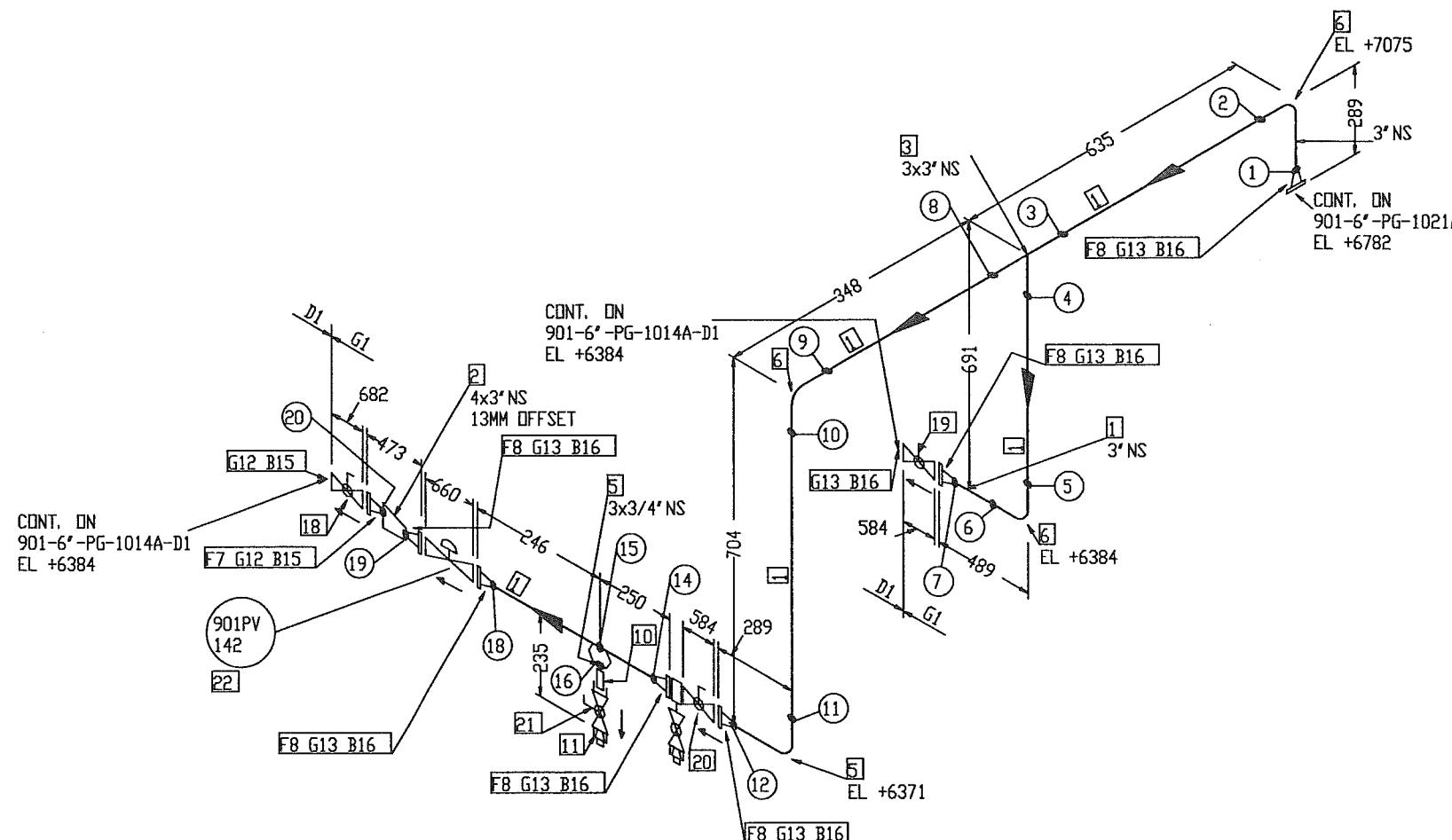
- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ④

## DESIGN DATA

- DESIGN PRESSURE : 241.3 BARG
- OPERATING TEMPERATURE : 128° C
- HYDROSTATIC TEST PRESSURE : 361.95 BARG
- CORROSION ALLOWANCE : 1/8"
- RADIOGRAPHY : 100%
- INSULATION : PP
- INSPECTION BY : GSI (QC)
- PWHT : NO



# BILL OF MATERIAL



## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE XXS A106 GR. B, NACE	3	G1	1, 9M
2	ECC RED BW XXS A234 GR. WPB, NACE	4 x 3	G1	1
3	EQUAL TEE BW XXS A234 GR. WPB, NACE	3 x 3	G1	1

5	WELDOLET XXS A105, NACE	3 x 3/4	G1	1
6	90 DEG LR ELBOW SMLS BW XXS A234 GR. WPB	3	G1	4
7	FLANGE 2500LB WN RTJ XXS A105, NACE	4	G1	1
8	FLANGE 2500LB WN RTJ XXS A105, NACE	3	G1	6

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
10	75MM LG PIPE NIPPLE TOE XXS A106 GR. B, NACE	3/4	G1	1
11	PLUG SCRD 6000LB A105, NACE	3/4	G1	1
12	R38 OVAL RING SOFT IRON BHN90 ZINC COATED	4	G1	2
13	R32 OVAL RING SOFT IRON BHN90 ZINC COATED	3	G1	7
15	265 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/2	G1	16
16	235 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1. 1/4	G1	56
18	BALL VALVE 2500LB RTJ, BV-49 (FB)	4	G1	1
19	BALL VALVE 2500LB RTJ, BV-48 (LC)	3	G1	1
20	BALL VALVE 2500LB RTJ, BV-48 (FB)	3	G1	1
21	BALL VALVE THREADED PER PIPING SPEC. G1	3/4	G1	1
22	901PV 142	3	G1	1

X0	AS BUILT	AR	RAGU	SD	09.04.12
2	AS BUILT	FT	BS	SD	07.06.10
1	REVISED AS NOTED	NN	CG	SD	30.04.08
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHK'D	APP'D	DATE

CLIENT : 

PROJECT:	FPSO CIDADE DEITAJAI	JOB NO.:	21-9791
QUANTITY:	1	CLASS :	ABS
TYP DRAWINGS NO.:	7000-04-L-26-XN-05121	REV'D:	
TITLE:	PIPING ISOMETRIC	LINE NO:	901-3"-PG-1023A-G1 901-3"-PG-1023B-G1

GSI DISCIPLINE SIGN	APPROVED BY	SD	U
PROCESS	AK	CHEKED BY	
MECHANICAL	VC	DRAIN BY	NN
PIPE	MH	SCALE	NN
STRUCTURAL	WCH	WHT	N.T.S
E & I	AK	ACAD Dwg #	K375
PROJECT	EG	6375-5121-45-XD	GSI Dwg. No.
			K375
			GSI-6375-5121
			SHT 45 X0

Wasco Gas Services International (S) Pte Ltd

JSL	JURONG SHIPYARD PTE LTD	(A subsidiary of SembCorp Marine Ltd)
	SINGAPORE	
	ENGINEERING DEPARTMENT	SECTION

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ⑳

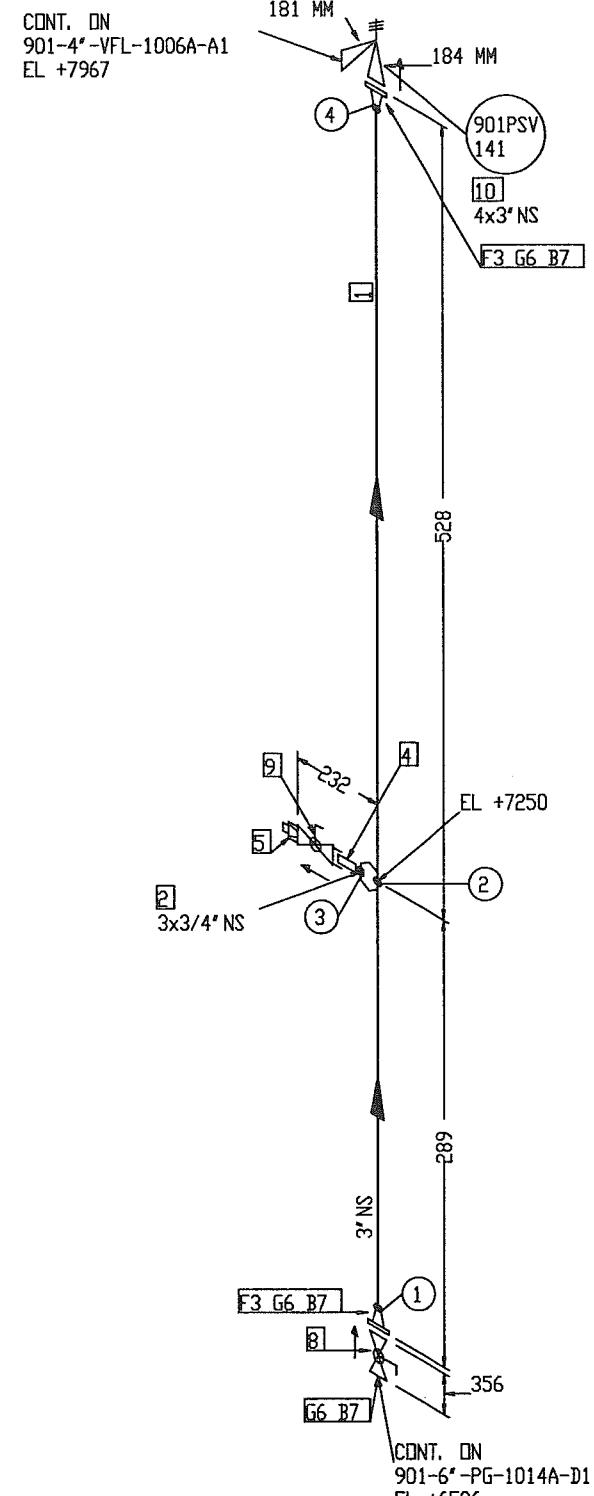
## DESIGN DATA

- DESIGN PRESSURE : 241.3 BARG
- OPERATING TEMPERATURE : 49° C
- HYDROSTATIC TEST PRESSURE : 361.95 BARG
- CORROSION ALLOWANCE : 1/8"
- RADIOGRAPHY : 100%
- INSULATION : NO
- INSPECTION BY : GSI (QC)
- PWHT : NO



# BILL OF MATERIAL

N ↙



## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ④

### FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 80 A106 GR. B, NACE	3	D1	0.7M
2	WELDOLET SCH 80 x SCH 160 A105, NACE	3 x 3/4	D1	1
3	FLANGE 600LB WN RF SCH 80 A105, NACE	3	D1	2

### ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
4	75MM LG PIPE NIPPLE TDE SCH 160 A106 GR. B, NACE	3/4	D1	1
5	PLUG SCRD 3000LB A105, NACE	3/4	D1	1
6	SPIRAL WOUND GASKET 600LB RF 4.5MM THK SS316 WINDING/GRAFITE FILLER W/3MM THK CS CENTERING RING, ZINC COATED	3	D1	3
7	135 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	D1	24
8	BALL VALVE 600LB RF, BV-29 (FB)(CSD)	3	D1	1
9	BALL VALVE THREADED PER PIPING SPEC. D1	3/4	D1	1
10	901PSV 141 4 x 3			1

XO	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	NN	CG	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	FT	BS	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHK'D	APP'D	DATE



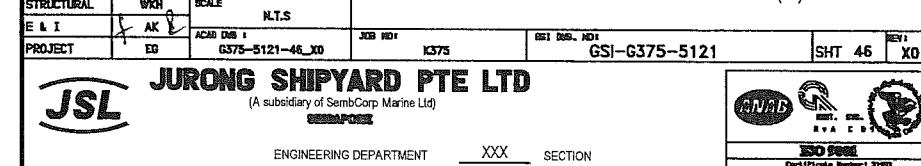
PROJECT:	FPSO CIDADE DE ITAJAÍ	JOB NO. 21-9791
		QUANTITY: 1
TITLE:	LINENo. 901-3"-PG-1024A-D1 901-3"-PG-1024B-D1	CLASS: ABS
		TOP DRAWING NO. 7000-04-L-26-XN-05121

"AS - BUILT"

