

HEAT EXCHANGER SPECIFICATION
THE FLUOR CORPORATION, LTD.

SHEET NO. 1504 REV.

DATE 5/7/56

VENDOR MUST COMPLETE THIS SPECIFICATION SHEET BEFORE RETURNING.
ITEMS MARKED * MAY BE OMITTED UNTIL SELECTION OF VENDOR.

BY

JOB NO. 5750

ITEM NO. E-1904 SERVICE Light Gas Oil Stripper Reboiler

DUTY 6,200,000 BTU/HR. EXCHANGER TYPE: HORIZ. XXXX S & T Thermosyphon

VENDOR _____ MFRS. IDENT. NO. _____

	Hydrocarbons		Hydrocarbons	
FLUID	168,000 Min.		170,000	
TOTAL FLOW.....LBS/HR	Shell		Tube	
SHELL OR TUBE SIDE.....				
	INLET	OUTLET	INLET	OUTLET
LIQUID	(Indefinite circulation)		170,000	170,000
SP. GR.....	0.71 @ 490 °F	@ °F	0.74 @ 700 °F	0.76 @ 645 °F
THERMAL COND...BTU/HR X SQFT X °F/FT	@ °F	@ °F	@ °F	@ °F
SPECIFIC HEAT.....BTU/LB X °F	@ °F	@ °F	0.70 @ 700 °F	0.68 @ 645 °F
VISCOSITY Centistokes	@ °F	@ °F	0.44 @ 700 °F	0.50 @ 645 °F
VAPOR				
MOLECULAR WEIGHT.....	177			
THERMAL COND...BTU/HR X SQFT X °F/FT	@ °F	@ °F	@ °F	@ °F
SPECIFIC HEAT.....BTU/LB X °F	@ °F	@ °F	@ °F	@ °F
VISCOSITYCENTIPOISES	@ °F	@ °F	@ °F	@ °F
ADDITIONAL DATA ON SHEET NO.....	Fig. 3			
OPERATING TEMPERATURES.....°F	490	513 Max.	700	645
PRESSURESPSIG	7		65	64
VELOCITIESFT/SEC				
PRESSURE DROP (NOTE A).....PSI	ALLOW. 8.5' Hot Liq. alc. 2' Hd.		ALLOW. 5	CALC. .452
DESIGN TEMPERATURE.....°F	650		750	
PRF. TUREPSIG	MIN. 75	TEST 175	MIN. 95	TEST 175
FC. RESIST.....SQFT X HR X °F/STU	MIN. 0.002	CALC.	MIN. 0.004	CALC. .006 Tot.
MIN. CORROSION ALLOWANCE.....IN.	1/8		1/4 - Float Hd. 1/4"	
NUMBER OF PASSES PER SHELL.....	1		2	
FLOW ARRANGEMENT.....	1 PAR. BANKS OF	1 EXCH. IN SERIES	1 PAR. BANKS OF	1 EXCH. IN SERIES

TOT. AREA (NOTE B) SQFT	541	SHELL (OR SECTS) TOTAL NO.	1	CROSS BAFFLES, TYPE..	
LMTD		XX .O.D.	26 IN.	NUMBER X SPACING.	X IN.
CORRECTED MTD.....	173	TUBES, NO. PER SHELL....	212	SEGMENT CUT.....	
TRANSFER RATE, CLEAN	110	O.D. X LENGTH.....	1 IN. X 120 IN.	TUBE HOLE DIAM....	* IN.
SERVICE	66.1	GAUGE, BWC.....	12 AVE. MIN. WALL	RADIAL CLEARANCE..	* IN.
		PITCH	1-1/4 IN. X 8	LONG BAFFLE, TYPE...	
CODE REQUIREMENTS....	XX ASME: TEMA	TUBE LIMIT DIAM. OR WIDTH	IN.	LENGTH	* IN.
REMOVABLE TUBE BUNDLE	YES XXX	WEIGHTS EACH BUNDLE...	3,300 LBS	DIST. ABOVE SHELL..	IN.
FLOATING HEAD.....	XXXXXX FULL THRU	BUNDLE & SHELL.....	6,200 LBS	REBOILER WEIR HEIGHT	IN.
IMPINGEMENT BAFFLE...	YES NO	FULL OF WATER.....	8,150 LBS	SHELL AFTER WEIR..	FT.

