PLAINTIFF'S EXHIBIT
DOW-2402

HYDROCARBON PROCESS PIPING
600 PSIG MAX AT +450F
720 PSIG MAX AT MINUS 20 TO +100F

ITEM	SIZE		DESCRIPTION
N-228		1	SCREWED FITTINGS SHALL NOT BE USED IN PIPING SYSTEMS WHERE VIBRATION IS PRESENT. I.E., COMPRESSOR PIPING, ETC.
NOTE		2	ALL NIPPLES USED FOR DRAINS AND VENTS SHALL BE MIN. SCH. 80.
N-213		3	PIPING SHALL BE INSTALLED IN ACCORDANCE WITH ENGR SPEC 47-110.
NOTE		4	ALL NIPPLES USED FOR INSTRUMENT AND TEST CONNECTIONS SHALL BE HEX BAR STOCK WITH MIN. .391" ID.
NOTE		5	G-44 GASKET TO BE USED ONLY WHERE SPECIFIED ON PIPING DRAWINGS.
PIPE			
P-28B	1/2 THRU 1 1/2		ASTM A-106 GR B, EX STRONG SEAMLESS STEEL PIPE.
P-3B	2 THRU 18		ASTM A-53 OR API-5L GR B, STD WEIGHT SEAMLESS STEEL PIPE.
P-43B	20 THRU 24		ASTM A-53 OR API-5L GR B, 0.500 WALL SEAMLESS STEEL PIPE.
FITTINGS			
ELTX-66	1/2 THRU 1 1/2		2000-LB THREADED FORGED STEEL FITTINGS, ASTM A-105, ANSI B16.11.
N-234			3000-LB FITTINGS MAY BE SUBSTITUTED FOR 2000-LB FITTINGS.
C-3C	1/2 THRU 1 1/2		3000-LB THREADED FORGED STEEL COUPLING, ASTM A-105, ANSI B16.11.
C-14S	1/2 THRU 1 1/2		3000-LB FORGED STEEL SOCKOLET, ASTM A-105.

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ITEM	SIZE	DESCRIPTION
C-41	1 THRU 20	STD WEIGHT STEEL WELDOLET, ASTM A-105,
C-54	1/2 THRU 1 1/2	3000-LB THREADED FORGED STEEL NIPOLET, ASTM A-105, DIMENSIONS PER BONNEY FORGE CATALOG W-8, PG. 29.
U-2	1/2 THRU 1 1/2	3000-LB THREADED FORGED STEEL UNION, ASTM A-105, AAR DIMENSIONS, STEEL TO STEEL SEAT, PETRO AAR OR VOGT 1931.
PC-2	1/2 THRU 1 1/2	THREADED SOLID STEEL HEX HEAD PLUG, ASTM A-105, ANSI B16.11.
R-22	1/2 THRU 1 1/2	EX STRONG STEEL SWAGED NIPPLE, ASTM A-106 OR A-53 GR B, OR AISI C-1025 BARSTOCK, THREADED, BEVELED, PLAIN OR ANY COMBINATION OF ENDS.
ELT-64	1/2 THRU 1 1/2	3000-LB SOCKET WELDING FORGED STEEL FITTINGS, ASTM A-105, ANSI B16.11.
C-14	1/2 THRU 1 1/2	3000-LB SOCKET WELDING FORGED STEEL COUPLING, ANSI B16.11, OR 3000-LB SOCKOLET, ASTM A-105, FOR WELDING IN.
C-54S	1/2 THRU 1 1/2	3000-LB SOCKET WELDING FORGED STEEL NIPOLET, ASTM A-105, DIMENSIONS PER BONNEY FORGE CATALOG W-8, PG.29.
PC-27	1/2 THRU 1 1/2	3000-LB SOCKET WELD FORGED STEEL CAP, ASTM A-105.
U-18	1/2 THUR 1 1/2	FOR UNION USE SOCKET WELDING FLANGES.
ELTR-15B	1 THRU 18	STD WEIGHT SEAMLESS STEEL WELDING FITTINGS, ASTM A-234 GR WPB, ANSI B16.9.
ELTR-16B	20 THRU 24	EX STRONG SEAMLESS STEEL WELDING FITTINGS, ASTM A-234 GR WPB, ANSI B16.9.
PC-51B	1 THRU 18	STD WEIGHT SEAMLESS STEEL WELDING CAP, ASTM A-234 GR WPB, ANSI B16.9.
PC-52B	20 THRU 24	EX STRONG SEAMLESS STEEL WELDING CAP, ASTM A-234 GR WPB, ANSI B16.9.
FLANGES		
F-21-RF	1/2 THRU 1 1/2	300-LB RAISED FACE THREADED FLANGE, ASTM A-105, ANSI B16.5.

