

PLAINTIFF'S EXHIBIT

DOW-2453

PIPING SPEC U
DATE 11-20-78
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300-LB MONEL SYSTEM
PROCESS
95 PERCENT AND 100 PERCENT CHLORINE
250 PSIG AT 350F -- 500PSIG @ 100F
DESCRIPTION

ITEM	SIZE	DESCRIPTION
PIPE		
P-42	1/4 THRU 12	ASTM B-165 ANNEALED, SCH 40S SEAMLESS MONEL 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

ELTR-69	1/4 THRU 3/4	2000-LB THREADED FORGED ANNEALED NICKEL COPPER (MONEL) FITTINGS, ASTM B-564, DIMENSIONS PER ANSI B16.11.
C-16C	1/4 THRU 3/4	3000-LB THREADED MONEL COUPLING, ASTM B-564 ANNEALED NICKEL COPPER, ANSI B16.11 DIMENSIONS.
C-16T	1/4 THRU 3/4	3000-LB MONEL THREDGLET, ASTM B-564 ANNEALED NICKEL COPPER.
PC-13	1/4 THRU 3/4	THREADED SOLID MONEL SQUARE HEAD PLUG, ASTM B-564 ANNEALED NICKEL COPPER, DIMENSIONS PER ANSI B16.11.
U-14	1/4 THRU 3/4	3000-LB THREADED MONEL UNION, ASTM B-564 ANNEALED NICKEL COPPER.
R-209	1/4 THRU 3/4	STD WEIGHT FORGED MONEL SWAGED NIPPLE, THREADED, BEVELED, PLAIN OR ANY COMBINATION OF ENDS.
ELTR-71	1 THRU 12	SCH 40S MONEL WELDING FITTINGS, ASTM B-366 GR WPNC ANNEALED, ANSI B16.9.
NOTE		WELDING ELBOWS SHALL BE LONG RADIUS.
S-25	1/2 THRU 12	SCH 40S MONEL STUB END, ASTM B-366 GR WPNC, ANSI B16.9, MSS SP-43 LENGTH.
PC-70	1 THRU 12	SCH 40S MONEL WELDING CAP, ASTM B-366 GR WPNC ANNEALED, ANSI B16.9.
N-8		NO THREADED FITTINGS PERMITTED UNLESS ISOLATED

BHL

PIPING SPEC U

FA4380

11-20-78

ST0408375

ST0408375

ITEM	SIZE	DESCRIPTION
FROM PROCESS OR SOURCE BY WELDED OR FLANGED VALVE.		
FLANGES		
F-6	1/2 THRU 12	300-LB LAP JOINT FLANGE, ASTM A-105, ANSI B16.5.
F-7-RF	1/2 THRU 12	300-LB RAISED FACE BLIND FLANGE, ASTM A-105, ANSI B16.5.
N-63		BLIND FLANGES SHALL HAVE 16 GAUGE MCNEL LOOSE PLATE DISC. DISC SHALL BE SAME DIA AS STD CUT RING GASKET, WITH TAB. TAB SHALL EXTEND MINIMUM 1 INCH BEYOND FLANGE OD.
BRANCH CONNECTIONS		
BC-2S	1/4 THRU 3/4	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.
N-SP300		NO THREADED FITTINGS TO BE USED BETWEEN FLANGED VALVES AND PROCESS PIPING.
BC-5BW	1 THRU 12	FOR WELDED PIPING, USE STRAIGHT SIZE OR REDUCING TEE. WELDOLET OR REINFORCING PAD MAY BE USED IN PLACE OF REDUCING TEE WHEN BRANCH IS SMALLER THAN HEADER. FOR THREADED BRANCH CONNECTION, USE 3000-LB FULL COUPLING, THREDOLET, OR NIPPLET WELDED TO HEADER.
GASKETS		
G-24	1/2 THRU 12	SPIRAL-WOUND, 316 STAINLESS STEEL-ASBESTOS GASKET, FLEXITALLIC CG, GARLOCK CR, LAMONS WR, JM-913 OR STERLING GR.
JOINT COMPOUND		
JC-15		TEFLON TAPE 1/2 INCH BY 3 MIL THICKNESS.
FLANGE BOLTS		
B-A193B7Q	1/2 THRU 12	ASTM A-193 GR B7 LIQUID QUENCHED AND TEMPERED ALLOY STEEL STUD BOLTS WITH ASTM A-194 GR 2H HEAVY HEX NUTS.

ST0408376

ITEM	SIZE	DESCRIPTION
BOLT LUBRICANT		
BL-5		JET-LUBE SS-30 COPPER ANTI-SEIZE COMPOUND.
VALVES		
V-743M	1 THRU 6	300-LB FLANGED STEEL BALL VALVE WITH MONEL BALL, REINF TEFLON SEATS AND TEFLON SEALS, 1" AND UNDER SHALL HAVE ROUND OR OVAL HANDLE, 1 1/4" AND OVER LEVER OPERATOR. CONTRON C-1688-BI HILLS MC C S301-CS-R-MC JAMESBURY DC300F-22-71-MT MAFPAC CS-300-8-RT SMITH 430J WKM B120-CS-02-ML
*V-742	1/4 THRU 3/4	200-LB SCREWED MONEL BALL VALVE. TEFLON SEATS AND SEALS, 1" AND UNDER SHALL HAVE ROUND OR OVAL HANDLE, 1 1/4" AND OVER LEVER OPERATOR. 300F MAXIMUM ALLOWABLE TEMPERATURE. ALCOYCO 3030C (MONEL) CONTRON C-1111-II HILLS MC C F602-MO-T JAMESBURY A71-TT (T/W) LADISH 4300 PACIFIC M-225-P5 (T/W)
V-607	1/4 THRU 3/4	300-LB SCREWED CS/Y SOLID WEDGE GATE VALVE. ALL MONEL. ALCOYCO 2210-M35 COOPER 3381 LADISH 8363 NEWCO (WADA) 13T-MC5 POWELL 2468A
V-606	1 THRU 4	300-LB FLANGED CS/Y SOLID WEDGE GATE VALVE. ALL MONEL. ALCOYCO 2217-M35 COOPER 130-SD-FF-CRYC LADISH 8375 NEWCO (WADA) 13F-M05 PACIFIC M-3350-8 OR M-530-8 PACIFIC M-350-8 POWELL 2469A POWELL 2467
V-9173WAY	1 THRU 3	300-LB FLANGED 3-WAY, 2 PORT, 90 DEGREE TURN TEFLON SLEEVED TRANSFLOW PLUG VALVE, MONEL

ST0408377

ITEM	SIZE	DESCRIPTION
		BODY AND PLUG. DURCO MG431-A1-MO 45 OFFSET
V-609	1/2 THRU 8	300-LB FLANGED HORIZONTAL SWING CHECK VALVE, ALL MONEL, BOLTED CAP. ALDYCO 2377-M35 COOPER 330 LADISH 5372 NEWCO (WADA) 33F-MC5 PACIFIC M-1130 POWELL 2348A POWELL 3061A-SS TRIANGLE S-3842-RR
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	1/4 THRU 3/8	MONEL SWAGELOK TUBING FITTINGS.
VALVES		
V-703	1/4	3000-LB MONEL NEEDLE VALVE, TEFLON PACKING, 1/4 INCH MALE PIPE THREAD ENDS. DRAGON 3363T HOKE 3212 M-4M WHITEY 1VM4-M
*		ASTERISK BEFORE VALVE NUMBER INDICATES RESTRICTED VENDOR LIST.

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