MATERIALS (MARK STRESS RELIEVED - S.R., RADIOGRAPHED - X.R.)		NOZZLES (NOTE C)		TUBE SIDE		SHELL SIDE	
TUBES	5 CR. 1/2 Mo.	THICK., IN.	INLET	SIZE	RATING	SIZE	RATING
TUBE SHEETS.....	Steel	*	OUTLET	6"	150 SG	6	150 SG
BAFFLES	Steel	*	DRAIN	6"	150 SG	12	150 SG
TUBE SUPPORTS.....	Steel	*	VENT				
TIE RODS & SPACERS..		*	RELIEF				
LONG BAFFLE.....	None	*	GASKETS				
SHELL	Steel	*	Stl. Clad Asb.				
SHELL COVER.....	Steel	*	" " "				
CHANNEL	Steel	*	" " "				
CHANNEL COVER.....	Steel	*	" " "				
FLOATING HEAD COVER	Steel	*	" " "				

REMARKS: Max. vaporization allowable in shell 25% Wt.
Max. heat flux allowable 12,000 BTU/HR./SQ. FT.

E PE-19-15124-4

PLAINTIFF'S
EXHIBIT

CHV-18

X-ray longitudinal seams

NOTE A: FOR CONDENSERS AND THERMOSYPHON REBOILERS PRESSURE DROP STATED SHALL INCLUDE STATIC HEAD BETWEEN CENTERLINES OF INLET AND OUTLET FLANGES.
NOTE B: OUTSIDE TUBE AREA EXCLUDING AREA IN TUBE SHEETS.
NOTE C: RATE PER ASA 8 196 LATEST SUPPLEMENT.

CHEV BB
0000680

(1) 10-8-56
(2) 11-30-56
(3) 12-14-56
(4) 7-24-57

HEAT EXCHANGER SPECIFICATION
THE FLUOR CORPORATION, LTD.

SHEET NO. E-1913 REV.

DATE 4/27/56

VENDOR MUST COMPLETE THIS SPECIFICATION SHEET BEFORE RETURNING.
ITEMS MARKED * MAY BE OMITTED UNTIL SELECTION OF VENDOR.

ITEM NO. E-1913 SERVICE Compressor Intercooler

BY _____
JOB NO. 5730

DUTY 14,085,000 BTU/HR. EXCHANGER TYPE: HORIZ. VERT. Horizontal S & T

VENDOR _____ MFRS. IDENT. NO. _____

FLUID	Hydrocarbons, Inerts, Water		Water	
TOTAL FLOW.....LBS/HR	84,392		352,000	
SHELL OR TUBE SIDE.....	Shell		Tube	
	INLET	OUTLET	INLET	OUTLET
LIQUID		37,792	352,000	352,000
SP. GR.....	Q	*F	Q	*F
THERMAL COND...BTU/HR X SQFT X *F/FT	Q	*F	Q	*F
SPECIFIC HEAT.....BTU/LB X *F	Q	*F	Q	*F
VISCOSITYCENTIPOISES	Q	*F	Q	*F
VAPOR	84,392	46,600		
MOLECULAR WEIGHT.....	44.5	37.5		
THERMAL COND...BTU/HR X SQFT X *F/FT	Q	*F	Q	*F
SPECIFIC HEAT.....BTU/LB X *F	Q	*F	Q	*F
VISCOSITYCENTIPOISES	Q	*F	Q	*F
ADDITIONAL DATA ON SHEET NO.....	Fig. 5			
OPERATING TEMPERATURES.....*F	276	100	80	120
PRESSURESPSIG	67.7	62.7	40	32
VELOCITIESFT/SEC			2 Min. 7 Max.	3.35 Act.
PRESSURE DROP (NOTE A).....PSI	ALLOW. 5	CALC. 5	ALLOW. 10	CALC. 7.5
DESIGN TEMPERATURE.....*F	600		300	
PRESSUREPSIG	MIN. 125	TEST 315	MIN. 100	TEST 203
FOUL RESIST.....SQFT X HR X *F/BTU	MIN. 0.002	CALC.	MIN. 0.002	CALC. .0045 Tot.
MIN. CORROSION ALLOWANCE.....IN.	1/8		1/8 - Float. Hd. 3/16	
NUMBER OF PASSES PER SHELL.....	Divided C.F.		4	
FLOW ARRANGEMENT.....	1	PAR. BANKS OF 2 EXCH. IN SERIES	1	PAR. BANKS OF 2 EXCH. IN SERIES