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ITEM	SIZE	DESCRIPTION
F-14-RF	1/2 THRU 1 1/2	150-LB RAISED FACE SOCKET WELDING FLANGE, ASTM A-105, ANSI B16.5.
F-5-RF	2 THRU 24	300-LB RAISED FACE WELDING NECK FLANGE, ASTM A-105, ANSI B16.5, BORE TO MATCH PIPE.
F-1-RF	2 THRU 24	150-LB RAISED FACE SLIP-ON FLANGE, ASTM A-105, ANSI B16.5.
F-7-RF	1/2 THRU 24	300-LB RAISED FACE BLIND FLANGE, ASTM A-105, ANSI B16.5.
BRANCH CONNECTIONS		
BC-7S		FOR SOCKET WELDING AND THREADED PIPING, USE STRAIGHT SIZE TEE ONLY, USE SOCKET WELDING REDUCER INSERT OR SWAGE NIPPLE WHEN BRANCH IS SMALLER THAN HEADER.
BC-112		FOR WELDED PIPING, USE STRAIGHT SIZE OR REDUCING TEE, WELDOLET OR REINFORCING PAD MAY BE USED ON REDUCING BRANCH CONNECTIONS IN PLACE OF REDUCING TEE, FOR 3/4 INCH AND SMALLER, USE SOCKOLET WELDED TO HEADER.
GASKETS		
G-40		SPIRAL-WOUND, 304 STAINLESS STEEL-ASBESTOS GASKET, FLEXITALLIC CG, GARLOCK CR, LAMONS WR, JM-913 OR STERLING GR.
G-44		SPIRAL-WOUND 304 STAINLESS STEEL-ASBESTOS GASKET WITH STAINLESS STEEL INNER AND OUTER COMPRESSION-GAUGE RINGS, ID SAME AS SCH 5S PIPE, FLEXITALLIC CGI, GARLOCK CRI, LAMONS WRI, JM-913-IR OR STERLING GR-IR.
JOINT COMPOUND		
JC-15		TEFLON TAPE 1/2 INCH BY 3 MIL THICKNESS.
FLANGE BOLTS		
B-A193B7Q		ASTM A-193 GR B7 QUENCHED AND TEMPERED ALLOY STEEL STUD BOLTS WITH ASTM A-194 GR 2H HEAVY HEX NUTS.
N-231		APPLY BOLT LUBRICANT TO THE FULL LENGTH OF THREADS.

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ITEM	SIZE	DESCRIPTION
BOLT LUBRICANT		
BL-2		FEL PRO C5-A.
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.
*V-474	1/2 THRU 1 1/2	800-LB SOCKET WELDING OS/Y SOLID WEDGE GATE VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM WITH HARD FACED SEAT RINGS, BOLTED BONNET.
*V-618	1/2 THRU 1 1/2	300-LB FLANGED, OS/Y SOLID WEDGE GATE VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM, HARD-FACED SEATS.
*V-882B	1/2 THRU 1 1/2	800-LB FEMALE SOCKET WELDING BY SCREWED OS/Y GATE VALVE, CARBON STEEL BODY, HARD-FACED SEAT RINGS, BOLTED BONNET.
*V-93	2 THRU 24	300-LB FLANGED OS/Y WEDGE GATE VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM WITH NICKEL ALLOY SEAT RINGS.
*V-93F	2 THRU 24	300-LB FLANGED OS/Y FLEXIBLE DISC GATE VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM WITH NICKEL ALLOY SEAT RINGS.
NOTE		V-93F TO HAVE BLEED VALVE BETWEEN SEATS. VALVE SHALL BE TESTED FOR DOUBLE BLOCK AND BLEED SERVICE.
*V-471	1/2 THRU 1 1/2	600-LB SCREWED OS/Y FLOCONTROL TYPE GLOBE VALVE, CARBON STEEL BODY, CHROME STAINLESS TRIM.
*V-472	1 THRU 1 1/2	600-LB SOCKET WELDING OS/Y FLOCONTROL TYPE GLOBE VALVE, CARBON STEEL BODY, CHROME

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ITEM	SIZE	DESCRIPTION
		STAINLESS TRIM.
*V-91	2 THRU 12	300-LB FLANGED OS/Y GLOBE VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM, BOLTED BONNET.
*V-102	1/2 THRU 1 1/2	600-LB SCREWED HORIZONTAL LIFT CHECK VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM, BOLTED CAP.
*V-594	1 THRU 1 1/2	600-LB SOCKET WELDING HORIZONTAL LIFT CHECK VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM, BOLTED CAP.
*V-90	2 THRU 18	300-LB FLANGED HORIZONTAL SWING CHECK VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM, BOLTED CAP.
*V-489	4 THRU 24	300-LB FLANGED NON-SLAM TILTING DISC CHECK VALVE, CARBON STEEL BODY, 13 CHROME ALLOY STEEL TRIM.
*V-400	10 THRU 24	300-LB RF WAFER CHECK VALVE WITH EXTENDED BODY AND PIN STOP, CARBON STEEL BODY AND DISC, EXTRA HEAVY INTEGRAL HINGE LUGS, METAL SEAT, INCONEL SPRING.
*V-256	1 1/2 THRU 2	300-LB FLANGED 3-WAY, 2-PORT, 90 DEG TURN, TRANSFLO TYPE PLUG VALVE WITH TAPERED PLUG, CARBON STEEL BODY, WRENCH OPERATED, LUBRICATED.
NOTE		V-256 IS RESTRICTED TO A MAX TEMP. OF 350F.
*V-260	3 THRU 4	300-LB FLANGED 3-WAY, 2-PORT, 90 DEG TURN, TRANSFLO TYPE PLUG VALVE WITH INVERTED TAPERED PLUG, CARBON STEEL BODY, WRENCH OPERATED, LUBRICATED.
* V-262	6	300-LB FLANGED 3-WAY, 2-PORT, 90 DEG TURN, TRANSFLO TYPE PLUG VALVE WITH INVERTED

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ITEM	SIZE	DESCRIPTION
		TAPERED PLUG. CARBON STEEL BODY. WORM GEAR OPERATED. LUBRICATED.
*V-89	6 THRU 16	300-LB FLANGED CARBON STEEL, LUBRICATED. VENTURI PATTERN PLUG VALVE WITH TAPERED OR INVERTED TAPERED PLUG. WORM GEAR OPERATED.

* Asterisk indicates VSP stock items. See Engr. Spec. 48-902 for stock numbers.

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