PLAINTIFF'S EXHIBIT

DOW-2452

CAUSTIC - 34 PERCENT AND UNDER
210 PSIG @ 300F
275 PSIG @ 100F

ITEM	SIZE	DESCRIPTION
PIPE		
P-28B	1/4 THRU 1 1/2	ASTM A-106 GR B, EX STRONG SEAMLESS STEEL PIPE.
P-27B	2 THRU 12	ASTM A-106 GR B, STD WEIGHT SEAMLESS STEEL PIPE.
FITTINGS		
E=90 DEG ELL, L=45 DEG ELL, T=TEE, X=CROSS, R=REDUCER C=COUPLING, S=STUB END, U=UNION, PC=PIPE CAP		
ELT-5	1/4 THRU 1 1/2	3000-LB THREADED FORGED STEEL FITTINGS, ASTM A-105, ANSI B16.11.
PC-12	1/4 THRU 1 1/2	THREADED SOLID STEEL HEX BULL PLUG, ASTM A-696 GR B OR C BARSTOCK, NORRIS.
U-2	1/4 THRU 1 1/2	3000-LB THREADED FORGED STEEL UNION, ASTM A-105, AAR DIMENSIONS, STEEL TO STEEL SEAT, PETRO AAR OR VOGT 1931.
R-22	1/4 THRU 1 1/2	EX STRONG STEEL SWAGED NIPPLE, ASTM A-106 OR A-53 GR B, OR ASTM A-696 GR B OR C BARSTOCK, THREADED, BEVELED, PLAIN, OR ANY COMBINATION OF ENDS.
PC-26	1/4 THRU 1 1/2	3000-LB THREADED FORGED STEEL CAP, ASTM A-105, ANSI B16.11.
C-3	1/4 THRU 1 1/2	3000-LB THREADED FORGED STEEL COUPLING, ANSI B16.11, OR 3000-LB THREDOLET, ASTM A-105, FOR WELDING IN.
ELTR-15B	2 THRU 12	STD WEIGHT SEAMLESS STEEL WELDING FITTINGS, ASTM A-234 GR WPB, ANSI B16.9.
NOTE		WELDING ELBOWS SHALL BE LONG RADIUS.
PC-51B	2 THRU 12	STD WEIGHT SEAMLESS STEEL WELDING CAP, ASTM A-234 GR WPB, ANSI B16.9.
N-1		ALL 1/2 NPT NIPPLES USED FOR INSTRUMENT, AND

ST0408369

ST0408369

ITEM	SIZE	DESCRIPTION
		TEST CONNECTIONS SHALL BE HEAVY HEX BAR STOCK WITH A MINIMUM WALL THICKNESS OF 0.151 INCH, (0.400 I.D.).
FLANGES		
F-1-RF	2 THRU 12	150-LB RAISED FACE SLIP-ON FLANGE, ASTM A-105, ANSI B16.5.
F-3-RF	1/2 THRU 12	150-LB RAISED FACE BLIND FLANGE, ASTM A-105, ANSI B16.5.
F-24-RF	2 THRU 12	150-LB RAISED FACE WELDING NECK FLANGE, ASTM A-105, ANSI B16.5, BORE TO MATCH WELDING FITTINGS.
N-60		FLAT FACE FLANGES SHALL BE USED WHEN BOLTING TO FLAT FACE CI FLANGES ON VALVES AND EQUIPMENT.
N-66A		REDUCING FLANGES SHALL BE SLIP-ON TYPE.
BRANCH CONNECTIONS		
BC-2S		FOR THREADED PIPING, USE STRAIGHT SIZE OR REDUCING TEE. WHEN BRANCH IS SMALLER THAN HEADER, A NIPPLE AND REDUCING COUPLING OR SWAGED NIPPLE MAY BE USED.
BC-70W		FOR WELDED PIPING, USE TEE WHEN BRANCH IS SAME SIZE AS HEADER, USE SADDLE WELD WITHOUT REINFORCEMENT, EXCEPT FOR BRANCH LINES 1 THRU 1 1/2 INCH, USE WELDOLET OR REINFORCING PAD. FOR THREADED BRANCH CONNECTION, USE 3000-LB FULL COUPLING, THREDOLET, OR NIPOLET WELDED TO HEADER.
GASKETS		
G-9A	2 THRU 12	STD FLAT RING GASKET, 1/8 INCH THICK ASBESTOS WITH SILICON RELEASING AGENT, JM-60, GARLOCK 7021 OR NICOLET 225 OR 245.
JOINT COMPOUND		
JC-15		TEFLON TAPE 1/2 INCH BY 3 MIL THICKNESS.
FLANGE BOLTS		
B-A193B7Q	2 THRU 12	ASTM A-193 GR B7 LIQUID QUENCHED AND

ST0408370

ITEM	SIZE	DESCRIPTION
		TEMPERED ALLOY STEEL STUD BOLTS WITH ASTM A-194 GR 2H HEAVY HEX NUTS.
BOLT LUBRICANT		
BL-S		JET-LUBE SS-30 COPPER ANTI-SEIZE COMPOUND.
VALVES		
V-367	1/2 THRU 1 1/2	800-LB SCREWED OS/Y SOLID WEDGE GATE VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM WITH HARD-FACED SEAT RINGS, BOLTED BONNET. BONNEY FORGE HL113/F HANCOCK 950S JENKINS 8800 LUNK 1111-W RPEC F56DE SMITH 800 TRIANGLE 8522V VELAN S-20548-02TY VOGT 12111
V-617	2	150-LB FLANGED OS/Y GATE VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM WITH HARD-FACED SEATS. BONNEY HL1-113 HANCOCK 950-F-15 JENKINS 8815 LUNK 1100-W PACIFIC 3150-2 RPEC F158DE SMITH 815 VELAN F-00548-C2TY VOGT 353
V-56	3 THRU 12	150-LB FLANGED WEDGE GATE VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM WITH STELLITED SEAT RINGS. CRANE 47XU JENKINS 10098Z KITZ 150SCLS MALBRANQUE 123AXS PACIFIC 150-U POWELL 1503-P140 SELLA 1111-F-2 TRIANGLE 1822V VOGT 6068 WALWORTH 5202-F-UT