TOT. AREA (NOTE B) SQFT	6,660	SHELL (OR SECTS) TOTAL NO.	2	CROSS BAFFLES, TYPE..	Cross Flow
LMTD		XX 0.D.	34 IN.	NUMBER X SPACING.	x 26 IN.
CORRECTED MTD.....	44.8 WTD	TUBES, NO. PER SHELL....	868	SEGMENT CUT.....	
TRANSFER RATE, CLEAN	80.6	O.D. X LENGTH.....	3/4 IN. x 240 IN.	TUBE HOLE DIAM....	* IN.
SERVICE	59	GAUGE, BWG.....	16 MIN. WALL	RADIAL CLEARANCE..	* IN.
		PITCH	15/16 IN. Δ XXXX	LONG BAFFLE, TYPE...	
CODE REQUIREMENTS....	XX ASME: TEMA	TUBE LIMIT DIAM. OR WIDTH	* IN.	LENGTH	* IN.
REMOVABLE TUBE BUNDLE	YES XX	WEIGHTS EACH BUNDLE...	12,550 LBS	DIST. ABOVE SHELL..	IN.
FLOATING HEAD.....	SLAMP-RING: XXXXX	BUNDLE & SHELL.....	18,990 LBS	REBOILER WEIR HEIGHT	IN.
IMPINGEMENT BAFFLE...	YES NO	FULL OF WATER.....	25,000 LBS	SHELL AFTER WEIR..	FT.

MATERIALS (MARK STRESS RELIEVED - S.R., RADIOGRAPHED - X.R.)			NOZZLES (NOTE C)			
TUBES	Admiralty	THICK., IN.	INLET	SIZE	RATING	SHELL SIDE
TUBE SHEETS.....	70 - 30 CU NI	*	OUTLET	8	150 RF	12" 150 RF
BAFFLES	Muntz Metal.	*	DRAIN	8	150 RF	10" 150 RF
TUBE SUPPORTS.....		*	VENT			
TIE RODS & SPACERS..	Brass	*	RELIEF			
LONG BAFFLE.....	None	*	GASKETS			
SHELL	Steel XR**	*	Cu Clad Asb.			
SHELL COVER.....	Steel	*	Stl Clad Asb.			
CHANNEL	Steel	*	JM-60			
CHANNEL COVER.....	Steel	*	JM-60			
FLOATING HEAD COVER	Steel	*	Cu Clad Asb.			

REMARKS: * Designed for 25% excess surface.

** Long seam only.

Note: See revised Fig. 5 - attached for condensation curve.

NOTE A: FOR CONDENSERS AND THERMOSYPHON REBOILERS PRESSURE DROP STATED SHALL INCLUDE STATIC HEAD BETWEEN CENTERLINES OF INLET AND OUTLET FLANGES.
NOTE B: OUTSIDE TUBE AREA EXCLUDING AREA IN TUBE SHEETS.
NOTE C: RATE PER ASA B 14 LATEST SUPPLEMENT.

CHEV BB
1000681

10-8-56
10-18-56
7-24-57

THE FLUOR CORPORATION, LTD.

SHEET NO. 1-15-14 REV.

DATE 4/27/56

VENDOR MUST COMPLETE THIS SPECIFICATION SHEET BEFORE RETURNING.
ITEMS MARKED * MAY BE OMITTED UNTIL SELECTION OF VENDOR.