### DESIGN DATA FOR MAIN LINE

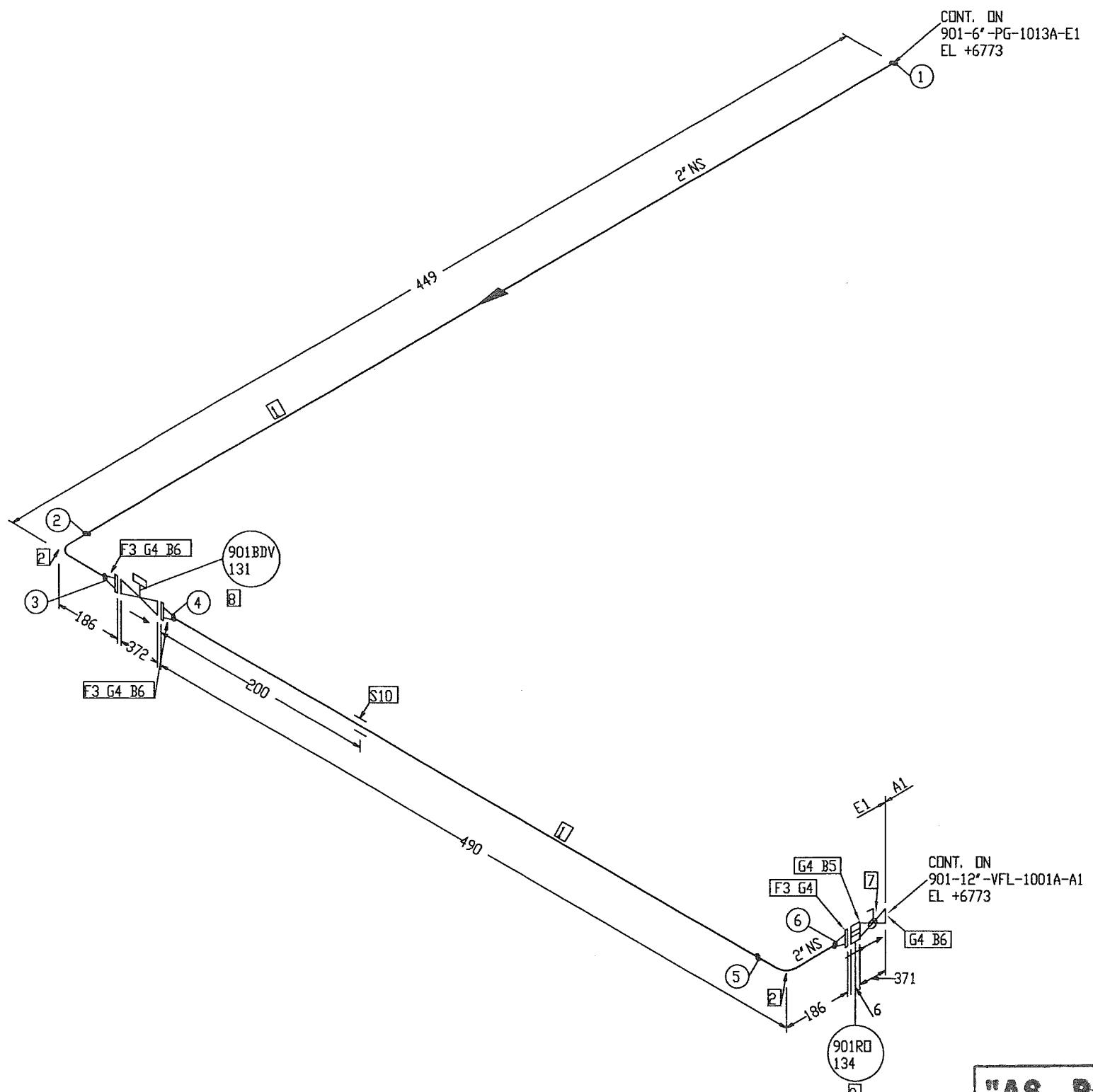
- | BSI DISCIPLINE SIGN | APPROVED BY SD             |
|---------------------|----------------------------|
| PROCESS AK          | CHECKED BY BS              |
| Mechanical VC       | DRIVEN BY FT               |
| Piping MH           | SCALE N.T.S                |
| Structural WKH      |                            |
| E & I AK            |                            |
| Project EG          | ACAD DBS: G375-5121-46_X0  |
|                     | JOB ID: K375               |
|                     | BSI REG. NO: GSI-6375-5121 |
|                     | SHT 46 KEY X0              |

WASCO Gas Services International (S) Pte Ltd



ENGINEERING DEPARTMENT XXX SECTION

# BILL OF MATERIAL



## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ⑥

### FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 160 A106 GR. B, NACE	2	E1	0.7M
2	90 DEG LR ELBOW SMLS BW SCH 160 A234 GR. WPB, NACE	2	E1	2
3	FLANGE 1500LB WN RTJ SCH 160 A105, NACE	2	E1	3

### ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
4	R24 OVAL RING SOFT IRON BHN90 ZINC COATED	2	E1	5
5	160 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	E1	8
6	150 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	E1	24
7	BALL VALVE 900LB RTJ, BV-32 (FB) (CSD)	2	E1	1
8	901BDV 131	2		1
9	901RD 134	2		1

### SUPPORTS

10	STD TTI CLAMP	2	E1	1
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XO	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	NN	CG	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	FT	BS	SD	17.04.08
REV.NO	DESCRIPTION OF REVISION	BY	CHKD	APP'D	DATE

CLIENT : **OOG TK**  
FPSO

PROJECT : FPSO CIDADE DE ITAJAÍ  
JOB NO. 21-9781  
QUANTITY 1  
TITLE: LINE NO. 901-2"-PG-1025A-E1  
PIPING ISOMETRIC CLASS : ABS  
TOP DRAWING NO. 901-2"-PG-1025B-E1  
7000-04-L-26-XN-05121

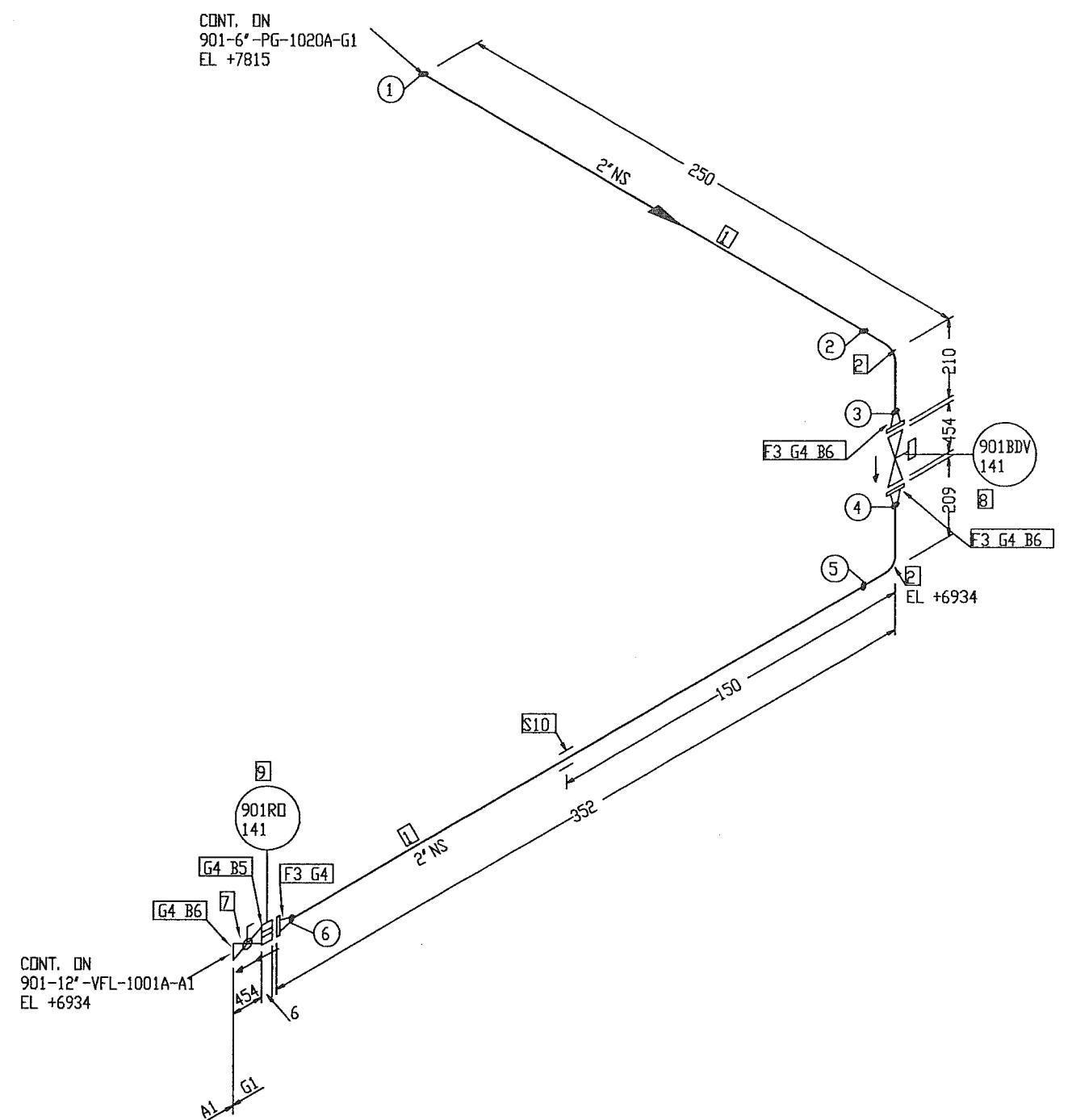
DESIGN DATA FOR MAIN LINE		APPROVED BY SD		Gas Services International (S) Pte Ltd
PROCESS	APR			
MECHANICAL	VC	DRIVEN BY RAGU		
PIPELINE	MH	DRIVEN BY FT		
STRUCTURAL	WCH	SCALE N.T.S		
E & I	AK	PROJECT EG	ACAD DBS # G375-5121-47_XD	JOB ID# K375
				BSI DBS. NO. GSI-G375-5121
				SHT 47 X0

**JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)  
SINGAPORE

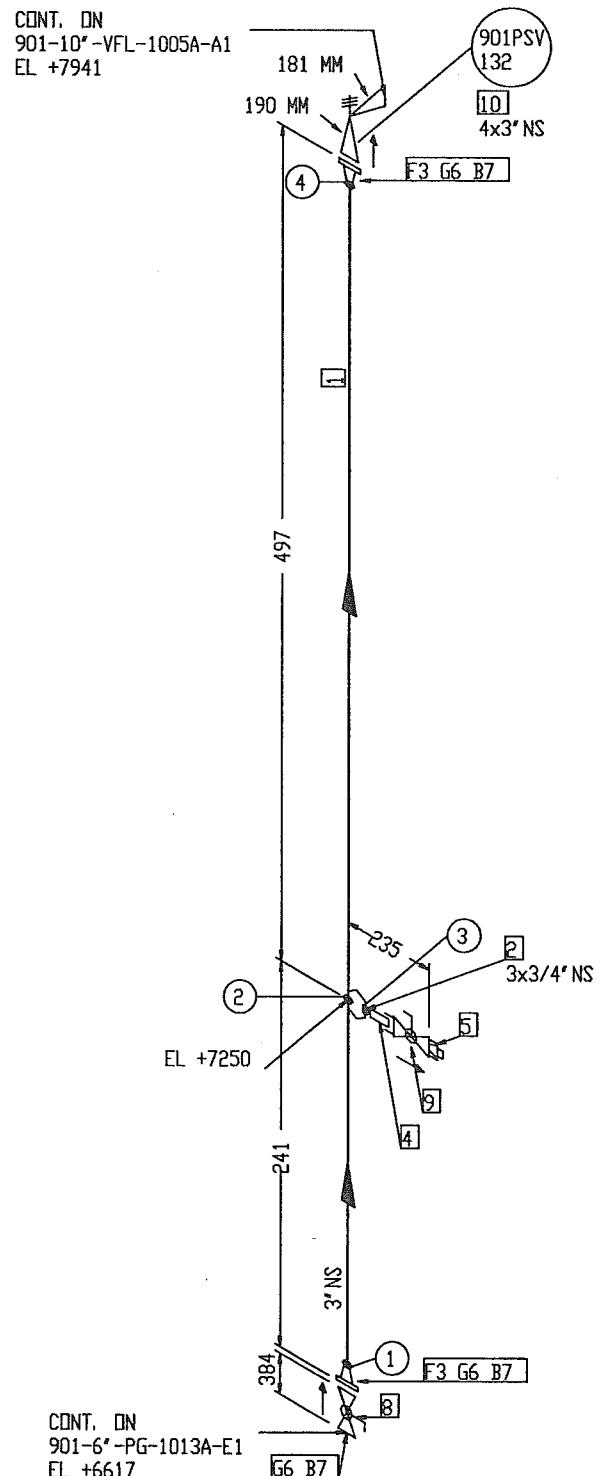
Engineering Department XXX Section

Certificate Number 12728

# BILL OF MATERIAL



# BILL OF MATERIAL



DESIGN DATA FOR MAIN LINE	
1. DESIGN PRESSURE	: 92 BARG
2. OPERATING TEMPERATURE	: 100° C
3. HYDROSTATIC TEST PRESSURE	: 138 BARG
4. CORROSION ALLOWANCE	: 1/8"
5. RADIOGRAPHY	: 100%
6. INSULATION	: PP
7. INSPECTION BY	: GSI (QC)
8. PWHT	: NO

