

Reg Feb 27, 2014

y. fuel FEB 27, 2014

# Piping Service Class ET2D

Size in: Inches  
 Flange Rating: 300 RF  
 Pipe Material: CS Cr. Carbide O/L  
 Corrosion Allow: 1/16" (1.6 mm) Plus Overlay  
 Design Code: ASME B31.3  
 Max Hydrotest: See attached MDMT and Hydrotest Pressure Table.

## Pressure Temperature Chart:

Based on: PIPE

Temp Deg C	kPag Min	kPag Max	Temp Deg F	psig Min	psig Max	Rev.
-29	1960	2965	-20	285	430	7
38	1960	2965	100	285	430	7
50	1920	2965	122	280	430	7
93	1790	2965	200	260	430	7

Services: See Service Class Note 1363

7 -29 to 93 Tailings - High Erosion.

Rev	NPS From	to	L-1 Description	Pref	SPM Code	Notes
<b>Pipe, Welded &amp; Seamless</b>						
	3 - 24	-	PIPE, ERW, XS, BE, SA53 B.		LPWR1688	1019, 1285.
	28 - 30	-	PIPE, SAW, XS, BE, API 5L B.		LPWA1013	1289.
<b>Pipe Bends</b>						
7	4 - 24	-	PIPE BEND, 10, 5D, ERW, XS, BE, SA53 B, 6" TANGENTS.		LBB110942	
7	4 - 24	-	PIPE BEND, 15, 5D, ERW, XS, BE, SA53 B, 6" TANGENTS.		LBB110943	
7	4 - 24	-	PIPE BEND, 22.5, 5D, ERW, XS, BE, SA53 B, 6" TANGENTS.		LBB29978	
7	4 - 24	-	PIPE BEND, 30, 5D, ERW, XS, BE, SA53 B, 6" TANGENTS.		LBB310944	
7	4 - 24	-	PIPE BEND, 45, 5D, ERW, XS, BE, SA53 B, 6" TANGENTS.		LBB41441	
7	4 - 24	-	PIPE BEND, 45, 3D, ERW, XS, BE, SA53 B, 6" TANGENTS.	2	LBB42882	1037, 1377.
7	4 - 24	-	PIPE BEND, 5, 5D, ERW, XS, BE, SA53 B, 6" TANGENTS.		LBB59977	
7	4 - 24	-	PIPE BEND, 60, 5D, ERW, XS, BE, SA53 B, 6" TANGENTS.		LBB69979	
7	4 - 24	-	PIPE BEND, 75, 5D, ERW, XS, BE, SA53 B, 6" TANGENTS.		LBB710945	
7	4 - 24	-	PIPE BEND, 90, 5D, ERW, XS, BE, SA53 B, 6" TANGENTS.		LBB91439	
7	4 - 24	-	PIPE BEND, 90, 3D, ERW, XS, BE, SA53 B, 6" TANGENTS.	2	LBB92891	1037, 1377.
7	28 - 30	-	PIPE BEND, 15, 5D, SAW, XS, BE, API 5L B, 12" TANGENTS.		LBB110819	
7	28 - 30	-	PIPE BEND, 10, 5D, SAW, XS, BE, API 5L B, 12" TANGENTS.		LBB110984	
7	28 - 30	-	PIPE BEND, 22.5, 5D, SAW, XS, BE, API 5L B, 12" TANGENTS.		LBB29981	
7	28 - 30	-	PIPE BEND, 30, 5D, SAW, XS, BE, API 5L B, 12" TANGENTS.		LBB310782	
7	28 - 30	-	PIPE BEND, 45, 5D, SAW, XS, BE, API 5L B, 6" TANGENTS.	2	LBB41445	1037, 1377.
7	28 - 30	-	PIPE BEND, 45, 3D, SAW, XS, BE, API 5L B, 6" TANGENTS.	2	LBB42883	1037, 1377.
7	28 - 30	-	PIPE BEND, 45, 5D, SAW, XS, BE, API 5L B, 12" TANGENTS.		LBB49536	
7	28 - 30	-	PIPE BEND, 5, 5D, SAW, XS, BE, API 5L B, 12" TANGENTS.		LBB59980	
7	28 - 30	-	PIPE BEND, 60, 5D, SAW, XS, BE, API 5L B, 12" TANGENTS.		LBB69982	
7	28 - 30	-	PIPE BEND, 75, 5D, SAW, XS, BE, API 5L B, 12" TANGENTS.		LBB710547	
7	28 - 30	-	PIPE BEND, 90, 5D, SAW, XS, BE, API 5L B, 6" TANGENTS.	2	LBB91443	1037, 1377.
7	28 - 30	-	PIPE BEND, 90, 3D, SAW, XS, BE, API 5L B, 6" TANGENTS.	2	LBB92893	1037, 1377.
7	28 - 30	-	PIPE BEND, 90, 5D, SAW, XS, BE, API 5L B, 12" TANGENTS.		LBB99527	
<b>Fittings, Threaded</b>						
	3/4 - 3/4	-	PLUG, HEX BULL, THD, SA234 WPB-S9.		LFTP1084	1017.
	3 - 3	3/4 - 3/4	COUPLING, RED, CL 6000, THD, SA105.		LFTR1477	1017.
<b>Fittings, Welded (BW)</b>						
7	4 - 30	-	ELBOW, 45, LR, XS, BW, SA234 WPB.	2	LFW41169	1377.
7	4 - 30	-	ELBOW, 90, LR, XS, BW, SA234 WPB.	2	LFW91170	1377.
7	4 - 30	3 - 28	REDUCER, ECC, XS, BW, SA234 WPB.		LFWE1174	
7	4 - 30	3 - 28	REDUCER, CONC, XS, BW, SA234 WPB.		LFWR1173	
<b>O'let's</b>						
7	3 - 30	2 - 2	WELDOLET, XS x XXS, BW, SA105.		LQLW5022	1287.
<b>Branch Reinforcement Pads</b>						
7	18 - 24	3 - 24	RE-PAD, XS, CS, MAKE FROM LPWR1688 PIPE.		LRPS10706	
7	28 - 30	3 - 30	RE-PAD, XS, CS, MAKE FROM LPWA1013 PIPE.		LRPS10704	
<b>Flanges</b>						
	2 - 2	-	FLANGE, WN, CL 300, RF, XXS, SA105.		LLFW1544	1287.
	2 - 24	-	FLANGE, BLIND, CL 300, RF, SA105.		LLFB1307	
	3 - 3	-	FLANGE, MALE THD, CL 300, RF, CS, PER SD-L-610.		LLFM1452	1017.
	3 - 10	-	BLIND, SPEC, CL 300, RF, CS, PER SD-L-507.		LLFC1306	
7	3 - 20	-	FLANGE, SO, CL 300, RF, SA105.		LLFS1472	1006, 1038.