ITEM NO. E-1914 SERVICE Compressor after Cooler

BY
JOB NO. 5730

DUTY 5,880,000 BTU/HR. EXCHANGER TYPE: HORIZ. VERT. Horizontal

VEN. 2 MFRS. IDENT. NO.

FLUID	Hydrocarbons, Inerts, Water	Water
TOTAL FLOW.....LBS/HR	82,403	294,000
SHELL OR TUBE SIDE.....	Shell	Tube
LIQUID	INLET	OUTLET
.....LBS/HR	35,503	57,703
SP. GR.....	@	@
THERMAL COND...BTU/HR X SQ FT X °F/FT	@	@
SPECIFIC HEAT.....BTU/LB X °F	@	@
VISCOSITYCENTIPOISES	@	@
VAPOR	INLET	OUTLET
.....LBS/HR	46,900	24,700
MOLECULAR WEIGHT.....	38	28
THERMAL COND...BTU/HR X SQ FT X °F/FT	@	@
SPECIFIC HEAT.....BTU/LB X °F	@	@
VISCOSITYCENTIPOISES	@	@
ADDITIONAL DATA ON SHEET NO.....	Fig. 6	
OPERATING TEMPERATURES.....°F	162	100
PRESSURESPSIG	180	175
VELOCITIESFT/SEC		2.9
PRESSURE DROP (NOTE A).....PSI	ALLOW. 5 CALC. 5	ALLOW. 10 CALC. 2.75
DESIGN TEMPERATURE.....°F	650	300
PRESSUREPSIG	MIN. 210 TEST 315	MIN. 100 TEST 203
FOUL RESIST.....SQ FT X HR X °F/BTU	MIN. 0.002 CALC. 1/8	MIN. 0.002 CALC. 0.005 Tot. 1/8 Float. Hd. 3/16
MIN. CORROSION ALLOWANCE.....IN.	1 - C.F.	4
NUMBER OF PASSES PER SHELL.....	1	1
FLOW ARRANGEMENT.....	1 PAR. BANKS OF 1 EXCH. IN SERIES	1 PAR. BANKS OF 1 EXCH. IN SERIES

TOT. AREA (NOTE B) SQ FT	3,330	SHELL (OR SECTS) TOTAL NO.	1	CROSS BAFFLES, TYPE..	Cross Flow
LMTD		EX 0.0 D.....	34 IN.	NUMBER X SPACING..	X 26 IN.
CORRECTED MTD.....	30.4	TUBES, NO. PER SHELL.....	868	SEGMENT CUT.....	
TRANSFER RATE, CLEAN	122	O.D. X LENGTH.....	3/4 IN. X 240 IN.	TUBE HOLE DIAM....	IN.
SERVICE	75.5	GAUGE, BWG.....	16 MIN. WALL	RADIAL CLEARANCE..	IN.
CODE REQUIREMENTS....	XXX	PITCH	15/16 IN. Δ	LONG BAFFLE, TYPE...	
REMOVABLE TUBE BUNDLE	YES XXX	TUBE LIMIT DIAM. OR WIDTH	IN.	LENGTH	IN.
FLOATING HEAD.....	CLAMP-RING XXXXX	WEIGHTS EACH BUNDLE...	12,550 LBS	DIST. ABOVE SHELL..	IN.
IMPINGEMENT BAFFLE...	YES NO	BUNDLE & SHELL.....	19,900 LBS	REBOILER WEIR HEIGHT	IN.
		FULL OF WATER.....	26,000 LBS	SHELL AFTER WEIR..	FT.

MATERIALS (MARK STRESS RELIEVED - S.R., RADIOGRAPHED - X.R.)			NOZZLES (NOTE C)	TUBE SIDE		SHELL SIDE	
	Admiralty	THICK., IN.		SIZE	RATING	SIZE	RATING
TUBES	70 - 30 CU NI	"	INLET	6	150 RF	8	300 RF
TUBE SHEETS.....	Muntz Metal	"	OUTLET	6	150 RF	8	300 RF
BAFFLES		"	DRAIN				
TUBE SUPPORTS.....		"	VENT				
TIE RODS & SPACERS..	Brass	"	RELIEF				
LONG BAFFLE.....	None	"	GASKETS		E PE-19-15134-2		
SHELL	Steel XR*	"	Cu. Clad Asb.				
SHELL COVER.....	Steel	"	Stl. Clad Asb.				
CHANNEL	Steel	"	JM-60				
CHANNEL COVER.....	Steel	"	JM-60				
FLOATING HEAD COVER	Steel	"	Cu. Clad Asb.				