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE SCH 160 A106 GR. B, NACE	3	E1	0.6M
2	WELDOLET SCH 160 A105, NACE	3 x 3/4	E1	1
3	FLANGE 900LB WN RTJ SCH 160 A105, NACE	3	E1	2

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
4	75mm LG PIPE NIPPLE TOE SCH 160 A106 GR. B, NACE	3/4	E1	1
5	PLUG SCRD 6000LB A105, NACE	3/4	E1	1
6	R31 OVAL RING SOFT IRON BHN90 ZINC COATED	3	E1	3
7	150 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	E1	24
8	BALL VALVE 900LB RTJ, BV-32 (FB) (CSC)	3	E1	1
9	BALL VALVE THREADED PER PIPING SPEC. E1	3/4	E1	1
10	901PSV 132	4 x 3		1

XO	AS BUILT	AB <sup>1</sup> -	RAGU	SD	09.04.12
1	AS BUILT	NN	CG	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	FT	BS	SD	17.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT :



PROJECT:	ITEM NO.	21-8791
	ITEM NO.	1
FPSO CIDADE DE ITAJAI	LINE NO.	CLASS #
	901-3"-PG-1030A-E1	ABS
	901-3"-PG-1030B-E1	TRD DRAWING NO.
		7000-04-L-26-XN-05121

"AS - BUILT"

GSI DISCIPLINE SIGN	APPROVED BY	SD	REVIS.
PROCESS	AN		
PIPING	MH	DRAGN BY	FT
STRUCTURAL	WRC	SCALE	N.T.S
E & I	AK	ACAO DBS	I
PROJECT	EG	JOB NO.	K375
		REVIS.	XO
		GSI-G375-5121	SHT 49
			XO

**JURONG SHIPYARD PTE LTD**  
(A subsidiary of SembCorp Marine Ltd)  
SINGAPORE

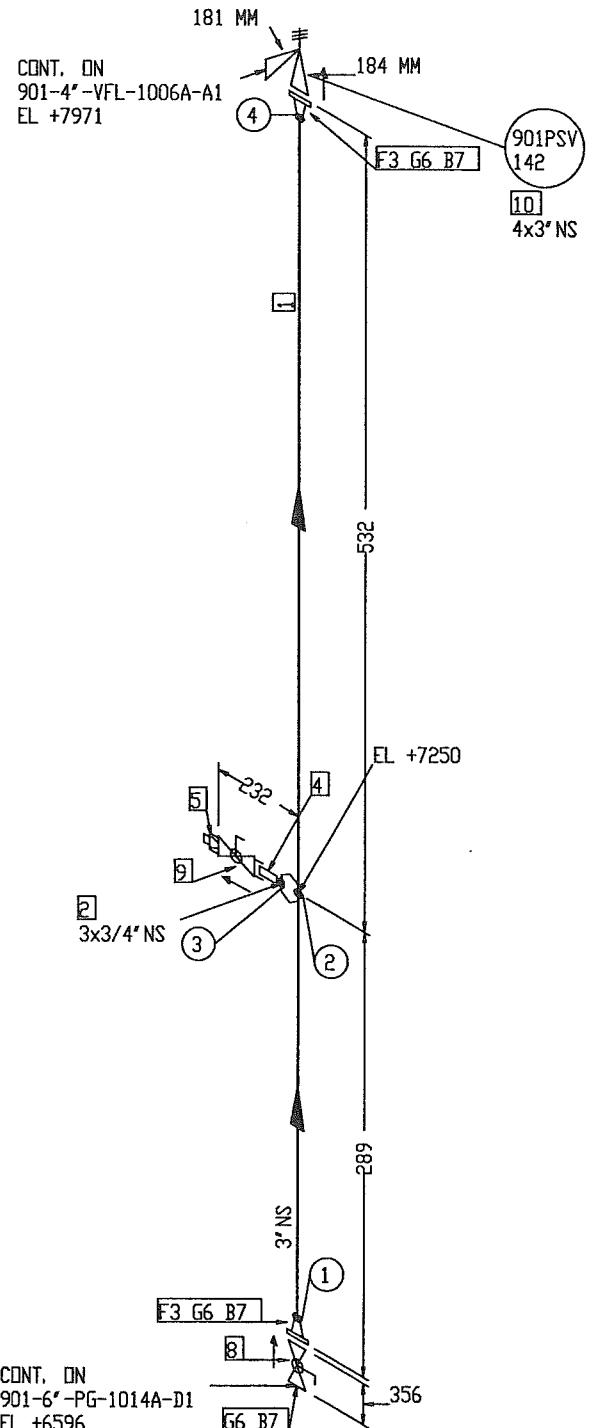
Engineering Department XXX Section

ENR Co. Ltd. Certificate Number 21703

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ④

# BILL OF MATERIAL



DESIGN DATA FOR MAIN LINE	
1. DESIGN PRESSURE	: 92 BARG
2. OPERATING TEMPERATURE	: 49° C
3. HYDROSTATIC TEST PRESSURE	: 138 BARG
4. CORROSION ALLOWANCE	: 1/8"
5. RADIOGRAPHY	: 100%
6. INSULATION	: NO
7. INSPECTION BY	: GSI (QC)
8. PWHT	: NO

XO	AS BUILT	AR	RAGU	SD	09.04.12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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<b>PROJECT:</b> FPSO CIDADE DEITAJAI <span style="float: right;">JOB ID: 21-8791</span> <b>TITLE:</b> PIPING ISOMETRIC <span style="float: right;">QUANTITY: 1</span> <span style="float: right;">CLASS: ABS</span> <span style="float: right;">TYP DRAWINGS ID: 7000-04-L-26-XN-05121</span>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">E&amp;I DISCIPLINE SIGN</th> <th colspan="2">APPROVED BY</th> <th colspan="2"></th> </tr> <tr> <th>PROCESS</th> <th>AR</th> <th>SD</th> <th>checked by</th> <th>RAGU</th> <th></th> </tr> <tr> <th>MECHANICAL</th> <th>VC</th> <th>DRIVEN BY</th> <th colspan="3"></th> </tr> <tr> <th>STRUCTURAL</th> <th>MH</th> <th>FT</th> <th colspan="3"></th> </tr> <tr> <th>E &amp; I</th> <th>VWH</th> <th>SCALE</th> <th colspan="3"></th> </tr> <tr> <th>PROJECT</th> <th>AK</th> <th>N.T.S</th> <th colspan="3"></th> </tr> <tr> <td colspan="2">ACAD DBS: G375-5121-50.XD</td> <td>JOB ID: K375</td> <td colspan="2">EST. DBS. 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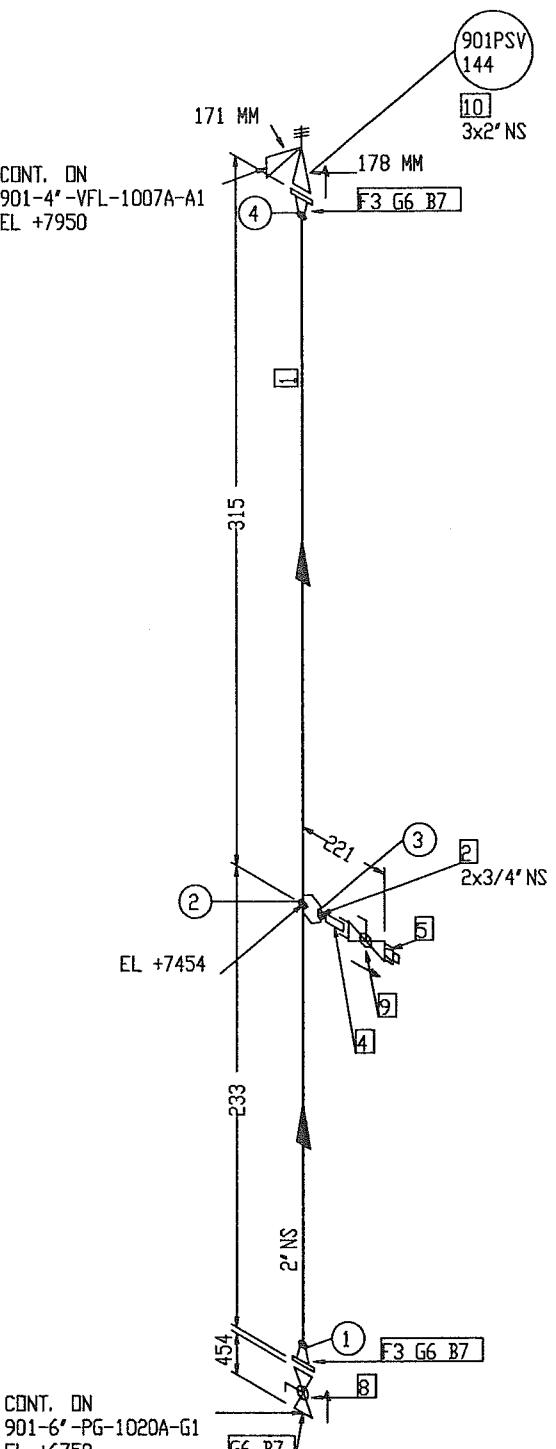
# BILL OF MATERIAL

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE XXS A106 GR. B, NACE	2	G1	0.3M
2	WELDOLET XXS A105, NACE	2 x 3/4	G1	1
3	FLANGE 2500LB WN RTJ XXS A105, NACE	2	G1	2

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
4	75mm LG PIPE NIPPLE TOE XXS A106 GR. B, NACE	3/4	G1	1
5	PLUG SCRD 600LB A105, NACE	3/4	G1	1
6	R26 OVAL RING SOFT IRON BHN90 ZINC COATED	2	G1	3
7	185 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	1	G1	24
8	BALL VALVE 2500LB RTJ, BV-48 (FB)(CSC)	2	G1	1
9	BALL VALVE THREADED PER PIPING SPEC. G1	3/4	G1	1
10	901PSV 144	3 x 2		1



"AS - BUILT"

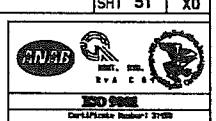
## DESIGN DATA FOR MAIN LINE

- | PROCESS                         | MECHANICAL                        | STRUCTURAL                                 | E & I                         | PROJECT               |
|---------------------------------|-----------------------------------|--|-------------------------------|-----------------------|
| 1. DESIGN PRESSURE : 241.3 BARG | 2. OPERATING TEMPERATURE : 128° C | 3. HYDROSTATIC TEST PRESSURE : 361.95 BARG | 4. CORROSION ALLOWANCE : 1/8" | 5. RADIOGRAPHY : 100% |
| 5. INSULATION : PP              | 6. INSPECTION BY : GSI (QC)       | 7. PWHT : NO                               |                               |                       |

