

SCHEDULE OF HEAT EXCHANGERS

JOB NAME
CONTRACT NO. AG-85/86
DOCUMENT NO. HCR10075
SHEET NO. OF

DESCRIPTIONS	EQUIPMENT NO.	MCKEE ORIGINAL				GUARANTEE PROPOSAL				MCKEE ORIGINAL				GUARANTEE PROPOSAL			
		1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B	1-E-100/A.B
	NO. OF SHELLS	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	SHELL ARRANGEMENT	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES	PARA. SERIES
SERVICE		CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.	CRUDE COL. OVHD.
TYPE		TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.	TRIM COOL.
CODE AND REGULATION		ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"	ASME VIII, TEMA "R"
FLUID NAME		HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER	HC WATER
FLOW RATE	LB/HR	75526	75526	75526	75526	75526	75526	75526	75526	75526	75526	75526	75526	75526	75526	75526	75526
SPECIFIC GRAVITY-MAXIMUM AV.		0.666	0.666	0.666	0.666	0.666	0.666	0.666	0.666	0.666	0.666	0.666	0.666	0.666	0.666	0.666	0.666
VISCOSITY-INLET, OUTLET	CP	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
TEMPERATURE-INLET	°F	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
OUTLET	°F	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
DESIGN	°F	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250	250
PRESSURE OPERATING	PSIG	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
DESIGN	PSIG	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
VELOCITY	FT/SEC																
PRESSURE DROP ALLOW/CAL.	PSI	5/	10/	5/4.5	10/8.06	5/4.5	10/8.06	5/4.5	10/8.06	5/4.5	10/8.06	5/4.5	10/8.06	5/4.5	10/8.06	5/4.5	10/8.06
FOULING FACTOR	HR-FT ² /BTU	0.001	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.0015	0.001	0.0015
TOTAL HEAT EXCHANGED	BTU/HR	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶	2.87 x 10 ⁶
L. M. T. D. CORRECTION	°F	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x	13.47 x
OVERALL HEAT TRANSFER RATE (DESIGN)	BTU/HR-FT ²	107.61	107.61	107.61	107.61	107.61	107.61	107.61	107.61	107.61	107.61	107.61	107.61	107.61	107.61	107.61	107.61
SURFACE AREA REQ'D/SHELL	FT ²	990	990	990	990	990	990	990	990	990	990	990	990	990	990	990	990
MARGIN	%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
SHELL SIDE	INSIDE DIAMETER	IN	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)	23.228 (24.21)
	NO. OF PASSES		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	BAFFLE SPACING AND CUT		21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%	21.01" / 20%
	NOZZLE SIZE & RATING		12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF	12" ANSI 150 RF
TUBE SIDE	O. D. x THK x LENGTH		0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'	0.75 x 0.065 x 16'
	NO. OF PASSES		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	NO. OF TUBES		320	320	320	320	320	320	320	320	320	320	320	320	320	320	320
	PITCH & TUBE ARRANGEMENT		15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ	15/16" x Δ
	NOZZLE SIZE & RATING		4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF	4" ANSI 150 RF
FILM COEFFICIENT	BTU/HR-FT ²																
OVERALL COEFFICIENT (CLEAN)	BTU/HR-FT ²		194.8	194.8	194.8	194.8	194.8	194.8	194.8	194.8	194.8	194.8	194.8	194.8	194.8	194.8	194.8
(ACTUAL)	BTU/HR-FT ²		126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
BAFFLE TYPE			VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.	VERT. CUT SEGM.
NO.			8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
GUARANTEE			NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
REMARKS																	
TOTAL FLUID ENTERING	LB/HR		253777	253777	253777	253777	253777	253777	253777	253777	253777	253777	253777	253777	253777	253777	253777
VAPOR			1123	1123	1123	1123	1123	1123	1123	1123	1123	1123	1123	1123	1123	1123	1123
LIQUID			252633	252633	252633	252633	252633	252633	252633	252633	252633	252633	252633	252633	252633	252633	252633
STEAM			21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
NON-CONDENSABLES			674	674	674	674	674	674	674	674	674	674	674	674	674	674	674
FLUID VAPORIZED OR CONDENSED	LB/HR		459	459	459	459	459	459	459	459	459	459	459	459	459	459	459
STEAM CONDENSED			12	12	12	12	12	12	12	12	12	12	12	12	12	12	12