REMARKS: * Long Seam Only.

** Designed for 30% excess service.

Note: See Fig. 6 - attached for condensation curve.

NOTE A: FOR CONDENSERS AND THERMOSTAT REBOILERS PRESSURE DROP STATED SHALL INCLUDE STATIC HEAD BETWEEN CENTERLINES OF INLET AND OUTLET FLANGES.
NOTE B: OUTSIDE TUBE AREA EXCLUDING AREA IN TUBE SHEETS.
NOTE C: RATE PER ASA 8 14E LATEST SUPPLEMENT.

CHEV BB
0000682

MAIL ALL
RESPON-
DENCE TO
PURCHASE
D STORES

- ☐ P. O. BOX 599, DENVER, COLORADO 80201
☐ P. O. BOX 117, SALT LAKE CITY, UTAH 84110
☒ P. O. BOX 20002, EL PASO, TEXAS 79998
☐ EL PASO, TEXAS

NOVEMBER 21, 1967

FORWARD INVOICES IN QUADRUPPLICATE TO:

P. O. BOX 599
DENVER, COLORADO 80201

EPR-28375

HOW FULL
NAME AND
ADDRESS

ISSUING POINT

DATE

PREFIX AND ORDER NUMBER

ORDER NUMBERS WITH PREFIX MUST
APPEAR ON ALL PACKAGES, SHIPPING
ORDERS AND INVOICES.

WESTERN SUPPLY COMPANY

424 NORTH BOULDER

TULSA, OKLAHOMA

DATE REQUIRED AT DESTINATION

JANUARY 26, 1968

ITEM NO.	QUANTITY	DESCRIPTION OF MATERIAL	QUAN. REC.	PRICE
1	2 ONLY	PULL THRU FLOATING HEAD TYPE REPLACEMENT TUBE BUNDLES IN ACCORDANCE WITH DRAWINGS AND THE SPECIFICATIONS IN YOUR POSSESSION. TUBES: 268 PCS, 3/4" OD X 16 IN X 20' LONG ADMIRALTY TUBESHEETS: HR BRASS BAFFLES: MUNTZ PRICE PER YOUR QUOTATION OF 9-8-67, YOUR FILE 67-357. YOU ARE TO FURNISH 6 SETS DETAIL DWS IN 3 WEEKS AFTER RECEIPT OF ORDER FOR OUR REVIEW AND ALSO FURNISH MATERIAL REPORTS ON ALL MATERIAL. WE RESERVE RIGHT TO INSPECT DURING FABRICATION. YOU SHOULD NOTIFY US TIME, ETC. NOTE: ADVISE WHETHER DELIVERY PROMISE - 3 TO 5 WEEKS WILL BE KEPT.		\$26,150.00

F.O.B. SHIPPING POINT W/FREIGHT ALLOWED TO EL PASO

SHIP TO AND MARK
ALL PACKAGES AND
BILLS OF LADING

Standard Oil Company of Texas

EPR-28375

ATTENTION OF

T. H. MANSFIELD
REFINERY STOREHOUSE

SHOW PREFIX AND ORDER NUMBER ON BILL OF LADING

DESTINATION 6501 Trowbridge, P. O. Box 20002, El Paso, Texas

SHIP VIA MOTORCART FREIGHT

Prepay & charge
on invoice. (Parcel
Post only)

☐ CHARGES COLLECT. ENDORSE BILL OF LADING
"Collect from Chevron Oil Company, P. O. Box
599, Denver, Colorado 80201 or at Carriers
Option and Expense Draw Sight Drafts on First
National Bank of Denver."