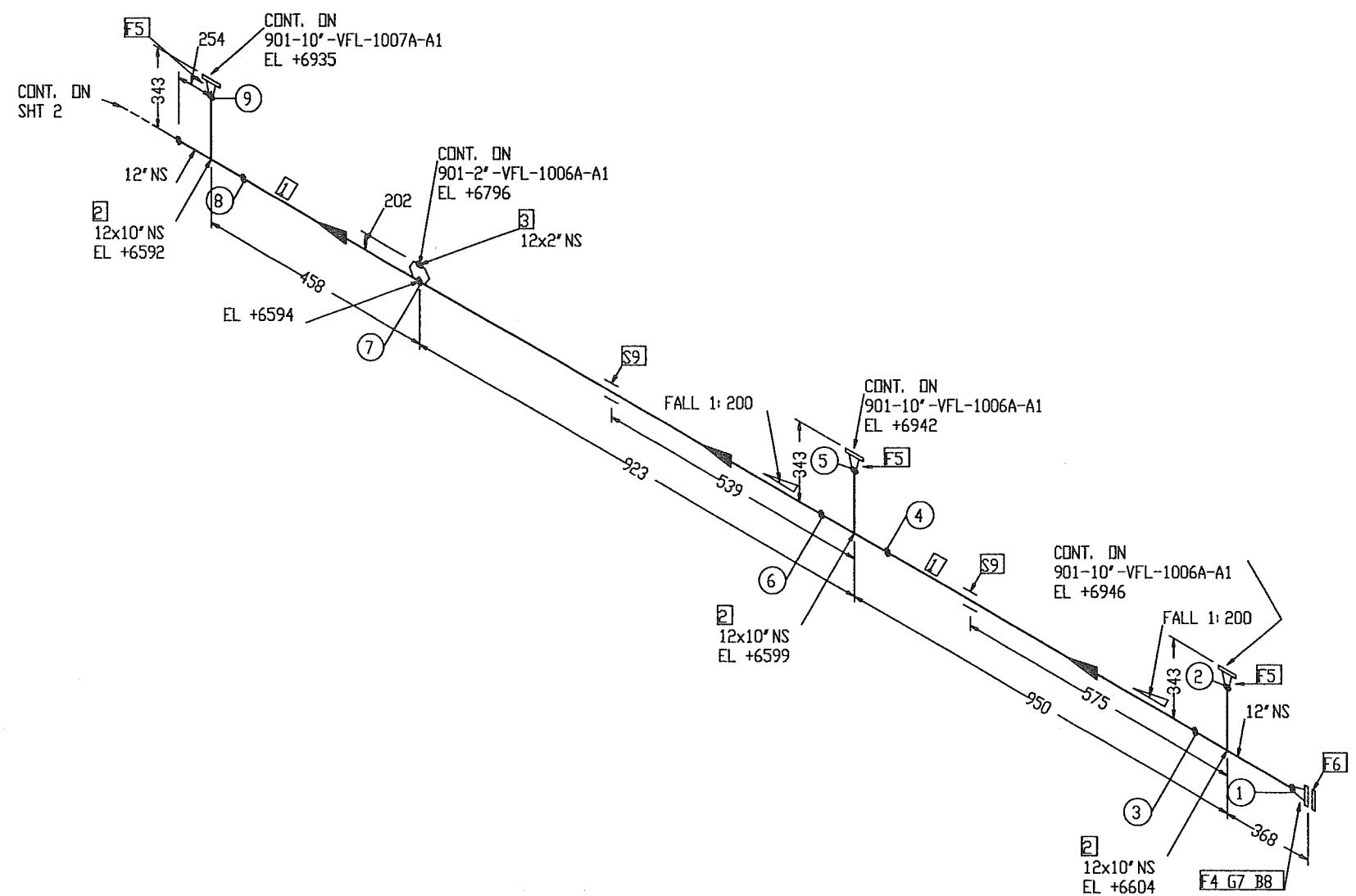
GSI DISCIPLINE SIGN		APPROVED BY SD	U WASCO
PROCESS		CHECKED BY RAGU	
MECHANICAL		DESIGNED BY RAGU	
STRUCTURAL		SCALE N.T.S	
JOB NO:	LINE NO:	CLASS :	Gas Services International (S) Pte Ltd
21-8791	901-2"-PG-1032A-G1	ABS	
1	901-2"-PG-1032B-G1	TOP DRAWING NO.	7000-04-L-26-XN-05121
REVISION NO:	ACAD DWS :	JOB NO:	REV:
	G375-5121-51_00	K375	XO
NOTES:	REVISION NO:	REVISION NO:	
1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.			
2. WELD NO. (1) TO (6)			

JURONG SHIPYARD PTE LTD  
(A subsidiary of SemCorp Marine Ltd)

ENGINEERING DEPARTMENT XXX SECTION



# BILL OF MATERIAL



## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE STD. WT. A106 GR. B, NACE	12	A1	1.4M
2	REDUCING TEE BW STD. WT. A234 GR. WPB, NACE	12 x 10	A1	3
3	WELDOLET STD. WT. x SCH 80 A105, NACE	12 x 2	A1	1
4	FLANGE 150LB WN RF STD. WT. A105, NACE	12	A1	1
5	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1	3

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N.S. (INS)	PIPE SPEC.	QTY
6	BLIND FLANGE 150LB RF A105, NACE	12	A1	1
7	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAPHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	12	A1	1
8	125 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	A1	12

## SUPPORTS

9	STD TTI CLAMP	12	A1	2
---	---------------	----	----	---

XO	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	NN	CG	SD	07.06.10
O	APPROVED FOR CONSTRUCTION	FT	BS	SD	30.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT :



PROJECT:	FPSO CIDADE DEITAJAI	JOB NO.	21-8791
		QUANTITY:	1
TITLE:	LIN ID 901-12"-VFH-1001A-A1 (SHT.1/6) 901-12"-VFH-1001A-A1 (SHT.1/6)	CLASS:	ABS
		TRD DRAWING NO.	7000-04-L-26-XN-05121

"AS - BUILT"

## DESIGN DATA FOR MAIN LINE

1. DESIGN PRESSURE : 5 BARG
2. OPERATING TEMPERATURE : 65° C
3. HYDROSTATIC TEST PRESSURE: 7.5 BARG
4. CORROSION ALLOWANCE : 1/8"
5. RADIOGRAPHY : 10%
6. INSULATION : NO
7. INSPECTION BY : GSI (QC)
8. PWHT : NO

GSI DISCIPLINE SIGN		APPROVED BY	SD	U
PROCESS	AR	checked by	SD	
MECHANICAL	VC	DRASH BT	NN	
PIPELINE	WPKH	STRUCTURAL	N.T.S	
E & I	+ AK	WPKH	N.T.S	
PROJECT	EG	ACAO DES :	K375	JOB ID# K375
		GSI DES. NO.		GSI DES. NO. GSI-G375-5121
				JOB 52 XO

WASCO Gas Services International (S) Pte Ltd

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JSL

ENRAB

ISO 9001

Engineering Department XXX SECTION

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. ① TO ⑥

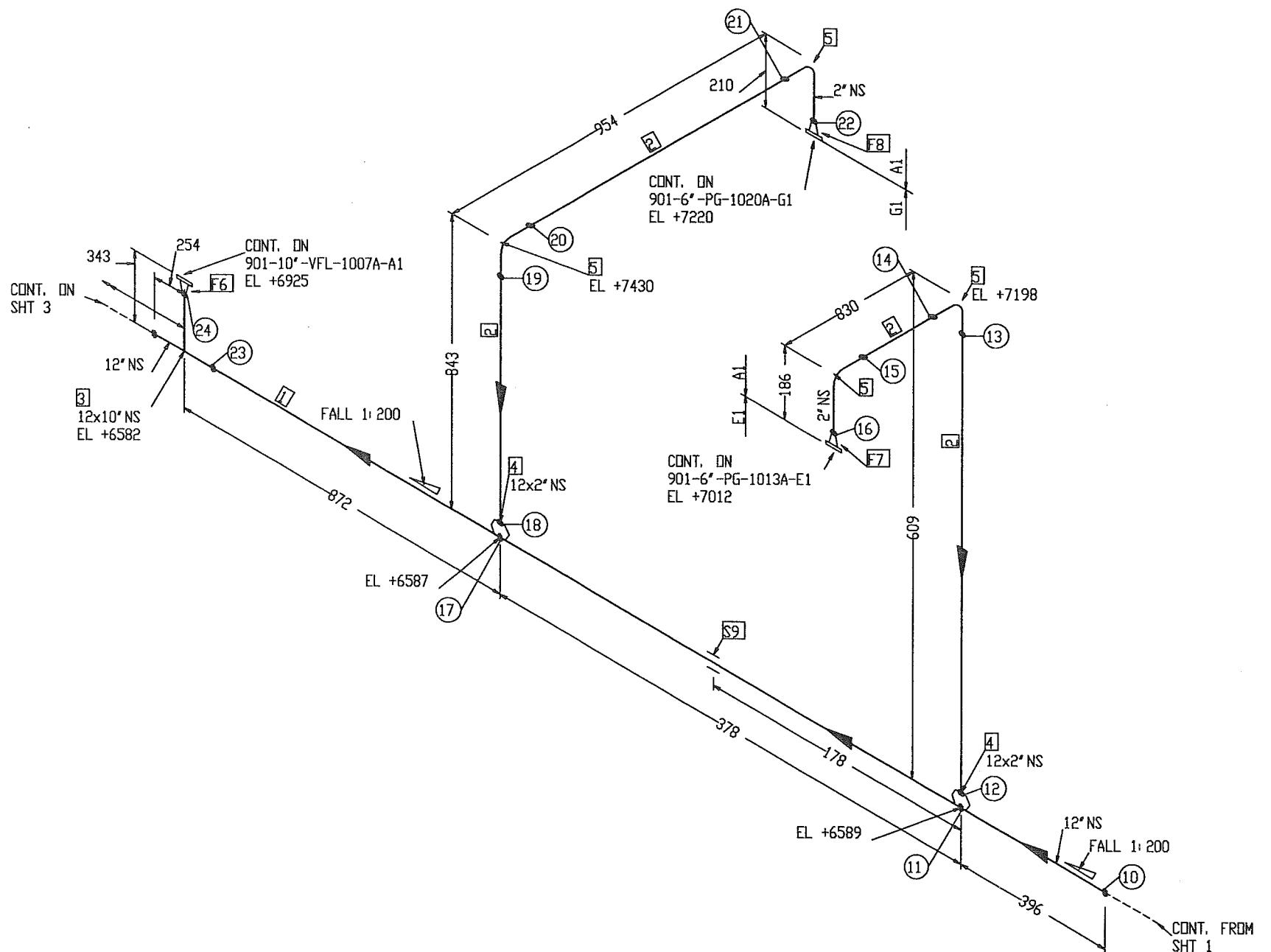
# BILL OF MATERIAL

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE STD. WT. A106 GR. B, NACE	12	A1	1, 4M
2	PIPE SMLS BE SCH 80 A106 GR. B, NACE	2	A1	2, 4M
3	REDUCING TEE BW STD. WT. A234 GR. WPB, NACE	12 x 10	A1	1
4	WELDOLET STD. WT. x SCH 80 A105, NACE	12 x 2	A1	2
5	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	2	A1	4
6	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1	1
7	FLANGE 1500LB WN RTJ SCH 80 A105, NACE	2	A1	1
8	FLANGE 2500LB WN RTJ SCH 80 A105, NACE	2	A1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
<b>SUPPORTS</b>				
9	STD TTI CLAMP	12	A1	1



"AS-BUILT"