# Piping Service Class ET2D

## Flanges

7	3 - 20	-	FLANGE, WN, CL 300, RF, XS, SA105.	LLFW1303	
	3 - 24	-	END RING, LJ, CL 300, XS, CS, PER SD-L-609.	LLFE5318	
7	3 - 24	-	FLANGE, LJ, CL 300, SA105.	2 LLFL1473	1005, 1006, 1038.
	12 - 24	-	BLIND & SPCR SET, CL 300, RF, CS, PER SD-L-507.	LLFA1305	
	12 - 24	-	SPACER, CL 300, RF, CS, PER SD-L-507.	LLFD8447	1353.
7	24 - 24	-	FLANGE, SO, CL 300, RF, SA105.	LLFS1472	1006, 1038.
7	24 - 24	-	FLANGE, WN, CL 300, RF, XS, SA105.	3 LLFW1303	
	28 - 30	-	FLANGE, BLIND, CL 300, RF, SA105, B16.47/A.	LLFB1594	
7	28 - 30	-	END RING, LJ, CL 300, XS, CS, PER SD-L-609.	2 LLFE5318	
7	28 - 30	-	FLANGE, LJ, CL 300 SPECIAL, SA350 LF2, DRILLING PATTERN PER B16.47/A, ASME VIII DIV 1.	2 LLFL10899	1006, 1038.
7	28 - 30	-	FLANGE, SO, CL 300 SPECIAL, RF, SA350 LF2, DRILLING PATTERN PER B16.47/A, ASME VIII DIV 1.	LLFS10897	1006, 1038.
7	28 - 30	-	FLANGE, WN, CL 300, RF, XS, SA105, B16.47/A.	3 LLFW1481	
	30 - 30	-	BLIND & SPCR SET, CL 300, RF, CS, B16.47/A FLG, PER SD-L-507.	LLFA1480	
	30 - 30	-	SPACER, CL 300, RF, CS, B16.47/A FLG, PER SD-L-507.	LLFD8448	1353.

## Transition Rings

7	24 - 24	-	RING, TRANSITION, CL 300, RF, TYPE A, CS, CCO, SD-L-635.	LLTA10722	1317.
7	24 - 24	-	RING, TRANSITION, CL 300, RF, TYPE A, CS, WC, SD-L-635.	2 LLTA10723	1317.
7	24 - 24	-	RING, TRANSITION, CL 300, RF, TYPE C, CS, CCO, SD-L-635.	LLTC10730	1317.
7	24 - 24	-	RING, TRANSITION, CL 300, RF, TYPE C, CS, WC, SD-L-635.	2 LLTC10731	1317.
7	24 - 24	-	RING, TRANSITION, CL 300, RF, TYPE E, CS, CCO, SD-L-635.	LLTE10738	1317.
7	24 - 24	-	RING, TRANSITION, CL 300, RF, TYPE E, CS, WC, SD-L-635.	2 LLTE10739	1317.
7	26 - 32	24 - 30	RING, TRANSITION, CL 300, RF, B16.47/A, TYPE G, CS, CCO, SD-L-635.	LLTG10750	1317.
7	26 - 32	24 - 30	RING, TRANSITION, CL 300, RF, B16.47/A, TYPE G, CS, WC, SD-L-635.	2 LLTG10751	1317.
7	28 - 28	-	RING, TRANSITION, CL 300, RF, B16.47/A, TYPE C, CS, CCO, SD-L-635.	LLTC10734	1317.
7	28 - 28	-	RING, TRANSITION, CL 300, RF, B16.47/A, TYPE C, CS, WC, SD-L-635.	2 LLTC10735	1317.
7	28 - 30	-	RING, TRANSITION, CL 300, RF, B16.47/A, TYPE A, CS, CCO, SD-L-635.	LLTA10726	1317.
7	28 - 30	-	RING, TRANSITION, CL 300, RF, B16.47/A, TYPE A, CS, WC, SD-L-635.	2 LLTA10727	1317.
7	28 - 30	-	RING, TRANSITION, CL 300, RF, B16.47/A, TYPE E, CS, CCO, SD-L-635.	LLTE10742	1317.
7	28 - 30	-	RING, TRANSITION, CL 300, RF, B16.47/A, TYPE E, CS, WC, SD-L-635.	2 LLTE10743	1317.
7	28 - 34	24 - 30	RING, TRANSITION, CL 300, RF, B16.47/A, TYPE F, CS, CCO, SD-L-635.	LLTF10746	1317.
7	28 - 34	24 - 30	RING, TRANSITION, CL 300, RF, B16.47/A, TYPE F, CS, WC, SD-L-635.	2 LLTF10747	1317.

## Nipples & Swages

3/4 - 3/4	-	PIPE NIPPLE, CLOSE, XXS, TBE, SA106 B.	LNSL1590	1017.
3 - 3	-	PIPE NIPPLE, SCH 160, POE/TOE, SA106 B, 9" LG.	LNSP1977	1017.

## Mechanical Couplings & Rings

7	6 - 14	4 - 12	RING COLLAR, GGMC, TYPE D, STYLE 77, CS, SA105N, PER SD-L-612.	LMCR9820	
7	6 - 20	-	COUPLING, GGMC, STYLE 77.	LMCC9844	1278, 1286.
7	6 - 20	-	GASKET, GGMC, STYLE 77, GR L, C-SHAPE.	3 LMCG9904	
7	6 - 20	-	GASKET, GGMC, STYLE 77, GR T, C-SHAPE.	4 LMCG9910	
7	6 - 20	-	GASKET, GGMC, STYLE 77, GR L, E-SHAPE.	LMCG9916	
7	6 - 20	-	GASKET, GGMC, STYLE 77, GR T, E-SHAPE.	2 LMCG9922	
7	16 - 18	-	COUPLING, GGMC, STYLE 26, (DISCONTINUED).	LMCC10155	1286, 1390.
7	16 - 18	-	GASKET, GGMC, STYLE 26, GR L, C-SHAPE.	3 LMCG9903	1037.
7	16 - 18	-	GASKET, GGMC, STYLE 26, GR T, C-SHAPE.	4 LMCG9909	1037.
7	16 - 18	-	GASKET, GGMC, STYLE 26, GR L, E-SHAPE.	LMCG9915	1037.
7	16 - 18	-	GASKET, GGMC, STYLE 26, GR T, E-SHAPE.	2 LMCG9921	1037.
7	16 - 18	-	RING COLLAR, GGMC, TYPE D, STYLE 26, CS, SA105N, FOR WELD OVERLAY LINED PIPE, PER SD-L-612.	LMCR9837	1037.
7	16 - 18	-	RING COLLAR, GGMC, TYPE C, STYLE 26, CS, SA105N, FOR WELD OVERLAY LINED PIPE, PER SD-L-612.	2 LMCR9984	1037, 1391.
7	16 - 20	14 - 18	RING COLLAR, GGMC, TYPE D, STYLE 77, CS, SA105N, FOR WELD OVERLAY LINED PIPE, PER SD-L-612.	LMCR9838	
7	20 - 20	18 - 18	RING COLLAR, GGMC, TYPE D, STYLE 28, CS, SA105N, FOR WELD OVERLAY LINED PIPE, PER SD-L-612.	LMCR9835	
7	20 - 24	-	COUPLING, GGMC, STYLE 28.	LMCC9841	
7	20 - 24	-	COUPLING, GGMC, STYLE 26.	LMCC9843	1286.
7	20 - 24	-	GASKET, GGMC, STYLE 28, GR L, C-SHAPE.	3 LMCG9901	
7	20 - 24	-	GASKET, GGMC, STYLE 26, GR L, C-SHAPE.	3 LMCG9903	
7	20 - 24	-	GASKET, GGMC, STYLE 28, GR T, C-SHAPE.	4 LMCG9907	
7	20 - 24	-	GASKET, GGMC, STYLE 26, GR T, C-SHAPE.	4 LMCG9909	