DATE RECEIVED	INVOICE OR TRANSFER NO.					
RECEIVED-VIA	INVOICE DATE					
ALLIED BY	REGISTER NO.					
RT. BILL DATE	AMOUNT					
RT. BILL NO.	DATE PAID					
AR NO.	ACCOUNT NO.					
BILL OF MATERIAL NO.	FEA.	LOCATION PLANT AREA	BULK PLANT ITEM FIELD	SRV. STATION LEASE	APPROPRIATION Appro. Work List	
					44357	001

APPROVED
DESCRIBE MATERIAL USE IF
CODING BLOCKS NOT APPLICABLE

E. P. DURKIN

915-772-1411

238

CHEV BB
0000683

REQUISITIONER'S COPY

GO-5-CW (12-65)

19-154

BILL OF MATERIAL

JOB SPARE BUNDLES FOR E-1913E14 DATE NOV 20, 1967

DRG. No. _____ SHEET _____

ORDER No. B/M-C-1685APPRO. JOB No. 44357-001TH MANSFIELD 355 MATERIAL REQ'D AT DEST'N BY 1-26-68

ITEM	QUANTITY	UNIT	DESCRIPTION	REMARKS
1	2 ONLY		PULL THRU FLOATING HEAD TYPE REPLACEMENT TUBE BUNDLES IN ACCORDANCE WITH ATTACHED DRAWINGS AND THE FOLLOWING SPECS.	
			TUBES: 868 PCS, 3/4" O.D. X 16 BWG. X 20' LONG ADMIRALTY	
			TUBESHEETS: NR. BRASS	
			BAFFLES: MUNTZ	
			PURCHASE FROM WESTERN SUPPLY CO. PER THEIR QUOTATION OF 9/8/67, THEIR FILE 67-857 PRICE \$26,150.00 SUPPLIER TO FURNISH 6 SETS DETAIL DWGS IN 3 WKS AFTER RECEIPT OF ORDER FOR OUR REVIEW AND ALSO FURNISH MAT'L REPORTS ON ALL MAT'L WE RESERVE RIGHT TO INSPECT DURING FABRICATION, THEY SHOULD NOTIFY US TIME, ETC.	

SHEET OF SHEETS

CHEV BB
0000684MFG. 334 (25M 2-53)
PRINTED IN U.S.A.

HEAT EXCHANGER SPECIFICATION
THE FLUOR CORPORATION, LTD.

SHEET NO. E-1914 REV.
DATE 4/27/56
BY JVL CHK'D PGY
JOB NO. 5730

VENDOR MUST COMPLETE THIS SPECIFICATION SHEET BEFORE RETURNING.
ITEMS MARKED * MAY BE OMITTED UNTIL SELECTION OF VENDOR.

ITEM NO. E-1914 SERVICE Compressor after Cooler

DUTY 5,880,000 BTU/HR.

EXCHANGER TYPE: HORIZ. TERT.

Horizontal

VENDOR SWECCO

MFRS. IDENT. NO.

1C-34-52H

FLUID	Hydrocarbons, Inerts, Water		Water	
TOTAL FLOW.....LBS/HR	82,403		294,000	
SHELL OR TUBE SIDE.....	Shell		Tube	
	INLET	OUTLET	INLET	OUTLET
LIQUIDLBS/HR	35,503	57,703	294,000	294,000
SP. GR.....	G	F	G	F
THERMAL COND...BTU/HR X SQFT X °F/FT	G	F	G	F
SPECIFIC HEAT.....BTU/LB X °F	G	F	G	F
VISCOSITYCENTIPOISES	G	F	G	F
VAPORLBS/HR	46,900	24,700		
MOLECULAR WEIGHT.....	38	28		
THERMAL COND...BTU/HR X SQFT X °F/FT	G	F	G	F
SPECIFIC HEAT.....BTU/LB X °F	G	F	G	F
VISCOSITYCENTIPOISES	G	F	G	F
ADDITIONAL DATA ON SHEET NO.....	Fig. 6			
OPERATING TEMPERATURES.....°F	162	100	80	100
PRESSURESPSIG	180	175	40	37
VELOCITIESFT/SEC			2.9	
PRESSURE DROP (NOTE A).....PSI	ALLOW. 5	CALC. 5	ALLOW. 10	CALC. 2.75
DESIGN TEMPERATURE.....°F	650		300	
PRESSUREPSIG	MIN. 210	TEST 315	MIN. 100	TEST 203
FOUL RESIST.....SQFT X HR X °F/BTU	MIN. 0.002	CALC.	MIN. 0.002	CALC. 005 Tot.
MIN. CORROSION ALLOWANCE.....IN.	1/8		1/8 Float. Hd. 3/16	
NUMBER OF PASSES PER SHELL.....	1 - C.F.		4	
FLOW ARRANGEMENT.....	1	FAR. BANKS OF	1	EXCH. IN SERIES