### NOTES:

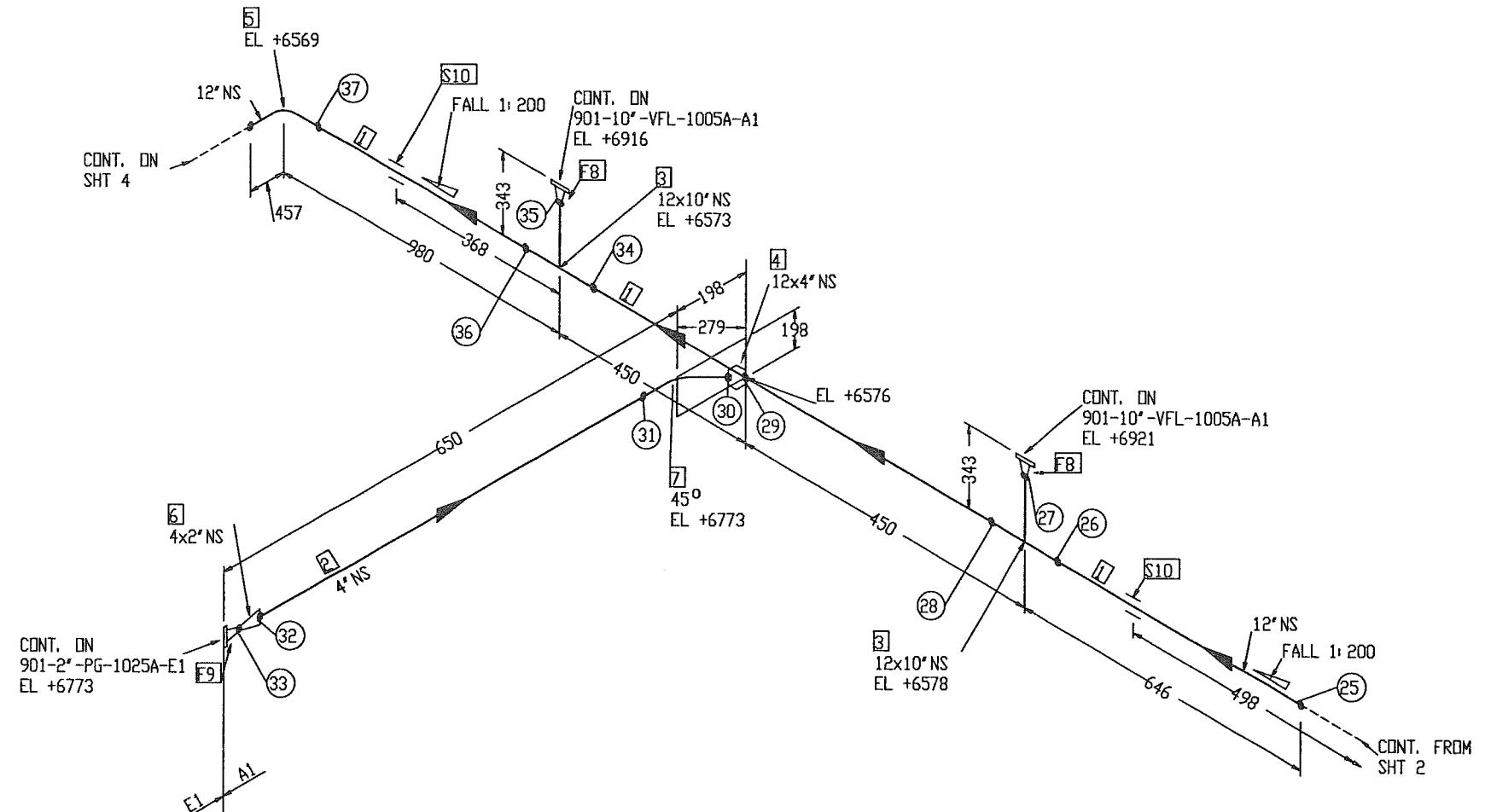
- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ⑥

### DESIGN DATA FOR MAIN LINE

- DESIGN PRESSURE : 5 BARG
- OPERATING TEMPERATURE : 65° C
- HYDROSTATIC TEST PRESSURE : 7.5 BARG
- CORROSION ALLOWANCE : 1/8"
- RADIOGRAPHY : 10%
- INSULATION : NO
- INSPECTION BY : GSI (QC)
- PWHT : NO

GSI DISCIPLINE SIGN		APPROVED BY	DRAWN BY	CHECKED BY	REV. NO.
PROCESS	MECHANICAL	SD			
			AK	CG	09.04.12
PIPE	MECH	SD	AK	CG	07.06.10
STRUCTURAL	WTRK	SD	AK	CG	30.04.08
E & I	WTRK	SD	AK	CG	DATE
PROJECT	ED	ACAD Dwg 1	JOB EDN	ED REV. NO.	BY CHKD APPD
		G375-5121-S3_X0	K575	GSI-G375-5121	SHT 53 X0
<b>JURONG SHIPYARD PTE LTD</b>					
(A subsidiary of SembCorp Marine Ltd)					
SINGAPORE					
Engineering Department XXX SECTION					
Certified by: [Signature]					

# BILL OF MATERIAL



## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE STD. WT. A106 GR. B, NACE	12	A1	1. 1M
2	PIPE SMLS BE SCH 40 A106 GR. B, NACE	4	A1	0. 4M
3	REDUCING TEE BW STD. WT. A234 GR. WPB, NACE	12 x 10	A1	2
4	WELDOLET STD. WT. A105, NACE	12 x 4	A1	1
5	90 DEG LR ELBOW SMLS BW STD. WT. A234 GR. WPB, NACE	12	A1	1
6	CONC RED BW SCH 40 x SCH 80 A234 GR. WPB, NACE	4 x 2	A1	1
7	45 DEG ELBOW SMLS BW SCH 40 A234 GR. WPB, NACE	4	A1	1
8	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1	2
9	FLANGE 1500LB WN RTJ SCH 80 A105, NACE	2	A1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
10	SUPPORTS STD TTI CLAMP	12	A1	2

XO	AS BUILT	AR ✓	RAGU ✓	SD	09.04.12
1	AS BUILT	NN	CG	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	30.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHK'D	APP'D	DATE

CLIENT : **OOG TK**  
FPSO

PROJECT :	FPSO CIDADE DEITAJAI	JOB NO. : 21-9791
		QUANTITY : 1
TITLE :	PIPING ISOMETRIC	CLASS : ABS
	LINENo 901-12"-VFH-1001A-A1 (SHT.3/6) 901-12"-VFH-1001A-A1 (SHT.3/6)	TPY DRAWINGS NO. : 7000-04-L-26-XN-05121

**"AS - BUILT"**

## DESIGN DATA FOR MAIN LINE

- DESIGN PRESSURE : 5 BARG
- OPERATING TEMPERATURE : 65° C
- HYDROSTATIC TEST PRESSURE : 7.5 BARG
- CORROSION ALLOWANCE : 1/8"
- RADIOGRAPHY : 10%
- INSULATION : NO
- INSPECTION BY : GSI (QC)
- PWHT : NO

GSI DISCIPLINE SIGN	APPROVED BY	
	SD	
PROCESS	AB/	CHECKED BY CG
MECHANICAL	VC	
PIPE	LM ✓	DRAWN BY NN
STRUCTURAL	WCH	SCALE H.T.S
E & I	AK	
PROJECT	EG	ACAD Dwg : GSI-5121-54-XD
		JOB NO. K375
		GSI Dwg. NO. K375
		REV. NO. GSI-0375-5121
		JHT 54 X0

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ENGINEERING DEPARTMENT XXX SECTION



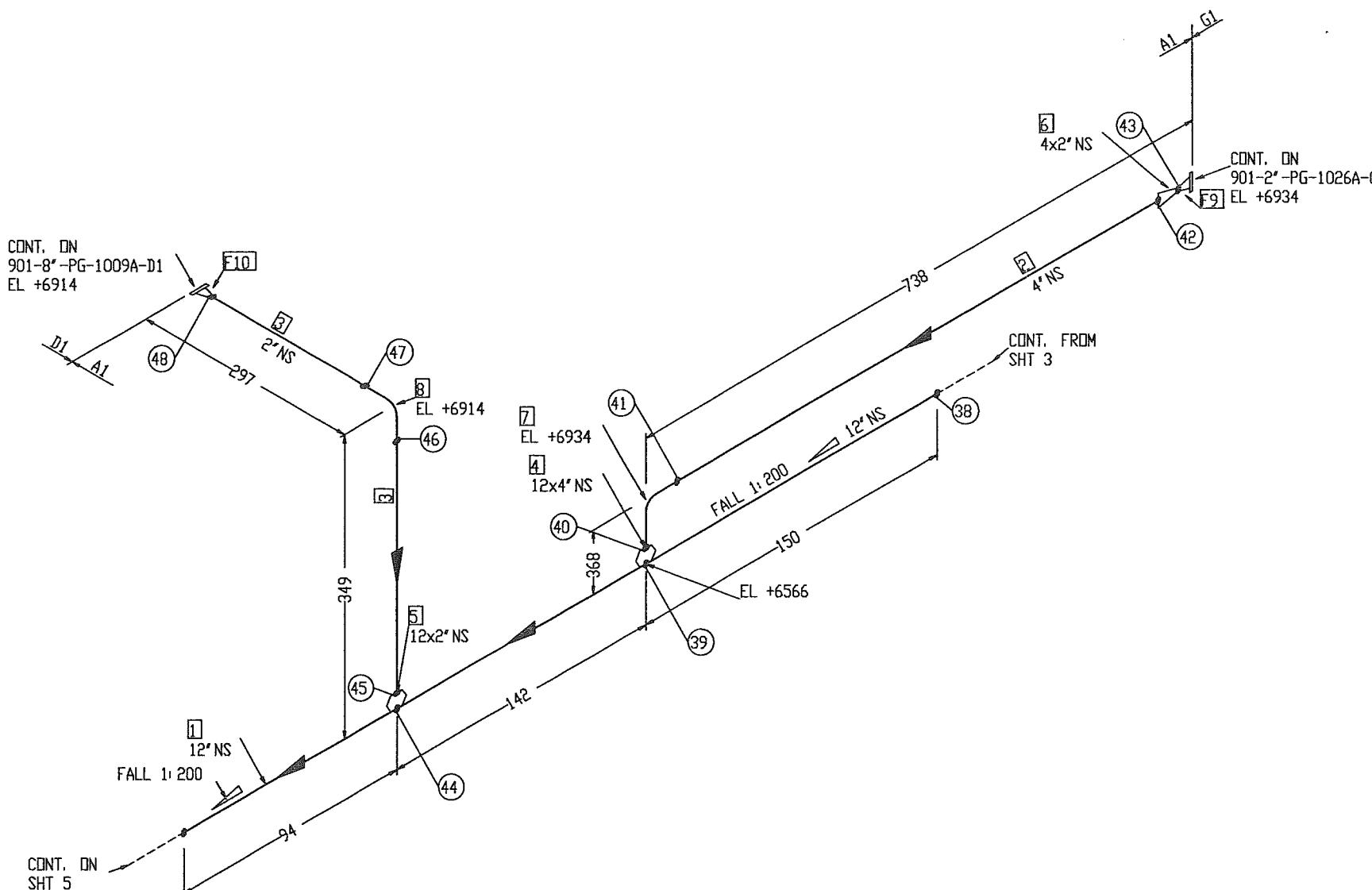
## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. (25) TO (37)

# BILL OF MATERIAL

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE STD. WT. A106 GR. B, NACE	12	A1	0.4M
2	PIPE SMLS BE SCH 40 A106 GR. B, NACE	4	A1	0.4M
3	PIPE SMLS BE SCH 80 A106 GR. B, NACE	2	A1	0.3M
4	WELDOLET STD. WT. A105, NACE	12 x 4	A1	1
5	WELDOLET STD. WT. x SCH 80 A105, NACE	12 x 2	A1	1
6	CONC RED BW SCH 40 x SCH 80 A234 GR. WPB, NACE	4 x 2	A1	1
7	90 DEG LR ELBOW SMLS BW SCH 40 A234 GR. WPB, NACE	4	A1	1
8	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	2	A1	1
9	FLANGE 2500LB WN RTJ SCH 80 A105, NACE	2	A1	1
10	FLANGE 600LB WN RF SCH 80 A105, NACE	2	A1	1



"AS - BUILT"

### NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. (38) TO (48)

### DESIGN DATA FOR MAIN LINE

1. DESIGN PRESSURE : 5 BARG
2. OPERATING TEMPERATURE : 65° C
3. HYDROSTATIC TEST PRESSURE : 7.5 BARG
4. CORROSION ALLOWANCE : 1/8"
5. RADIOPHGRAPHY : 10%
6. INSULATION : NO
7. INSPECTION BY : GSI (QC)
8. PWHT : NO

XO	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	NN	CG	SD	07.06.10
O	APPROVED FOR CONSTRUCTION	NN	CG	SD	30.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE



PROJECT:	FPSO CIDADE DE ITAJAÍ	JOB NO.:	21-9791
QUANTITY:	1	CLASS :	ABS
TITLE:	PIPING ISOMETRIC	LINE NO:	901-12"-VFH-1001A-A1 (SHT.4/6) 901-12"-VFH-1001A-A1 (SHT.4/6)
		TRD DRAWING NO.:	7000-04-L-26-XN-05121