# Piping Service Class ET2D

## Mechanical Couplings & Rings

7	20 - 24	-	GASKET, GGMC, STYLE 28, GR L, E-SHAPE.	LMCG9913
7	20 - 24	-	GASKET, GGMC, STYLE 26, GR L, E-SHAPE.	LMCG9915
7	20 - 24	-	GASKET, GGMC, STYLE 28, GR T, E-SHAPE.	2 LMCG9919
7	20 - 24	-	GASKET, GGMC, STYLE 26, GR T, E-SHAPE.	2 LMCG9921
7	20 - 24	-	RING COLLAR, GGMC, TYPE C, STYLE 28, CS, SA105N, FOR WELD OVERLAY LINED PIPE, PER SD-L-612.	2 LMCR10001 1391.
7	20 - 24	-	RING COLLAR, GGMC, TYPE D, STYLE 28, CS, SA105N, FOR WELD OVERLAY LINED PIPE, PER SD-L-612.	LMCR9835
7	20 - 24	-	RING COLLAR, GGMC, TYPE D, STYLE 26, CS, SA105N, FOR WELD OVERLAY LINED PIPE, PER SD-L-612.	LMCR9837
7	20 - 24	-	RING COLLAR, GGMC, TYPE C, STYLE 26, CS, SA105N, FOR WELD OVERLAY LINED PIPE, PER SD-L-612.	2 LMCR9984 1391.
7	30 - 30	-	COUPLING, GGMC, STYLE 28.	LMCC9841
7	30 - 30	-	GASKET, GGMC, STYLE 28, GR L, C-SHAPE.	3 LMCG9901
7	30 - 30	-	GASKET, GGMC, STYLE 28, GR T, C-SHAPE.	4 LMCG9907
7	30 - 30	-	GASKET, GGMC, STYLE 28, GR L, E-SHAPE.	LMCG9913
7	30 - 30	-	GASKET, GGMC, STYLE 28, GR T, E-SHAPE.	2 LMCG9919
7	30 - 30	-	RING COLLAR, GGMC, TYPE D, STYLE 28, CS, SA105N, FOR WELD OVERLAY LINED PIPE, PER SD-L-612.	LMCR9835
7	30 - 30	28 - 28	RING COLLAR, GGMC, TYPE D, STYLE 28, CS, SA105N, FOR WELD OVERLAY LINED PIPE, PER SD-L-612.	LMCR9835

## Gaskets & Bolts

	2 - 24	-	BOLT, STUD, A193 B7 W/2 A194 2H NUTS.	LGB31113
7	2 - 24	-	BOLT, STUD, A193 B7 W/1 A194 2H NUT.	LGB35611
	2 - 24	-	GASKET, SP WD, CL 300, 1/8", 304 SS/GRAPHITE.	LGBS1218
	3 - 24	-	BOLT, CAP SCREW, A193 B7.	LGB11114
7	28 - 30	-	BOLT, STUD, A193 B7 W/2 A194 2H NUTS.	LGB31113
7	28 - 30	-	BOLT, STUD, A193 B7 W/1 A194 2H NUT.	LGB35611
	28 - 30	-	GASKET, SP WD, CL 300, 1/8", 304 SS/GRAPHITE, B16.47/A FLG.	LGBS1593

## Valves, Gate

	2 - 8	-	VALVE, GATE, CL 300, RF, A216 WCB, TRIM 8, CAT. 2.	LVGR1361 1004.
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## Valves, Butterfly

	2 - 4	-	VALVE, BUTTERFLY, CL 300, TAPPED LUG, RF, A216 WCB, 316 SS SEAT, WO, CAT. 2.	LVFT1863 1008.
	6 - 24	-	VALVE, BUTTERFLY, CL 300, TAPPED LUG, RF, A216 WCB, 316 SS SEAT, GO, CAT. 2.	LVFT1864 1008.

## Valves, Ball

	3/4 - 1 1/2	-	VALVE, BALL, 720 CWP, 500 PSI @300 F, 200 PSI @350 F, THD, A105, RTFE SEATS, REGULAR PORT, HO, CAT. 1, FIRE SAFE.	LVBT3646
	3 - 3	-	VALVE, BALL, 720 CWP, 500 PSI @300 F, 200 PSI @350 F, THD, A105, RTFE SEATS, FULL PORT, HO, CAT. 1, FIRE SAFE.	LVBT3647 1017.
	3 - 4	-	VALVE, BALL, CL 300, RF, A216 WCB, PTFE SEATS, FULL PORT, WO, CAT. 2.	LVBR1774
	6 - 10	-	VALVE, BALL, CL 300, RF, A216 WCB, PTFE SEATS, FULL PORT, GO, CAT. 2.	LVBR1775

## Valves, Plug

	3 - 4	-	VALVE, PLUG, CL 300, RF, A216 WCB, CONC PLUG, SP, PTFE SLEEVE, WO, CAT. 2.	LVPR1788 1018.
	6 - 8	-	VALVE, PLUG, CL 300, RF, A216 WCB, CONC PLUG, SP, PTFE SLEEVE, GO, CAT. 2.	LVPR1789 1018.