TOT. AREA (NOTE B) SQFT	3,330	SHELL (OR SECTS) TOTAL NO.	1	CROSS BAFFLES, TYPE..	Cross Flow
LMTD		XX 0.D.....	34	NUMBER X SPACING..	X 26
CORRECTED MTD.....	30.4	TUBES, NO. PER SHELL.....	868	SEGMENT CUT.....	
TRANSFER RATE, CLEAN	122	O.D. X LENGTH.....	3/4 IN. X 240 IN.	TUBE HOLE DIAM...	* IN.
SERVICE	75.5	GAUGE, BWG.....	16 XX MIN. WALL	RADIAL CLEARANCE..	* IN.
		PITCH	15/16 IN. Δ XX	LONG BAFFLE, TYPE...	
CODE REQUIREMENTS.....	XX ASME: TEMA	TUBE LIMIT DIAM. OR WIDTH	IN.	LENGTH	* IN.
REMOVABLE TUBE BUNDLE	YES XX	WEIGHTS EACH BUNDLE...	12,550	DIET. ABOVE SHELL..	IN.
FLOATING HEAD.....	CLAMP-RING: XXXX	BUNDLE & SHELL.....	19,900	REBOILER WEIR HEIGHT	IN.
IMPINGEMENT BAFFLE...	YES NO	FULL OF WATER.....	26,000	SHELL AFTER WEIR...	FT.

MATERIALS (MARK STRESS RELIEVED - S.R., RADIOGRAPHED - X.R.)	NOZZLES (NOTE C)	TUBE SIZE	RATING	SHELL SIZE	RATING
TUBES Admiralty	INLET	6	150 RF	8	300 RF
TUBE SHEETS..... 70 - 30 CU NI	OUTLET	6	150 RF	8	300 RF
BAFFLES Muntz Metal	DRAIN				
TUBE SUPPORTS.....	VENT				
TIE RODS & SPACERS.. Brass	RELIEF				
LONG BAFFLE..... None					
SHELL Steel XR*		GASKETS			
SHELL COVER..... Steel		Cu, Cald Asb.			
CHANNEL Steel		Stl. Clad Asb.			
CHANNEL COVER..... Steel		JM-60			
FLOATING HEAD COVER Steel		JM-60			
		Cu. Clad Asb.			

REMARKS: * Long Seam Only.

** Designed for 30% excess service.

Note: See Fig. 6 - attached for condensation curve.

E PE-19-15134-2

NOTE A: FOR CONDENSERS AND THERMOSIPHON REBOILERS PRESSURE DROP STATED SHALL INCLUDE STATIC HEAD BETWEEN CENTERLINES OF INLET AND OUTLET FLANGES.
NOTE B: OUTSIDE TUBE AREA EXCLUDING AREA IN TUBE SHEETS.
NOTE C: RATE PER ASA 8 (LATEST SUPPLEMENT).

CHEV BB
1000685

(1) 10-8-56
(2) 7-24-57

WLB
Before S.O. wa)
approved. Has bundle
been ordered? BB 5/14/69

WESTERN SUPPLY COMPANY

MANUFACTURERS OF HEAT EXCHANGERS

P. O. BOX 2739

TULSA, OKLAHOMA 74101

March 24, 1969

Standard Oil Company of Texas
P. O. Box 20002
El Paso, Texas 79998

Subject: Replacement Tube Bundle
Western File 69-371

Attn: Mr. J. E. Bimler, Supervisor
Purchasing and Stores

Gentlemen:

We are pleased to confirm our quotation covering a replacement tube bundle requested in your recent verbal inquiry.