ST0408371

ST0408371

ITEM	SIZE	DESCRIPTION
V-104	1/4 THRU 1 1/2	600-LB SCREWED OS/Y GLOBE VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM WITH HARD-FACED SEAT, BOLTED BONNET. BONNEY FORGE HL313/F HANCOCK 5500-S JENKINS 8G80 LUNK 1711-W RPEC F80DE SMITH G80 TRIANGLE 8712V VELAN S-20748-G2TY VOGT 12141
V-36	2 THRU 10	150-LB FLANGED OS/Y GLOBE VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM. CRANE 143X FSVC 2501.1A JENKINS 1040-B2 KITZ 150SCJ LUNK 1532-C MALBRANQUE 523AX NEWCO (VITAS) 21F-CB1 PACIFIC 160-1 POWELL 1531-P-140 SELLA 3111-F STOCKHAM 15-GPF-1 TRIANGLE 1812 VELAN F-0074C-C2TY VOGT 473 WALWORTH 5275-F-AA
V-409	1/4 THRU 1 1/2	1500-LB SCREWED IN-LINE CHECK VALVE, CARBON STEEL BODY AND PISTON, 316 STAINLESS STEEL SPRING, TEFLON SEAT. CHECK-ALL UN-3-C-T
V-6658	1/2 THRU 1 1/2	800-LB SCREWED CARBON STEEL BALL VALVE WITH STAINLESS STEEL BALL, TEFLON SEATS AND SEALS, 1" AND UNDER SHALL HAVE ROUND OR OVAL HANDLE, 1 1/4" AND OVER LEVER OPERATOR. CLAYTON MARK 880TTC HILLS MC C F602-CS-T-S6/SP-CD8 HILLS MC C M502-CS-T-S6 JAMESBURY 21-22-36-MT JENKINS 8421 SMITH 411T8R
V-7378	2 THRU 6	150-LB FLANGED STEEL BALL VALVE WITH 316 STAINLESS STEEL BALL, TEFLON SEATS AND SEALS, 1" AND UNDER SHALL HAVE ROUND OR OVAL

ST0408372

ITEM	SIZE	DESCRIPTION
		HANDLE, 1 1/4" AND OVER LEVER OPERATOR. CONTRO C-1166-BC HILLS MC C S151-CS-T-S6 HILLS MC C F151-CS-T-S6 JAMESBURY 0150F-22-36TT KTM E0862-32-TT-15-L LUNK 713LT MARPAC CS-8470-12-TT-W MARPAC CS-8470-12 MARPAC CS-400-12-TT SMITH 415TB- WKM B100-CS-02-S1 WKM B102-CS-02-S1
V-671S	3 THRU 4	150-LB FLANGED PLUG VALVE, DUCTILE IRON BODY WITH 316 STAINLESS STEEL PLUG, TEFLON SLEEVE, WRENCH OPERATED. DURCO G411-DI04 TUFLINE 067-DI-316 UNION 15A2HLFL
N-213		PIPING SHALL BE INSTALLED IN ACCORDANCE WITH ENGR SPEC 47-110.
N-100		INSTRUMENTATION
N-101		THE FOLLOWING SPECIFICATIONS ARE TO BE USED FOR INSTRUMENTATION. FOR ITEMS NOT LISTED, THE PRECEDING PIPING SPECIFICATION IS TO BE USED WHERE APPLICABLE.
PIPE		
P-105	1/4 THRU 1/2	ASTM B-165 ANNEALED MONEL SEAMLESS TUBING, 1/4 OD, 3/8 OD OR 1/2 OD BY 0.035 WALL, AS SPECIFIED.
FITTINGS		
E=90 DEG ELL, L=45 DEG ELL, T=TEE, X=CROSS, R=REDUCER C=COUPLING, S=STUB END, U=UNION, PC=PIPE CAP		
ELTR-105		MONEL SWAGELOK TUBING FITTINGS.
VALVES		
V-699	1/4	3000-LB NEEDLE VALVE, 316 STAINLESS BODY, TEFLON PACKING, 1/4 INCH MALE PIPE THREAD BY 1/4 INCH SWAGELOK ENDS. WHITEY 1VM4-S4-316

ST0408373

ITEM	SIZE	DESCRIPTION
V-625	1/4 THRU 1	3000-LB SCREWED CARBON STEEL BAR STOCK NEEDLE VALVE. 13 CHROME ALLOY STEEL STEM AND SEAT. CRANE 222X DRAGON 10-M-02 EDWARD 152 LUNK 1730 POWELL 1974 RP-C 1060 VOGT 1861
V-712	1/4	300-LB SCREWED HORIZONTAL LIFT CHECK VALVE. 316 STAINLESS STEEL. BOLTED CAP. ALOYCO 2550-CF8M COOPER 330 SELC NEWCO (WADA) 43T-F34 PACIFIC S-3381-12 POWELL 2004A VOGT 701 F8M

ST0408374

ST0408374