## Valves, Knife Gate

7	6 - 6	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.750" NOM WALL, 17-4 PH GATE, STELLITE COATED, ENCLOSED GATE, 304 SS STEM, GO, CAT. 2.	LVKF11149 1401, 1402, 1406.
7	6 - 6	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.750" NOM WALL, 17-4 PH GATE, STELLITE COATED, EXPOSED GATE, 304 SS STEM, GO, CAT. 2.	LVKF11150 1401, 1403, 1406.
7	6 - 6	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.750" NOM WALL, 17-4 PH GATE, NEDOX COATED, ENCLOSED GATE, 304 SS STEM, GO, CAT. 2.	LVKF11151 1401, 1402, 1407.
7	6 - 6	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.750" NOM WALL, 17-4 PH GATE, NEDOX COATED, EXPOSED GATE, 304 SS STEM, GO, CAT. 2.	LVKF11152 1401, 1403, 1407.
7	8 - 8	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, STELLITE COATED, ENCLOSED GATE, 304 SS STEM, GO, CAT. 2.	LVKF11153 1401, 1402, 1406.

# Piping Service Class ET2D

## Valves, Knife Gate

7	8 - 8	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, STELLITE COATED, EXPOSED GATE, 304 SS STEM, GO, CAT. 2.	LVKF11154	1401, 1403, 1406.
7	8 - 8	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, NEDOX COATED, ENCLOSED GATE, 304 SS STEM, GO, CAT. 2.	LVKF11155	1401, 1402, 1407.
7	8 - 8	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, NEDOX COATED, EXPOSED GATE, 304 SS STEM, GO, CAT. 2.	LVKF11156	1401, 1403, 1407.
7	8 - 20	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, STELLITE COATED, ENCLOSED GATE, 304 SS STEM, PCO, CAT. 2.	LVKF11157	1401, 1402, 1406.
7	8 - 20	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, STELLITE COATED, EXPOSED GATE, 304 SS STEM, PCO, CAT. 2.	LVKF11158	1401, 1403, 1406.
7	8 - 20	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, NEDOX COATED, ENCLOSED GATE, 304 SS STEM, PCO, CAT. 2.	LVKF11159	1401, 1402, 1407.
7	8 - 20	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, NEDOX COATED, EXPOSED GATE, 304 SS STEM, PCO, CAT. 2.	LVKF11160	1401, 1403, 1407.
7	10 - 24	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, STELLITE COATED, ENCLOSED GATE, 304 SS STEM, HCO, CAT. 2.	LVKF11161	1401, 1402, 1406.
7	10 - 24	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, STELLITE COATED, EXPOSED GATE, 304 SS STEM, HCO, CAT. 2.	LVKF11162	1401, 1403, 1406.
7	10 - 24	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 CS FLG, 0.812" NOM WALL, 17-4 PH GATE, NEDOX COATED, ENCLOSED GATE, 304 SS STEM, HCO, CAT. 2.	LVKF11163	1401, 1402, 1407.
7	10 - 24	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, NEDOX COATED, EXPOSED GATE, 304 SS STEM, HCO, CAT. 2.	LVKF11164	1401, 1403, 1407.
7	12 - 12	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, A216 WCB, CL 300 RF FLG, 1Cr-1/5Mo GATE, CR CARBIDE SEAT, CS TRIM, FP, GORTEX PACKING, HCO, CAT. 2.	LVKF9787	1394, 1401.
7	28 - 30	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, B16.47/A CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, STELLITE COATED, ENCLOSED GATE, 304 SS STEM, HCO, CAT. 2.	LVKF11165	1401, 1402, 1406.
7	28 - 30	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, B16.47/A CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, STELLITE COATED, EXPOSED GATE, 304 SS STEM, HCO, CAT. 2.	LVKF11166	1401, 1403, 1406.
7	28 - 30	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, B16.47/A CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, NEDOX COATED, ENCLOSED GATE, 304 SS STEM, HCO, CAT. 2.	LVKF11167	1401, 1402, 1407.
7	28 - 30	-	VALVE, KNIFE GATE, CL 300, TAPPED WAFER RF, CS, B16.47/A CL 300 RF FLG, 0.812" NOM WALL, 17-4 PH GATE, NEDOX COATED, EXPOSED GATE, 304 SS STEM, HCO, CAT. 2.	LVKF11168	1401, 1403, 1407.

## Laterals, Slurry Service

7	24 - 24	-	45 LATERAL TEE, STR, 525 PSIG MAWP, FLANGED, CL 300 RF, XS + 5/16", PER SD-L-728.	LXLF10604	
7	24 - 24	-	45 LATERAL TEE, STR, 525 PSIG MAWP, GGMC X FLANGED, STYLE 28 X CL 300 RF, XS + 5/16", PER SD-L-728.	LXLK10601	
7	28 - 28	27 - 27	45 LATERAL TEE, STR, 525 PSIG MAWP, GGMC X FLANGED, STYLE 28 X CL 300 RF, XS + 5/16", B16.47/A, PER SD-L-728.	LXLK10607	
7	28 - 30	-	45 LATERAL TEE, STR, 525 PSIG MAWP, FLANGED, CL 300 RF, XS + 5/16", B16.47/A, PER SD-L-728.	LXLF10610	
7	30 - 30	-	45 LATERAL TEE, STR, 525 PSIG MAWP, GGMC X FLANGED, STYLE 28 X CL 300 RF, XS + 5/16", B16.47/A, PER SD-L-728.	LXLK10607	

## Wyes, Slurry Service

7	24 - 24	-	45 DEGREE WYE, STR, 525 PSIG MAWP, FLANGED, CL 300 RF, XS + 5/16", PER SD-L-729.	LXYF10616	
7	24 - 24	-	90 DEGREE WYE, STR, 525 PSIG MAWP, FLANGED, CL 300 RF, XS + 5/16", PER SD-L-730.	LXYF10628	
7	24 - 24	-	45 DEGREE WYE, STR, 525 PSIG MAWP, GGMC X FLANGED, STYLE 28 X CL 300 RF, XS + 5/16", PER SD-L-729.	LXYK10613	
7	24 - 24	-	90 DEGREE WYE, STR, 525 PSIG MAWP, GGMC X FLANGED, STYLE 28 X CL 300 RF, XS + 5/16", PER SD-L-730.	LXYK10625	
7	28 - 28	27 - 27	45 DEGREE WYE, STR, 525 PSIG MAWP, GGMC X FLANGED, STYLE 28 X CL 300 RF, XS + 5/16", B16.47/A, PER SD-L-729.	LXYK10619	

# Piping Service Class ET2D

## Wyes, Slurry Service

7	28 - 28	27 - 27	90 DEGREE WYE, STR, 525 PSIG MAWP, GGMC X FLANGED, STYLE 28 X CL 300 RF, XS + 5/16", B16.47/A, PER SD-L-730.	LXYK10631
7	28 - 30	-	45 DEGREE WYE, STR, 525 PSIG MAWP, FLANGED, CL 300 RF, XS + 5/16", B16.47/A, PER SD-L-729.	LXYF10622
7	28 - 30	-	90 DEGREE WYE, STR, 525 PSIG MAWP, FLANGED, CL 300 RF, XS + 5/16", B16.47/A, PER SD-L-730.	LXYF10634
7	30 - 30	-	45 DEGREE WYE, STR, 525 PSIG MAWP, GGMC X FLANGED, STYLE 28 X CL 300 RF, XS + 5/16", B16.47/A, PER SD-L-729.	LXYK10619
7	30 - 30	-	90 DEGREE WYE, STR, 525 PSIG MAWP, GGMC X FLANGED, STYLE 28 X CL 300 RF, XS + 5/16", B16.47/A, PER SD-L-730.	LXYK10631