One - 33" x 20' floating head bundle only, having (868)
3/4" x 16 BWG x 20' inhibited admiralty tubes
identical to the one furnished on Western Work
Order 10828,
Estimated weight----- 11,500#
Price f.o.b. Western Shops, Tulsa, Oklahoma,
with truck freight allowed to El Paso, Texas----- \$14,650.

Routine delivery of the bundle could be accomplished within six to eight weeks after receipt of purchase order.

Any increase in the cost of copper alloy tubes subsequent to this proposal, but prior to shipment, will be passed along to the customer. Such escalation shall not exceed 3% of the f.o.b. Tulsa price of the specific item.

Terms: Net cash, thirty days.

This proposal is for acceptance within thirty days from the above date, after which time both the price and delivery will be subject to change.

We appreciate the opportunity of working with you; and if you have any questions, please do not hesitate to call on us.

Very truly yours,

WESTERN SUPPLY COMPANY

E. W. Flaxbart

E. W. Flaxbart,
Vice-President

EWf:ns

CHEV BB
0000686

TSB/TAM

WESTERN SUPPLY COMPANY

Heat Exchanger Division

POST OFFICE BOX 2739

TULSA, OKLAHOMA 74101

E. D. ANDERSON
VICE-PRESIDENT

E. W. FLAUBART
MANAGER

D. E. SCHIRMER
SALES MANAGER

J. R. MASLANKA
CHIEF ENGINEER

September 8, 1967

Standard Oil Company of Texas
P. O. Box 20002
El Paso, Texas 79998

Subject: Standard Oil Quotation QR-Tube Bundles
El Paso, Texas
Western File 67-857

Attn: Mr. J. E. Bimler

Gentlemen:

Thank you for your inquiry of August 14, 1967. It is a pleasure to hear from you. In response to your request, we submit the following price and delivery information.

Item #1

J. E. BIMLER

SEP 11 1967

Tube Bundles E-1913-A and B and E-1914 to be made in accordance with your drawing, to have N. R. Brass tube-sheets, Muntz baffles and (868) 3/4" O. D. x 16 BWG x 20' long admiralty tubes. These are the Alternate "C" materials mentioned in your inquiry.

Approximate weight, each----- 11,500#

Price, quantity of one bundle only----- \$13,375.

Price, each, quantity of two bundles----- \$13,075.

Price, each, quantity of three bundles----- \$12,975.

As Bundles E-1913-A and B and E-1914 are identical, we have taken the liberty of giving you quantity bracketed prices which we believe will assist you when placing your order.

Item #2

Tube Bundle E-1904 to be made in accordance with your drawing, to have 2-1/4 chrome tubesheets and baffles and (212) 1" O. D. x 12 BWG avg. x 10' long 5 chrome 1/2 moly tubes.

Approximate weight----- 3,000#

Price----- \$ 4,350.

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Item #2-A

As an alternate to Item #2, we propose to furnish a tube bundle having 1-1/4 chrome tubesheets and baffles instead of 2-1/4 chrome tubesheets and baffles.

Price----- \$ 4,285.

All prices are f.o.b. Western Shops, Tulsa, Oklahoma, with freight allowed to El Paso, Texas.

Delivery will be made eight to nine weeks after receipt of purchase order.

Any increase in the cost of component materials or labor subsequent to this proposal, but prior to shipment, will be passed on to the customer. Such escalation shall not exceed 5% of the f.o.b. Tulsa price.

Terms: Net cash, thirty days.

This proposal is for acceptance within thirty days from the above date, after which time both the price and delivery will be subject to change.

We appreciate the opportunity to work with you, and if you have any questions, please do not hesitate to call on us.

Very truly yours,

WESTERN SUPPLY COMPANY


F. T. Uffer

FTU:ns
Attachment

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