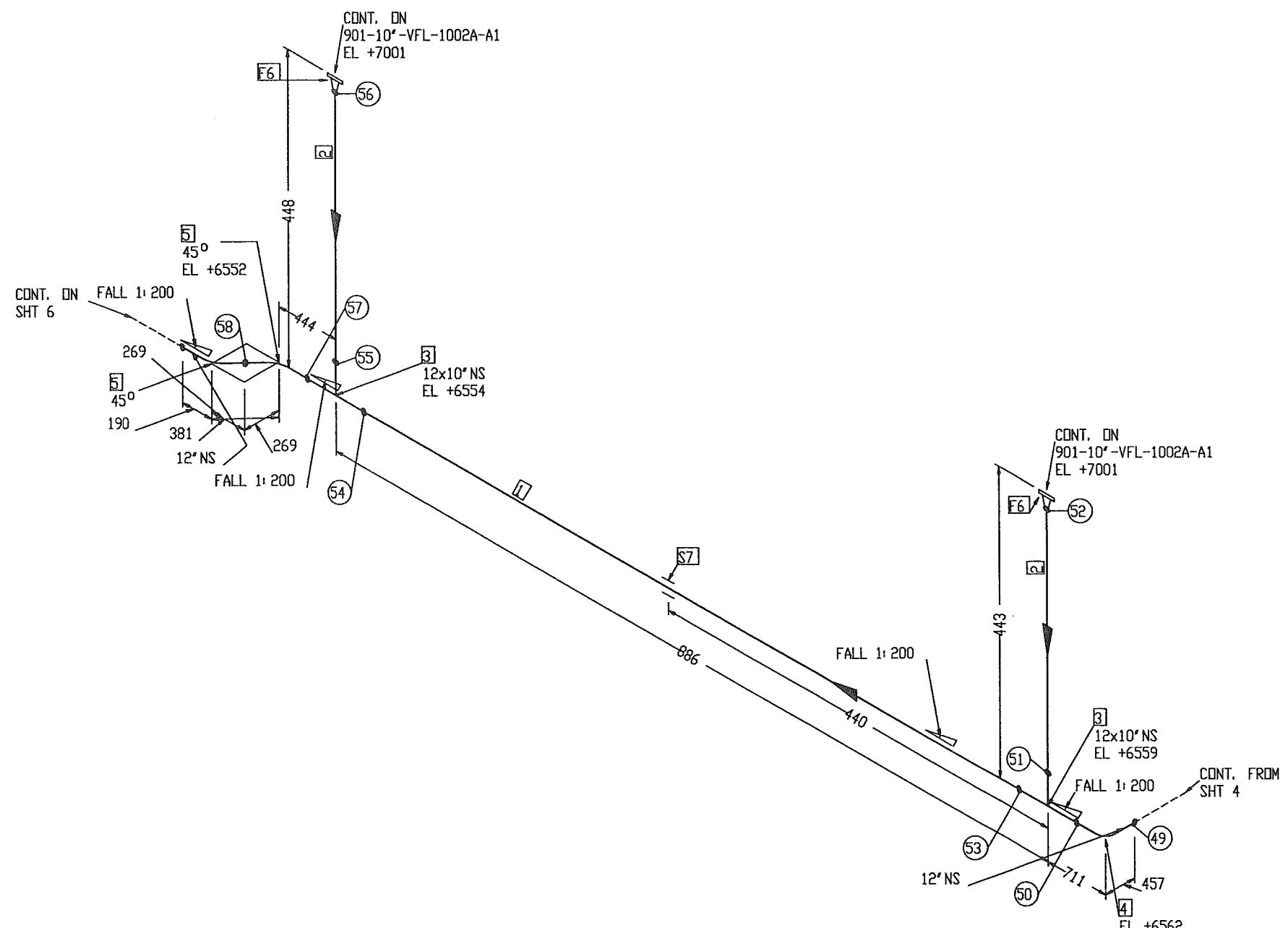
GSI DISCIPLINE SIGN	APPROVED BY	SD	WASCO Gas Services International (S) Pte Ltd
PROCESS	AB	ENGINERED BY	
MECHANICAL	VC	DRASH BY	
PIPING	MH	NN	
STRUCTURAL	WCH	SCALE	
E & I	AK	N.L.S	
PROJECT	EG	ACM DSB #	Job ID#
		6375-5121-55_00	K375
		GSI DIS. NO:	GSI-G375-5121
		SHT	55
		REV:	XO

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SGAPORE  
Engineering Department XXX Section



# BILL OF MATERIAL



FABRICATION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.
1	PIPE SMLS BE STD. WT. A106 GR. B, NACE	12	A1 0.4M
2	PIPE SMLS BE STD. WT. A106 GR. B, NACE	10	A1 0.3M
3	REDUCING TEE BW STD. WT. A234 GR. WPB, NACE	12 x 10	A1 2
4	90 DEG LR ELBOW SMLS BW STD. WT. A234 GR. WPB, NACE	12	A1 1
5	45 DEG ELBOW SMLS BW STD. WT. A234 GR. WPB, NACE	12	A1 2
6	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1 2

ERCTION MATERIALS			
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.
7	SUPPORTS		
7	STD TTI CLAMP	12	A1 1

XO	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	NN	CG	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	30.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT: **OOG TK**  
FPSO

PROJECT: **FPSO CIDADE DE ITAJAÍ** JOB NO. **21-9791**  
TITLE: **PIPING ISOMETRIC** LINE NO. **901-12"-VFH-1001A-A1 (SHT.5/6)**  
CLASS: **ABS** DRAWING NO. **7000-04-L-26-XN-05121**

DESIGN DATA FOR MAIN LINE

GSI DISCIPLINE	STEN	APPROVED BY	SD
PROCESS	AP	CHEKED BY	SD
MECHANICAL	VC	DRWNG BY	CG
PIPEING	MH	DRWNG BY	NN
STRUCTURAL	WKH	SCALE	N.T.S.
E & I	X AK	ACAD Dwg #	6375-5121-56_XD
PROJECT	ED	JOB NO.	K375
		GSI Dwg. No.	GSI-6375-5121
		SHT	56

WASCO Gas Services International (S) Pte Ltd

JURONG SHIPYARD PTE LTD (a subsidiary of SembCorp Marine Ltd)  
Singapore

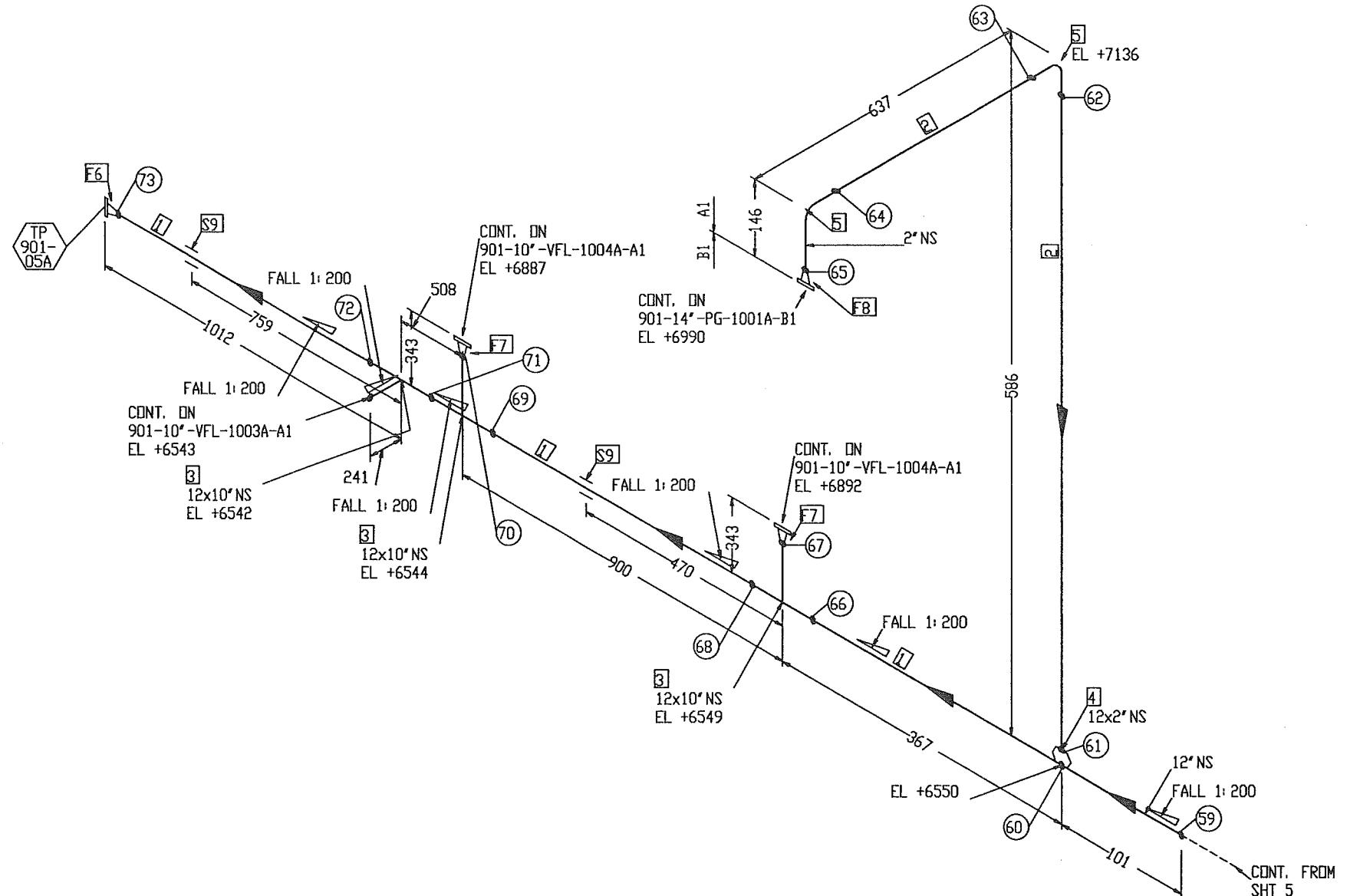
Engineering Department XXX Section

NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. (49) TO (58)

AS-BUILT

# BILL OF MATERIAL



FABRICATION MATERIALS				
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE STD. WT. A106 GR. B, NACE	12	A1	1. 3M
2	PIPE SMLS BE SCH 80 A106 GR. B, NACE	2	A1	0. 8M
3	REDUCING TEE BW STD. WT. A234 GR. WPB, NACE	12 x 10	A1	3
4	WELDOLET STD. WT. x SCH 80 A105, NACE	12 x 2	A1	1
5	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	2	A1	2
6	FLANGE 150LB WN RF STD. WT. A105, NACE	12	A1	1
7	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1	2
8	FLANGE 300LB WN RF SCH 80 A105, NACE	2	A1	1

ERCTION MATERIALS				
PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
9	SUPPORTS			
9	STD TTI CLAMP	12	A1	2

XO	AS BUILT	AR	RAGB	SD	09.04.12
1	AS BUILT	NN	CG	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	30.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHKD	APPD	DATE

CLIENT :	
PROJECT:	FPSO CIDADE DE ITAJAÍ
JOB NO.	21-8791
QUANTITY	1
TITLE:	LINE NO. 901-12"-VFH-1001A-A1 (SHT.6/6) 901-12"-VFH-1001B-A1 (SHT.6/6)
CLASS	ABS
ITEM DENOM. NO.	7000-04-L-26-XN-05121
GSI DISCIPLINE SIGN	APPROVED BY SD
PROCESS	AK
MECHANICAL	VC
PIPEING	MH
STRUCTURAL	WCH
E & I	AK
PROJECT	ACAD DBN # G375-5121-57.XD
EG	JOB ID# K375
	GSI INS. NO# GSI-G375-5121
	REV. NO# SHT 57
	
Gas Services International (S) Pte Ltd	
	
JURONG SHIPYARD PTE LTD	
(A subsidiary of SembCorp Marine Ltd)	
Engineering Department XXX SECTION	
	

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. (59) TO (73)

DESIGN DATA FOR MAIN LINE	
1. DESIGN PRESSURE	: 5 BARG
2. OPERATING TEMPERATURE	: 65° C
3. HYDROSTATIC TEST PRESSURE	: 7.5 BARG
4. CORROSION ALLOWANCE	: 1/8"
5. RADIOGRAPHY	: 10%
6. INSULATION	: NO
7. INSPECTION BY	: GSI (QC)
8. PWHT	: NO