## Expansion Barrels

7	28 - 28	-	EXPANSION BARREL, FLANGED, CL 300, 550 PSIG MAWP, 0.750" NOM WALL, B16.47/A, PER SD-L-714.	LXBF10086
7	28 - 28	27 - 27	EXPANSION BARREL, GGMC, STYLE 28, 525 PSIG MAWP, 0.750" NOM WALL, PER SD-L-715.	LXBG10087
7	30 - 30	-	EXPANSION BARREL, FLANGED, CL 300, 550 PSIG MAWP, 0.750" NOM WALL, B16.47/A, PER SD-L-718.	LXBF10090
7	30 - 30	-	EXPANSION BARREL, GGMC, STYLE 28, 525 PSIG MAWP, 0.750" NOM WALL, PER SD-L-719.	LXBG10091

## Chain Operators & Chain

7	2 - 24	-	CHAIN OPERATOR, 0, FOR 2" TO 4" OD HW, (BABBITT OR EQUAL).	LXCC9285
7	2 - 24	-	CHAIN OPERATOR, 1, FOR 4-1/2" TO 5-3/4" OD HW, (BABBITT OR EQUAL).	LXCC9286
7	2 - 24	-	CHAIN OPERATOR, 1-1/2, FOR 6" TO 7-1/2" OD HW, (BABBITT OR EQUAL).	LXCC9287
7	2 - 24	-	CHAIN OPERATOR, 2, FOR 7-3/4" TO 9" OD HW, (BABBITT OR EQUAL).	LXCC9288
7	2 - 24	-	CHAIN OPERATOR, 2-1/2, FOR 9-1/4" TO 12-1/2" OD HW, HAMMER-BLOW, (BABBITT OR EQUAL).	LXCC9289
7	2 - 24	-	CHAIN OPERATOR, 3, FOR 12-3/4" TO 15-1/2" OD HW, HAMMER-BLOW, (BABBITT OR EQUAL).	LXCC9290
7	2 - 24	-	CHAIN OPERATOR, 3-1/2, FOR 15-3/4" TO 19" OD HW, HAMMER-BLOW, (BABBITT OR EQUAL).	LXCC9291
7	2 - 24	-	CHAIN OPERATOR, 4, FOR 19-1/4" TO 22" OD HW, HAMMER-BLOW, (BABBITT OR EQUAL).	LXCC9292
7	2 - 24	-	CHAIN OPERATOR, 4-1/2, FOR 22-1/4" TO 26" OD HW, HAMMER-BLOW, (BABBITT OR EQUAL).	LXCC9293
7	2 - 24	-	CHAIN OPERATOR, 5, FOR 26-1/4" TO 30" OD HW, HAMMER-BLOW, (BABBITT OR EQUAL).	LXCC9294
7	2 - 24	-	CHAIN, 2, FOR OPER NO. 0, GALV CS, (BABBITT OR EQUAL).	LXCD9138
7	2 - 24	-	CHAIN, 1/0, FOR OPER NO. 1, 1-1/2, 2, GALV CS, (BABBITT OR EQUAL).	LXCD9139
7	2 - 24	-	CHAIN, 4/0, FOR OPER NO. 2-1/2, 3, 3-1/2, GALV CS, (BABBITT OR EQUAL).	LXCD9140
7	2 - 24	-	CHAIN, 5/0, FOR OPER NO. 4, 4-1/2, 5, GALV CS, (BABBITT OR EQUAL).	LXCD9141

## Service Class Notes:

- 141 Valves larger than NPS 24 shall be selected on an individual basis.
- 1016 Pipe and pipe fittings to be weld overlaid per Specification L-35. Overlay material shall be noted on drawings.
- 1036 Minimum required wall thickness is XS based on service conditions. Minimum available corrosion allowance excluding overlay is 3/16".
- 1132 Check valves are not allowed in this service class.
- 7 1304 NPS 28 is a valid pipe size for this service class.
- 1363 The "SERVICES:" temperature listed is the allowable operating temperature range for the Service, metallurgy, and corrosion allowance.

## Component Notes:

- 1004 Gate valves may be used in line vents, drains and flush water connections.
- 1005 Lap joint flanges may be fabricated from slip-on flanges per drawing SD-L-609.
- 1006 Flanges may be used subject to the limitations given in Specification L-1 Section 5.
- 1008 Valves to be installed with cap screws.
- 1017 For instrumentation connections only.
- 1018 May be used in flush and drain services.
- 1019 For weld overlay spools minimum size is NPS 3 (straight runs only) and NPS 4 (for spools with bends and fittings).
- 7 1037 For replacement only, not for new installations.
- 1038 Weld neck flanges shall be considered at high stress joints.
- 1278 Specify Style 77 couplings one size larger than nominal pipe size.
- 1285 API 5L B XS ERW (LPWR4465), and API 5L X42 XS ERW (LPWR5116), are acceptable substitutes for SA53 B XS ERW in this class.
- 1286 GGMC's may not meet the pressure-temperature limits of this class. See drawing SD-L-612 for maximum allowable working pressure.
- 1287 NPS2 may be used for vent and flush connections only. See Preferred Arrangement 463.
- 1289 API 5L X42 XS, SAW (LPWA5108), is an acceptable substitute for API 5L B XS SAW in this class.
- 1317 Refer to drawing SD-L-635 for transition ring selection criteria.

## Piping Service Class ET2D

- 1353 To be used only when indicated on the P&ID.
- 7 1377 See L-67 prior to use.
- 7 1390 Coupling discontinued, not for new construction. Only gasket and ring collars are available.
- 7 1391 Type C Ring Collars shall be used for replacement in kind where it is not possible to use Type D or Type B Ring Collars.
- 7 1394 For use as drain valves per L-67.
- 7 1401 Tapped wafer knife gate valves to be installed with stud bolts with one nut (LGB35611).
- 7 1402 To be used where freezing of the contents of the valve bonnet is not a concern.
- 7 1403 Can be used subject to Operations input.
- 7 1406 For use in systems with entrained solids and valve wear resistance is desired.
- 7 1407 For use in services where bitumen or similar sticky products are present. Also for use where less valve operation friction is desired.

### MDMT and Hydrotest Pressure:

The minimum temperature listed in the "Pressure Temperature Chart" is based on the thickest pipe wall.

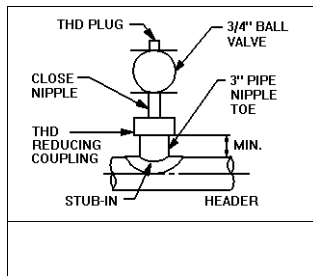
The hydrotest pressure listed is based on new and cold.

The MDMT and Hydrotest Pressure for all wall thicknesses is listed below.

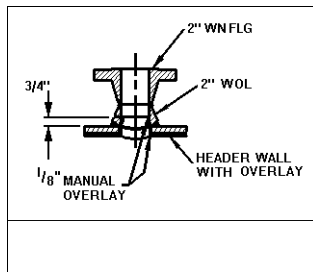
NPS	Wall Thk	MDMT Deg C	Hydrotest		Limited By	Rev.
			psig	kPag		
0.75 - 30		-29	650	4448	Pipe	7



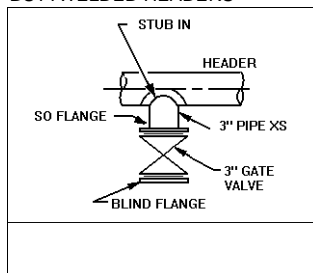
## Preferred Arrangements ET2D



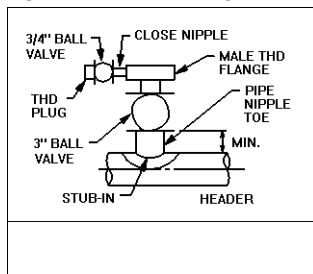
OPERATING VENTS, BUTTWELDED HEADERS 460



OPERATING VENTS AND FLUSH CONNECTIONS (ALTERNATE), BUTTWELDED HEADERS 463



OPERATING DRAINS, BUTTWELDED HEADERS 640



INSTRUMENT AND PRESSURE CONNECTIONS, BUTTWELDED HEADERS 840

# Branch Table ET2D

## Notes:

- 1) For fabricated branch connections see Appendix C, page 1.

Header	0.5	0.75	1	1.5	2	3	4	6	8	10	12	14	16	18	20	24	28	30	36
2	*	*	*	*	-														
3	*	*	*	*	WOL	F05													
4	*	*	*	*	WOL	F05	F06												
6	*	*	*	*	WOL	F05	F06	F06											
8	*	*	*	*	WOL	F05	F06	F06	F06										
10	*	*	*	*	WOL	F05	F06	F06	F06	F06									
12	*	*	*	*	WOL	F05	F06	F06	F06	F06	F06								
14	*	*	*	*	WOL	F05	F06	F06	F06	F06	F06	F06							
16	*	*	*	*	WOL	F05	F06	F06	F06	F06	F06	F06	F06						
18	*	*	*	*	WOL	F05	F06	F06	F06	RB	RB	RB	RB	RB					
20	*	*	*	*	WOL	RB	RB	RB	RB	RB	RB	RB	RB	RB	RB				
24	*	*	*	*	WOL	RB	RB	RB	RB	RB	RB	RB	RB	RB	RB	RB			
28	*	*	*	*	WOL	RB	RB	RB	RB	RB	RB	RB	RB	RB	RB	RB	RB		
30	*	*	*	*	WOL	RB	RB	RB	RB	RB	RB	RB	RB	RB	RB	RB	RB	RB	
36																			*
	0.5	0.75	1	1.5	2	3	4	6	8	10	12	14	16	18	20	24	28	30	36
	May require gusseting see SD-L-7				Branch														

## Legend:

- : No Branch allowed.
- \*: Not a valid pipe size for this Service Class.
- F05: Fillet weld in 1/16" increments = 5/16" fillet weld.
- F06: Fillet weld in 1/16" increments = 3/8" fillet weld.
- RB: Reinforced stub-in.
- WOL: Weldolet.



# Piping Service Class ET2D

## Revision Memo:

Rev.	Note	General Revision Note
6	1). L-1 Rev 19.	
3	2). UE-1 Delivered.	
7	3). Issued for Construction, Consolidated UE-1, general update.	

### Revisions to Services:

Rev.	°C Min	Max	Revision Notes
7	-29	93	Added. ~ Tailings - High Erosion.
6	-29	93	Deleted. ~ Slurry - Plant 78.
6	-29	93	Deleted. ~ Tailings - Plant 23 to SWSS.

### Revisions to the Pressure Temperature Chart:

°C Min	Revision Notes
-29	Added. - PIPE, -29, 1960, 2965, -20, 285, 430
-29	Deleted. - PIPE, -29, ATM, 2965, -20, ATM, 430
38	Added. - PIPE, 38, 1960, 2965, 100, 285, 430
38	Deleted. - PIPE, 38, ATM, 2965, 100, ATM, 430
50	Added. - PIPE, 50, 1920, 2965, 122, 280, 430
93	Added. - PIPE, 93, 1790, 2965, 200, 260, 430
93	Deleted. - PIPE, 93, ATM, 2965, 200, ATM, 430

### Revisions to Piping Components:

NPS	From to	Pref	SPM Code	Notes	Revision Notes
<u>Revisions to Pipe, Welded &amp; Seamless</u>					
27	- 27	-	LPWA4471		Deleted.
<u>Revisions to Pipe Bends</u>					
4	- 24	-	LBB110942		Added.
4	- 24	-	LBB110943		Added.
4	- 24	-	LBB29978		Added.
4	- 24	-	LBB310944		Added.
4	- 24	-	LBB41441	1283, 1026, 1307.	Deleted.
4	- 24	-	LBB41441		Added.
4	- 24	-	LBB42882	1283, 1026, 1308.	Deleted.
4	- 24	2	LBB42882	1037, 1377.	Added.
4	- 24	-	LBB59977		Added.
4	- 24	-	LBB69979		Added.
4	- 24	-	LBB710945		Added.
4	- 24	-	LBB91439	1283, 1026, 1307.	Deleted.
4	- 24	-	LBB91439		Added.
4	- 24	2	LBB92891	1037, 1377.	Added.
4	- 24	-	LBB92891	1283, 1026, 1308.	Deleted.
27	- 27	-	LBB46608	1283, 1026, 1308.	Deleted.
27	- 27	-	LBB46610	1283, 1026, 1307.	Deleted.
27	- 27	-	LBB96609	1283, 1026, 1308.	Deleted.
27	- 27	-	LBB96611	1283, 1026, 1307.	Deleted.
28	- 30	-	LBB110819		Added.
28	- 30	-	LBB110984		Added.
28	- 30	-	LBB29981		Added.
28	- 30	-	LBB310782		Added.
28	- 30	-	LBB41445	1283, 1026, 1307.	Deleted.
28	- 30	2	LBB41445	1037, 1377.	Added.
28	- 30	2	LBB42883	1037, 1377.	Added.
28	- 30	-	LBB42883	1283, 1026, 1308.	Deleted.
28	- 30	-	LBB49536		Added.
28	- 30	-	LBB59980		Added.
28	- 30	-	LBB69982		Added.
28	- 30	-	LBB710547		Added.
28	- 30	2	LBB91443	1037, 1377.	Added.
28	- 30	-	LBB91443	1283, 1026, 1310.	Deleted.
28	- 30	-	LBB92893	1283, 1026, 1309.	Deleted.