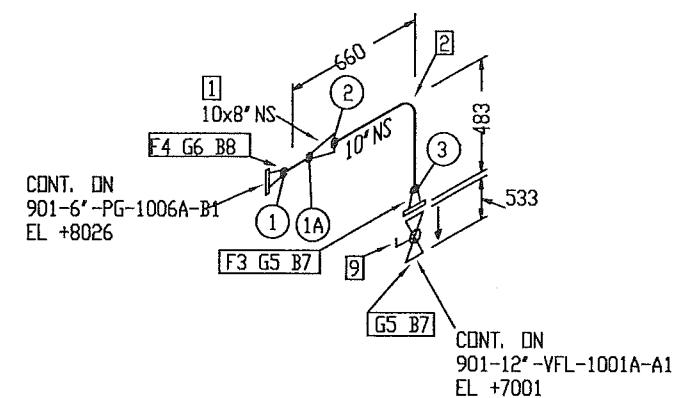
# BILL OF MATERIAL

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	CONC RED BW STD. WT. A234 GR. WPB, NACE	10 x 8	A1	1
2	90 DEG LR ELBOW SMLS BW STD. WT. A234 GR. WPB, NACE	10	A1	1
3	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1	1
4	FLANGE 150LB WN RF SCH 40 A105, NACE	8	A1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
5	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	10	A1	2
6	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	8	A1	1
7	120 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	A1	24
8	115 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	A1	8
9	BALL VALVE 150LB RF, BV-22(FB) (CSO)	10	A1	1



X0	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	30.04.08
REV. NO	DESCRIPTION OF REVISION				

CLIENT :

PROJECT:	FPSO CIDADE DE ITAJAÍ	JOB ID.:	21-9781
BUNNITY:	1	CLASS :	ABS
TITLE:	LINN ID: 901-10"-VFH-1002A-1-A1 901-10"-VFH-1002A-1-A1	TPJ BUNNITY. ID:	7000-04-L-26-XN-05121

"AS - BUILT"

GSI DISCIPLINE SIGN	APPROVED BY	SD	
PROCESS	AE	CHECKED BY	
MECHANICAL	VC	DRAWN BY	NN
STRUCTURAL	WKH	SCALE	N.T.S
E & I	AK	ACAD DBN:	GSI-5121-SL_XD
PROJECT	EE	JOB IDN:	K375
		GSI IRB. NO:	GSI-G375-5121
		REV:	5B
		XO:	
JURONG SHIPYARD PTE LTD			
(A subsidiary of SembCorp Marine Ltd)			
SINGAPORE			
Engineering Department XXX SECTION			
ISO 9001			
DRAFTS DRAWN BY: JSL			

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ③

## DESIGN DATA

- |                              |            |
|------------------------------|------------|
| 1. DESIGN PRESSURE           | : 5 BARG   |
| 2. OPERATING TEMPERATURE     | : 65° C    |
| 3. HYDROSTATIC TEST PRESSURE | : 7.5 BARG |
| 4. CORROSION ALLOWANCE       | : 1/8"     |
| 5. RADIOGRAPHY               | : 10%      |
| 6. INSULATION                | : NO       |
| 7. INSPECTION BY             | : GSI (QC) |
| 8. PWHT                      | : NO       |

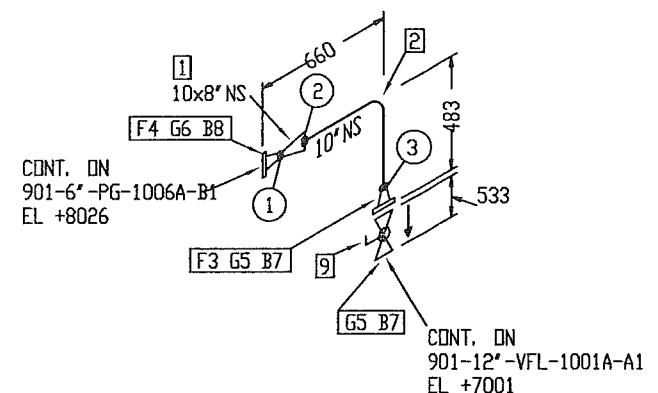
# BILL OF MATERIAL

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	CONC RED BW STD. WT. A234 GR. WPB, NACE	10 x 8	A1	1
2	90 DEG LR ELBOW SMLS BW STD. WT. A234 GR. WPB, NACE	10	A1	1
3	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1	1
4	FLANGE 150LB WN RF SCH 40 A105, NACE	8	A1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
5	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	10	A1	2
6	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	8	A1	1
7	120 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	A1	24
8	115 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	A1	8
9	BALL VALVE 150LB RF, BV-22(FB) (CSC)	10	A1	1



XO	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.05.10
O	APPROVED FOR CONSTRUCTION	NN	CG	SD	30.04.08
REV.NO	DESCRIPTION OF REVISION				

CLIENT : **OOG K**  
FPSO

PROJECT:	FPSO CIDADE DE ITAJAÍ	JOB NO. 21-9791
		QUANTITY 1
TITLE:	LINN NO. 901-10"-VFH-1002A-2-A1	CLASS ABS
	901-10"-VFH-1002A-2-A1	TOP DRAWING NO. 7000-04-L-26-XN-05121

DESIGN DATA		APPROVED BY SD	DRAWN BY CG	WTHN NN	SCALE N.T.S	ACMO DRS 4 G375-5121-59_XD	JOB ID K375	EST. DRS. NO. GSI-G375-5121	SHT 59 REV X0
PROCESS	MECHANICAL								
PIPING	VC								
STRUCTURAL	WTHN								
E & I	X AK								
PROJECT	EG								

**WASCO** Gas Services International (S) Pte Ltd

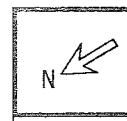
**JURONG SHIPYARD PTE LTD**  
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SINGAPORE

ISO 9001  
Certified by Bureau Veritas

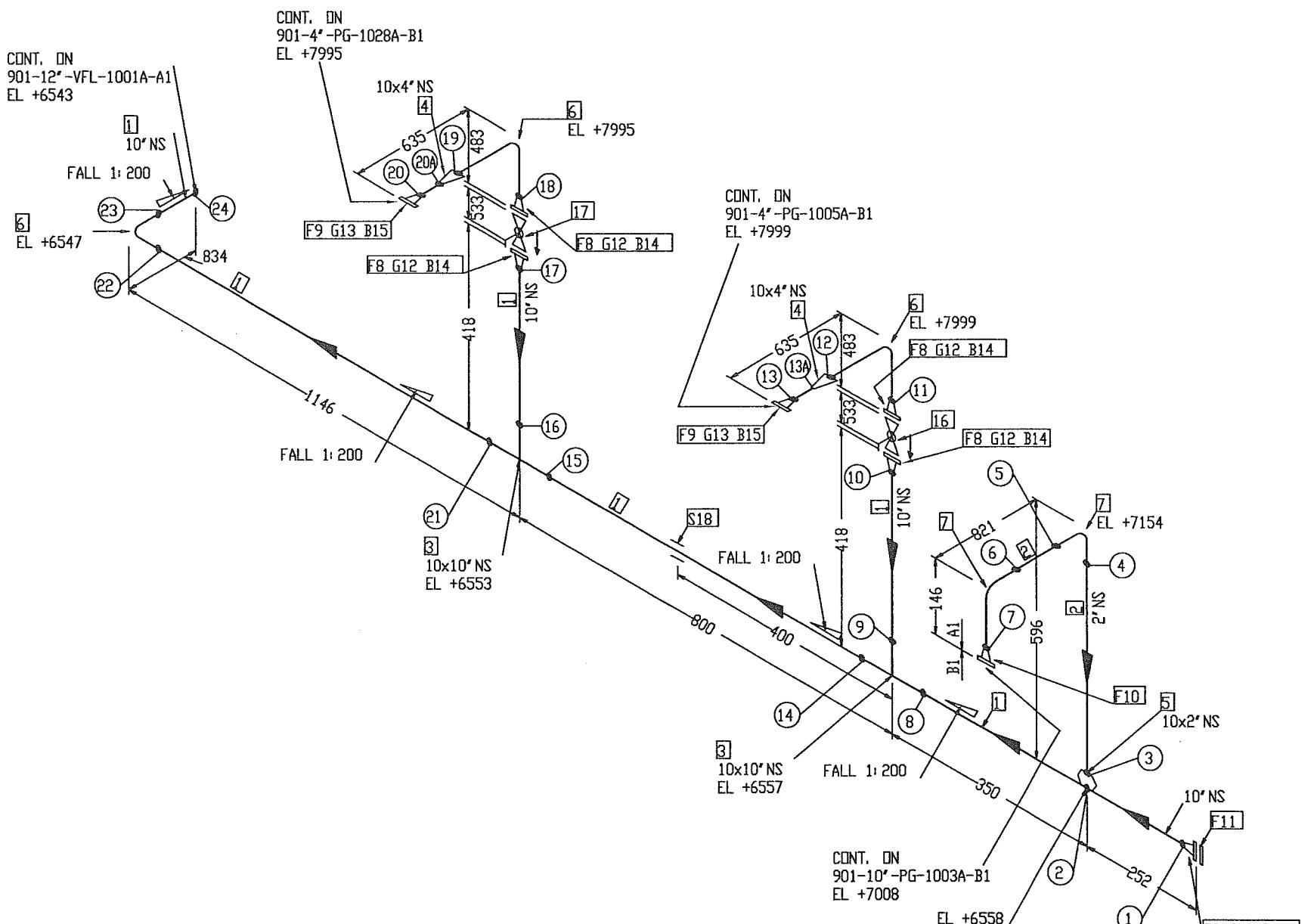
## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. ① TO ③

"AS - BUILT"



# BILL OF MATERIAL



"AS - BUILT"

## NOTES:

- CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
- WELD NO. ① TO ②

## DESIGN DATA

- DESIGN PRESSURE : 5 BARG
- OPERATING TEMPERATURE : 65° C
- HYDROSTATIC TEST PRESSURE : 7.5 BARG
- CORROSION ALLOWANCE : 1/8"
- RADIOGRAPHY : 10%
- INSULATION : NO
- INSPECTION BY : GSI (QC)
- PWHT : NO

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	PIPE SMLS BE STD. WT. A106 GR. B, NACE	10	A1	1. 9M
2	PIPE SMLS BE SCH 80 A106 GR. B, NACE	2	A1	1. 1M
3	EQUAL TEE BW STD. WT. A234 GR. WPB, NACE	10 x 10	A1	2
4	CONC RED BW STD. WT. A234 GR. WPB, NACE	10 x 4	A1	2
5	WELDOLET STD. WT. x SCH 80 A105, NACE	10 x 2	A1	1
6	90 DEG LR ELBOW SMLS BW STD. WT. A234 GR. WPB, NACE	10	A1	3
7	90 DEG LR ELBOW SMLS BW SCH 80 A234 GR. WPB, NACE	2	A1	2
8	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1	5
9	FLANGE 150LB WN RF SCH 40 A105, NACE	4	A1	2
10	FLANGE 300LB WN RF SCH 80 A105, NACE	2	A1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
11	BLIND FLANGE 150LB RF A105, NACE	10	A1	1
12	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	10	A1	5
13	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	4	A1	2
14	120 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	A1	60
15	95 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	A1	16
16	BALL VALVE 150LB RF, BV-22(FB) (CSID)	10	A1	1
17	BALL VALVE 150LB RF, BV-22(FB) (CSC)	10	A1	1

## SUPPORTS

18	STD TTI CLAMP	10	A1	1
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XO	AS BUILT	AR	RAGU	SD	09.04.12
1	AS BUILT	FT	BS	SD	07.06.10
O	APPROVED FOR CONSTRUCTION	NN	CG	SD	30.04.08

REV. NO. DESCRIPTION OF REVISION BY CHKD APPD DATE

CLIENT : **OOG K**  
FPSO

PROJECT:	FPSO CIDADE DEITAJAI		JOB NO.	21-9791
TITLE:	PIPING ISOMETRIC		QUANTITY	1
LINE ID		CLASS	ABS	
901-10"-VFH-1003A-A1		TOP DRAWING NO.	7000-04-L-26-XN-05121	

6SI DISCIPLINE SIGN	APPROVED BY	SD	
PROCESS	AR	CHECKED BY	
MECHANICAL	VC	DRIVEN BY	CG
PIPING	MH	SCALE	NN
STRUCTURAL	WCH	RELEASER	N.T.S
E & I	AK	ACAD DRS :	K375
PROJECT	EG	G375-5121-00_00	6SI DRS. NO. GSI-G375-5121
			SHT 60
			XO