# Piping Service Class ET2D

## Revisions to Pipe Bends

28 - 30	-	2	LBB92893	1037, 1377.	Added.
28 - 30	-		LBB99527		Added.

## Revisions to Fittings, Welded (BW)

4 - 24	-	2	LFW41169		Deleted.
4 - 24	-	2	LFW91170		Deleted.
4 - 24	3 - 20		LFWE1174		Deleted.
4 - 24	3 - 20		LFWR1173		Deleted.
4 - 30	-	2	LFW41169	1377.	Added.
4 - 30	-	2	LFW91170	1377.	Added.
4 - 30	3 - 28		LFWE1174		Added.
4 - 30	3 - 28		LFWR1173		Added.
28 - 30	-	2	LFW41169		Deleted.
28 - 30	-	2	LFW91170		Deleted.
30 - 30	20 - 28		LFWE1174		Deleted.
30 - 30	20 - 28		LFWR1173		Deleted.

## Revisions to O'let's

3 - 24	2 - 2		LQLW5022	1287.	Deleted.
3 - 30	2 - 2		LQLW5022	1287.	Added.
28 - 30	2 - 2		LQLW5022	1287.	Deleted.

## Revisions to Branch Reinforcement Pads

18 - 24	3 - 24		LRPS10706		Added.
28 - 30	3 - 30		LRPS10704		Added.

## Revisions to Flanges

3 - 20	-		LLFS1472	1006, 1038.	Added.
3 - 20	-		LLFW1303		Added.
3 - 24	-	2	LLFL1473	1005, 1006.	Deleted.
3 - 24	-	2	LLFL1473	1005, 1006, 1038.	Added.
3 - 24	-		LLFS1472	1038.	Deleted.
3 - 24	-	2	LLFW1303		Deleted.
24 - 24	-		LLFS1472	1006, 1038.	Added.
24 - 24	-	3	LLFW1303		Added.
27 - 27	-		LLFE5112		Deleted.
27 - 27	-	2	LLFL5111	1006, 1286.	Deleted.
27 - 27	-		LLFS5110	1006, 1286.	Deleted.
28 - 30	-	2	LLFE5318		Added.
28 - 30	-	2	LLFL10899	1006, 1038.	Added.
28 - 30	-		LLFS10897	1006, 1038.	Added.
28 - 30	-		LLFS5609	1006.	Deleted.
28 - 30	-	3	LLFW1481		Added.
28 - 30	-	2	LLFW1481		Deleted.

## Revisions to Transition Rings

24 - 24	-		LLTA10722	1317.	Added.
24 - 24	-	2	LLTA10723	1317.	Added.
24 - 24	-		LLTC10730	1317.	Added.
24 - 24	-	2	LLTC10731	1317.	Added.
24 - 24	-		LLTE10738	1317.	Added.
24 - 24	-	2	LLTE10739	1317.	Added.
26 - 32	24 - 30		LLTG10750	1317.	Added.
26 - 32	24 - 30	2	LLTG10751	1317.	Added.
28 - 28	-		LLTC10734	1317.	Added.
28 - 28	-	2	LLTC10735	1317.	Added.
28 - 30	-		LLTA10726	1317.	Added.
28 - 30	-	2	LLTA10727	1317.	Added.
28 - 30	-		LLTE10742	1317.	Added.
28 - 30	-	2	LLTE10743	1317.	Added.
28 - 34	24 - 30		LLTF10746	1317.	Added.
28 - 34	24 - 30	2	LLTF10747	1317.	Added.

## Revisions to Mechanical Couplings & Rings

6 - 14	4 - 12		LMCR9820		Added.
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# Piping Service Class ET2D

## Revisions to Mechanical Couplings & Rings

6 - 16	-	LMCC5589	1278, 1286.	Deleted.
6 - 16	-	LMCG5600		Deleted.
6 - 16	-	2 LMCG5601	1323.	Deleted.
6 - 16	4 - 14	LMCR4911		Deleted.
6 - 20	-	LMCC9844	1278, 1286.	Added.
6 - 20	-	3 LMCG9904		Added.
6 - 20	-	4 LMCG9910		Added.
6 - 20	-	LMCG9916		Added.
6 - 20	-	2 LMCG9922		Added.
16 - 18	-	LMCC10155	1286, 1390.	Added.
16 - 18	-	3 LMCG9903	1037.	Added.
16 - 18	-	4 LMCG9909	1037.	Added.
16 - 18	-	LMCG9915	1037.	Added.
16 - 18	-	2 LMCG9921	1037.	Added.
16 - 18	-	LMCR9837	1037.	Added.
16 - 18	-	2 LMCR9984	1037, 1391.	Added.
16 - 20	14 - 18	LMCR9838		Added.
16 - 24	-	LMCC5586	1286.	Deleted.
16 - 24	-	LMCG5594		Deleted.
16 - 24	-	2 LMCG5595	1323.	Deleted.
16 - 24	-	LMCR1462		Deleted.
20 - 20	18 - 18	LMCR9835		Added.
20 - 24	-	LMCC5587	1286, 1322.	Deleted.
20 - 24	-	LMCC9841		Added.
20 - 24	-	LMCC9843	1286.	Added.
20 - 24	-	LMCG5596		Deleted.
20 - 24	-	2 LMCG5597	1323.	Deleted.
20 - 24	-	3 LMCG9901		Added.
20 - 24	-	3 LMCG9903		Added.
20 - 24	-	4 LMCG9907		Added.
20 - 24	-	4 LMCG9909		Added.
20 - 24	-	LMCG9913		Added.
20 - 24	-	LMCG9915		Added.
20 - 24	-	2 LMCG9919		Added.
20 - 24	-	2 LMCG9921		Added.
20 - 24	-	2 LMCR10001	1391.	Added.
20 - 24	-	LMCR1463		Deleted.
20 - 24	-	LMCR1464		Deleted.
20 - 24	-	LMCR9835		Added.
20 - 24	-	LMCR9837		Added.
20 - 24	-	2 LMCR9984	1391.	Added.
24 - 24	-	LMCT5459	1317.	Deleted.
24 - 24	-	LMCT5465	1317.	Deleted.
27 - 27	-	LMCC5587	1286.	Deleted.
27 - 27	-	LMCG5596		Deleted.
27 - 27	-	2 LMCG5597	1323.	Deleted.
27 - 30	-	LMCR1464		Deleted.
28 - 28	-	LMCR4946	1280.	Deleted.
28 - 28	-	LMCT5459	1317.	Deleted.
30 - 30	-	LMCC5587	1286.	Deleted.
30 - 30	-	LMCC9841		Added.
30 - 30	-	LMCG5602		Deleted.
30 - 30	-	2 LMCG5603	1323.	Deleted.
30 - 30	-	3 LMCG9901		Added.
30 - 30	-	4 LMCG9907		Added.
30 - 30	-	LMCG9913		Added.
30 - 30	-	2 LMCG9919		Added.
30 - 30	-	LMCR9835		Added.
30 - 30	28 - 28	LMCR9835		Added.