**JURONG SHIPYARD PTE LTD**  
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**SINGAPORE**

Engineering Department XXX Section



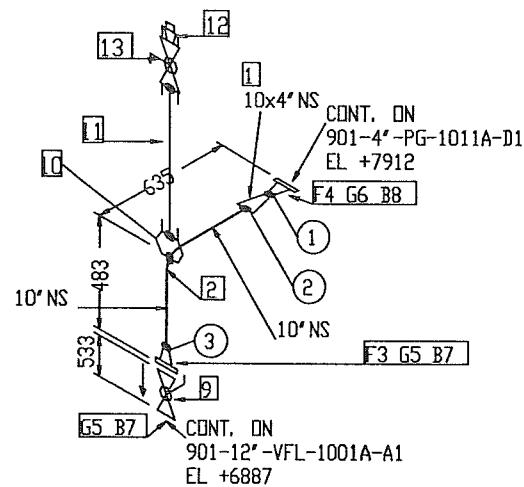
## BILL OF MATERIAL

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	CONC RED BW STD. WT. A234 GR. WPB, NACE	10 x 4	A1	1
2	90 DEG LR ELBOW SMLS BW STD. WT. A234 GR. WPB, NACE	10	A1	1
3	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1	1
4	FLANGE 150LB WN RF SCH 40 A105, NACE	4	A1	1

## **ERCTION MATERIALS**

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
5	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	10	A1	2
6	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	4	A1	1
7	120 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HDT-DIP GALV. COATED	7/8	A1	24
8	95 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HDT-DIP GALV. COATED	5/8	A1	8
9	BALL VALVE 150LB RF, BV-22(FB) (CSD)	10	A1	1
10	ELBOLET 3000LB A105, NACE	10 x 3/4	A1	1
11	75mm LG PIPE NIPPLE PBE SCH 160 A106 GR. B, NACE	3/4	A1	1
12	PLUG SCRD 3000LB A105, NACE	3/4	A1	1
13	BALL VALVE SWxNPT PER PIPING SPEC. A1	3/4	A1	1



**"AS - BUILT"**

## DESIGN DATA

- NOTES:

  1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
  2. WELD NO. (10) TO (20) & (13A)

DESIGN DATA	
1. DESIGN PRESSURE	: 5 BARG
2. OPERATING TEMPERATURE	: 65° C
3. HYDROSTATIC TEST PRESSURE	: 7.5 BARG
4. CORROSION ALLOWANCE	: 1/8"
5. RADIOGRAPHY	: 10%
6. INSULATION	: NO
7. INSPECTION BY	: GSI (QC)
8. PWHT	: NO

XO	AS BUILT	AR	RAGU	SD	09.04.12
2	REVISED AS SHOWN	RAGU	LYC	SD	01.12.11
1	AS BUILT	NN	CG	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	30.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHK'D	APPD	DATE



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EPSO CIDADE DEITA IAÍ

— 1 —

PROJECT:		FPSO CIDADE DEITAJAÍ	JOB NO.	21-9791
			SEQUENCE NO.	1
TITLE:	LINE NO.	CLASS I		
PIPING ISOMETRIC	901-10"-VFH-1004A-1-A1	ABS		
	901-10"-VFH-1004B-1-A1	TOP DRAWINGS NO. 7000-04-L-26-XN-05121		

**SD**  
**BS**  
**AGU**  
**AS**

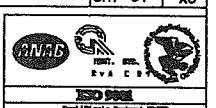


**WASCO** Gas Services International (S) Pte Ltd



**JURONG SHIPYARD PTE LTD**  
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ENGINEERING DEPARTMENT XXX SECTION





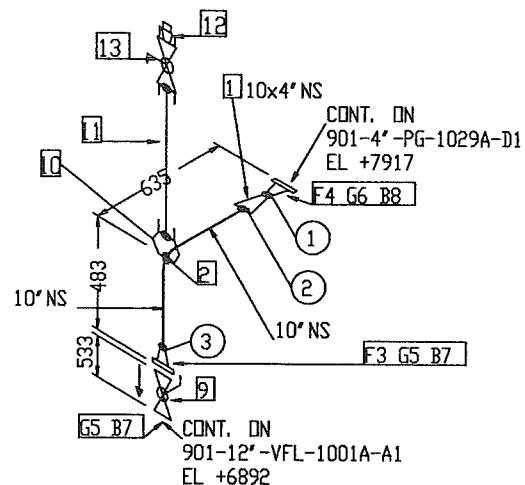
# BILL OF MATERIAL

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	CONC RED BW STD. WT. A234 GR. WPB, NACE	10 x 4	A1	1
2	90 DEG LR ELBOW SMLS BW STD. WT. A234 GR. WPB, NACE	10	A1	1
3	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1	1
4	FLANGE 150LB WN RF SCH 40 A105, NACE	4	A1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
5	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAPHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	10	A1	2
6	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAPHITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	4	A1	1
7	120 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	A1	24
8	95 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	5/8	A1	8
9	BALL VALVE 150LB RF, BV-22(FB) (CSC)	10	A1	1
10	ELBOLET 3000LB A105, NACE	10 x 3/4	A1	1
11	75mm LG PIPE NIPPLE PBE SCH 160 A106 GR. B, NACE	3/4	A1	1
12	PLUG SCRD 3000LB A105, NACE	3/4	A1	1
13	BALL VALVE SWxNPT PER PIPING SPEC. A1	3/4	A1	1



XO	AS BUILT	AR	RAGD	SD	09.04.12
2	REVISED AS SHOWN	RAGU	LYC	SD	01.12.11
1	AS BUILT	NN	CG	SD	07.06.10
0	APPROVED FOR CONSTRUCTION	NN	CG	SD	30.04.08
REV. NO	DESCRIPTION OF REVISION	BY	CHK'D	APP'D	DATE

CLIENT :



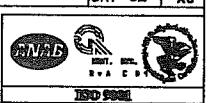
PROJECT:	FPSO CIDADE DEITAJAI	JOB NO.	21-9791
LINE NO.	901-10"-VFH-1004A-2-A1	QUANTITY	1
CLASS	ABS	ITEM DRAWING NO.	7000-04-L-26-XN-05121
ITEM DRAWING NO.	901-10"-VFH-1004B-2-A1	REV.	XO

**"AS - BUILT"**

DESIGN DATA		APPROVED BY SD	DRAWN BY RAGU	SCALE N.T.S	ACAD Dwg # GSI-5121-82-XD	JOB NO. GSI-5121	EDIS. NO. GSI-G375-5121	REV. SHT 62 XO
ESI DISCIPLINE SIGN	PROCESS							
MECHANICAL	AR	VC	MH	SCALE	ACAD Dwg # GSI-5121-82-XD	JOB NO. GSI-5121	EDIS. NO. GSI-G375-5121	REV. SHT 62 XO
PIPE	AR	DRIVEN BY	DRIVEN BY	ACAD Dwg # GSI-5121-82-XD	JOB NO. GSI-5121	EDIS. NO. GSI-G375-5121	REV. SHT 62 XO	
STRUCTURAL	AR	WCH	WCH	ACAD Dwg # GSI-5121-82-XD	JOB NO. GSI-5121	EDIS. NO. GSI-G375-5121	REV. SHT 62 XO	
E & I	AK	ACAD Dwg # GSI-5121-82-XD	ACAD Dwg # GSI-5121-82-XD	ACAD Dwg # GSI-5121-82-XD	JOB NO. GSI-5121	EDIS. NO. GSI-G375-5121	REV. SHT 62 XO	
PROJECT	ED	ED	ED	ED	ED	ED	ED	

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## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. (10) TO (20) & (13A)

## DESIGN DATA

- |                              |            |
|------------------------------|------------|
| 1. DESIGN PRESSURE           | : 5 BARG   |
| 2. OPERATING TEMPERATURE     | : 65° C    |
| 3. HYDROSTATIC TEST PRESSURE | : 7.5 BARG |
| 4. CORROSION ALLOWANCE       | : 1/8"     |
| 5. RADIOPHONY                | : 10%      |
| 6. INSULATION                | : NO       |
| 7. INSPECTION BY             | : GSI (QC) |
| 8. PWHT                      | : NO       |

ENGINEERING DEPARTMENT XXX SECTION

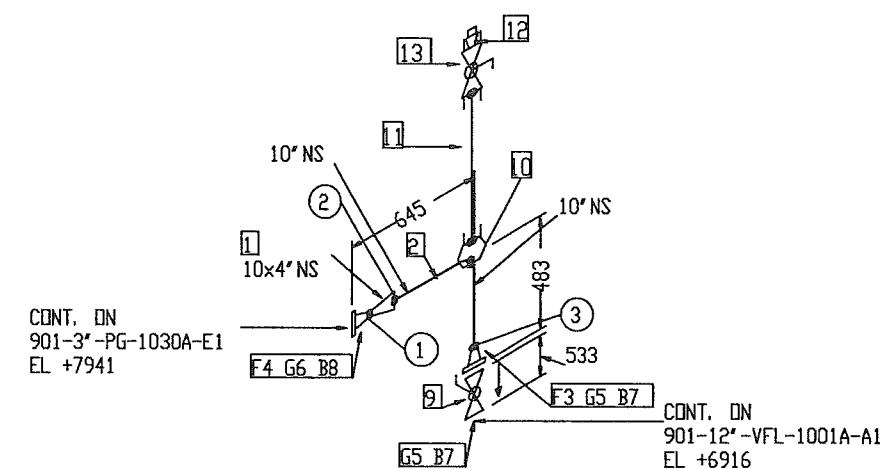
# BILL OF MATERIAL

## FABRICATION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
1	CONC RED BW STD. WT. A234 GR. WPB, NACE	10 x 4	A1	1
2	90 DEG LR ELBOW SMLS BW STD. WT. A234 GR. WPB, NACE	10	A1	1
3	FLANGE 150LB WN RF STD. WT. A105, NACE	10	A1	1
4	FLANGE 300LB WN RF SCH 40 A105, NACE	4	A1	1

## ERCTION MATERIALS

PT NO	COMPONENT DESCRIPTION	N. S. (INS)	PIPE SPEC.	QTY
5	SPIRAL WOUND GASKET 150LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	10	A1	2
6	SPIRAL WOUND GASKET 300LB RF 4.5mm THK SS316 WINDING/GRAFITE FILLER W/3mm THK CS CENTERING RING, ZINC COATED	4	A1	1
7	120 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	7/8	A1	24
8	120 MM LG STUD BOLTS C/W NUTS A193 GR. B7/A194 GR. 2H HOT-DIP GALV. COATED	3/4	A1	8
9	BALL VALVE 150LB RF, BV-22(FB) (CSC)	10	A1	1
10	ELBOWLET 3000LB A105, NACE	10 x 3/4	A1	1
11	75mm LG PIPE NIPPLE PBE SCH 160 A106 GR. B, NACE	3/4	A1	1
12	PLUG SCRD 3000LB A105, NACE	3/4	A1	1
13	BALL VALVE SWxNPT PER PIPING SPEC. A1	3/4	A1	1



"AS - BUILT"

## NOTES:

1. CONTRACTOR TO DECIDE ON FIELD WELDS AND EXTRA SPOOL LENGTH WHEREVER NECESSARY.
2. WELD NO. ① TO ③

## DESIGN DATA

1. DESIGN PRESSURE : 5 BARG
2. OPERATING TEMPERATURE : 65° C
3. HYDROSTATIC TEST PRESSURE : 7.5 BARG
4. CORROSION ALLOWANCE : 1/8"
5. RADIOGRAPHY : 10%
6. INSULATION : NO
7. INSPECTION BY : GSI (QC)
8. PWHT : NO

GSI DISCIPLINE SIGN		APPROVED BY	SD	U	Wasco	Gas Services International (S) Pte Ltd
PROCESS	MECHANICAL	PIPING	STRUCTURAL			
REVISION	VC	MSH	WCH			
E & I	X	AK	N.T.S			
PROJECT	ED	ACAD DBS : G375-5121-03_00	JOB ID : K575	GS1 DBS. NO : GSI-G375-5121	SHT 63	REV X0

**JURONG SHIPYARD PTE LTD**  
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SINGAPORE

Engineering Department XXX Section

DNV GL  
BV  
LR  
ABS  
RINA  
CCS  
Det Norske Veritas - DNV GL