## Revisions to Gaskets & Bolts

2 - 24	-	LGB35611		Added.
3 - 24	-	LGB21426	1007.	Deleted.

# Piping Service Class ET2D

## Revisions to Gaskets & Bolts

3 - 24	-	LGBF1311	1007.	Deleted.
27 - 27	-	LGB31113		Deleted.
27 - 27	-	LGBS5113		Deleted.
28 - 30	-	LGB31113		Added.
28 - 30	-	LGB35611		Added.
28 - 30	-	LGB38391	1354.	Deleted.

## Revisions to Valves, Knife Gate

6 - 6	-	LVKF11149	1401, 1402, 1406.	Added.
6 - 6	-	LVKF11150	1401, 1403, 1406.	Added.
6 - 6	-	LVKF11151	1401, 1402, 1407.	Added.
6 - 6	-	LVKF11152	1401, 1403, 1407.	Added.
8 - 8	-	LVKF11153	1401, 1402, 1406.	Added.
8 - 8	-	LVKF11154	1401, 1403, 1406.	Added.
8 - 8	-	LVKF11155	1401, 1402, 1407.	Added.
8 - 8	-	LVKF11156	1401, 1403, 1407.	Added.
8 - 20	-	LVKF11157	1401, 1402, 1406.	Added.
8 - 20	-	LVKF11158	1401, 1403, 1406.	Added.
8 - 20	-	LVKF11159	1401, 1402, 1407.	Added.
8 - 20	-	LVKF11160	1401, 1403, 1407.	Added.
10 - 24	-	LVKF11161	1401, 1402, 1406.	Added.
10 - 24	-	LVKF11162	1401, 1403, 1406.	Added.
10 - 24	-	LVKF11163	1401, 1402, 1407.	Added.
10 - 24	-	LVKF11164	1401, 1403, 1407.	Added.
12 - 12	-	LVKF9787	1394, 1401.	Added.
28 - 30	-	LVKF11165	1401, 1402, 1406.	Added.
28 - 30	-	LVKF11166	1401, 1403, 1406.	Added.
28 - 30	-	LVKF11167	1401, 1402, 1407.	Added.
28 - 30	-	LVKF11168	1401, 1403, 1407.	Added.

## Revisions to Laterals, Slurry Service

24 - 24	-	LXLF10604		Added.
24 - 24	-	LXLK10601		Added.
28 - 28	27 - 27	LXLK10607		Added.
28 - 30	-	LXLF10610		Added.
30 - 30	-	LXLK10607		Added.

## Revisions to Wyes, Slurry Service

24 - 24	-	LXYF10616		Added.
24 - 24	-	LXYF10628		Added.
24 - 24	-	LXYK10613		Added.
24 - 24	-	LXYK10625		Added.
28 - 28	27 - 27	LXYK10619		Added.
28 - 28	27 - 27	LXYK10631		Added.
28 - 30	-	LXYF10622		Added.
28 - 30	-	LXYF10634		Added.
30 - 30	-	LXYK10619		Added.
30 - 30	-	LXYK10631		Added.

## Revisions to Expansion Barrels

28 - 28	-	LXBF10086		Added.
28 - 28	27 - 27	LXBG10087		Added.
30 - 30	-	LXBF10090		Added.
30 - 30	-	LXBG10091		Added.

## Revisions to Chain Operators & Chain

2 - 24	-	LXCC9285		Added.
2 - 24	-	LXCC9285	1151.	Deleted.
2 - 24	-	LXCC9286		Added.
2 - 24	-	LXCC9286	1151.	Deleted.
2 - 24	-	LXCC9287	1151.	Deleted.
2 - 24	-	LXCC9287		Added.
2 - 24	-	LXCC9288		Added.
2 - 24	-	LXCC9288	1151.	Deleted.
2 - 24	-	LXCC9289	1151.	Deleted.

# Piping Service Class ET2D

## Revisions to Chain Operators & Chain

2 - 24	-	LXCC9289		Added.
2 - 24	-	LXCC9290		Added.
2 - 24	-	LXCC9290	1151.	Deleted.
2 - 24	-	LXCC9291		Added.
2 - 24	-	LXCC9291	1151.	Deleted.
2 - 24	-	LXCC9292		Added.
2 - 24	-	LXCC9292	1151.	Deleted.
2 - 24	-	LXCC9293		Added.
2 - 24	-	LXCC9293	1151.	Deleted.
2 - 24	-	LXCC9294		Added.
2 - 24	-	LXCC9294	1151.	Deleted.
2 - 24	-	LXCD9138	1151.	Deleted.
2 - 24	-	LXCD9138		Added.
2 - 24	-	LXCD9139		Added.
2 - 24	-	LXCD9139	1151.	Deleted.
2 - 24	-	LXCD9140	1151.	Deleted.
2 - 24	-	LXCD9140		Added.
2 - 24	-	LXCD9141		Added.
2 - 24	-	LXCD9141	1151.	Deleted.

## Revisions to Service Class Notes:

### Note Revision Notes

1281 Deleted.  
1304 Added.  
1362 Deleted.  
1364 Deleted.

## Revisions to Component Notes:

### Note Revision Notes

1007 Deleted.  
1026 Deleted.  
1037 Added.  
1151 Deleted.  
1280 Deleted.  
1283 Deleted.  
1307 Deleted.  
1308 Deleted.  
1309 Deleted.  
1310 Deleted.  
1322 Deleted.  
1323 Deleted.  
1354 Deleted.  
1377 Added.  
1390 Added.  
1391 Added.  
1394 Added.  
1401 Added.  
1402 Added.  
1403 Added.  
1406 Added.  
1407 Added.

## Revisions to MDMT and Hydrotest Pressure:

Rev. Notes	NPS	Wall Thk	MDMT Deg C	Hydrotest		Limited By
				psig	kPag	
Added.	3/4	- 30	-29	650	4448	Pipe
Deleted.	3/4	- 30	-29	645		