STRATEGIC PETROLEUM RESERVE

ENGINEERING CHANGE PROPOSAL

SUMMARY SHEET

CLASS I CHANGE

ECP NUMBER	TITLE
SJ-M/O-4630	**Remove and Replace Secondary Seals on Tanks 1 & 3**

BUDGET SOURCE

- ☐ SPR BLI _____
- ☐ CONTRACTOR BASELINE
- ☐ AUD
- ☐ OTHER: Lease Contractor

AUTHORITY

- ☑ PCCB
- ☐ ECC

SCHEDULE

- ☐ YES
  MILESTONE NUMBER _____
  CMCR NUMBER
- ☒ NO

TOTAL ESTIMATED COST OF CHANGE

	FY 00	FY 01
DESIGN	$5,845	
CONSTRUCTION	$11,690	
TOTAL	$17,535	

PCCB/ECC SIGNATURES	CONCUR	NON CONCUR	DATE	COMMENTS CONDITIONS/LIMITATIONS
~~APM Management Team Lead~~ DOE SENIOR SITE OFFICIAL	✓		3/17/04	
APM TECHNICAL ASSURANCE	✓		3/16/04	Put Vendor Data into Centra
APM SYSTEMS AND PROJECTS	✓		16 MAR 2004	
APM MAINTENANCE AND OPERATIONS	✓		3/15/04	Nothing needs to be done to the baseline Dwgs
DEPUTY PROJECT MANAGER				
DOE CMO				
PROJECT MANAGER				
DEPUTY ASSISTANT SECRETARY - SPR				

PCCB/ECC ACTION

- ☑ FULL APPROVAL
- ☐ CONDITIONAL/LIMITED APPROVAL
- ☐ DISAPPROVAL

completed 1997

STRATEGIC PETROLEUM RESERVE

ENGINEERING CHANGE PROPOSAL

ECP NUMBER	ECP TITLE	PAGE 1 OF 4
SJ-M/O-4630	**Remove and Replace Secondary Seals on Tanks 1 & 3**	

CONTRACTOR CHANGE NO. / REV.	INITIATED BY	DATE	SUBMITTED BY	DATE
	Doug Cloud	**1/22/03**	**Jill Derise**	**1/22/03**

PRIORITY	ORG / CONTRACTOR	PHONE NO.	ORG/CONTRACTOR	PHONE NO.
☐ EMERGENCY ☐ URGENT ☒ ROUTINE	**Shell Pipeline Company LP**	**(504) 728-7131**	**Shell Pipeline Company LP**	**(504) 728-7366**

VALUE ENGINEERING	DRAWDOWN CRITICAL	ROM ESTIMATE
☐ VEP (MANDATORY) ☐ VECP (VOLUNTARY)	☐ YES ☒ NO	$ **52,046**

DESCRIPTION:

PROBLEM / EXISTING CONFIGURATION

This ECP is being submitted as documentation of work that was done at Sugarland in 1997. In November 1997, high winds caused the secondary seals on Tanks 1 & 3 to break off at the rim angle connection; thus leaving large seal gaps that were out of compliance for EPA air emission requirements.

PROPOSED SOLUTION / ENHANCEMENT

Tanks were isolated; roofs were vapor-freed; existing Graver secondary wiper seals were removed and disposed; new Matrix stainless steel conventional wiper seals with Buna tips and bolting hardware were installed. See attached vendor documentation for FAS-1 Flex-A-Seal compression plate secondary seal system, which was known as a Matrix conventional compression secondary seal in 1997.

[Reference Shell AFE 349045]

REASON/JUSTIFICATION

New seals were required to comply with EPA air emission requirements. The work was not considered to be a capital improvement (therefore not "unfunded liability") because the project entailed replacing one secondary seal brand with another brand.

CI'S AFFECTED

TECHNICAL ANALYSIS/RECOMMENDATION	IMPLEMENTATION METHOD
	☐ SUBCONTRACT ☐ M&O LABOR (LOE) ☐ COMBINATION

ENGINEERING	DATE	DOE SSR	DATE
			☐ CONCUR ☐ NONCONCUR

STRATEGIC PETROLEUM RESERVE

ENGINEERING CHANGE PROPOSAL
SOFTWARE, HARDWARE, FIRMWARE CHANGE

CONTRACTOR CHANGE NUMBER	REVISION NUMBER	ECP NUMBER	Page 3 of 4
		SJ-M/0-4630	

SOFTWARE CHANGE ANALYSIS	HARDWARE/SOFTWARE AFFECTED
	(NOTE: REDLINE CI BOM)

DISPOSITION OF PARTS

☐ REWORK SITE COMPONENTS ONLY ☐ REWORK ALL SITE COMPONENTS ☐ COMPONENTS NOT AFFECTED

☐ OTHER (DESCRIBE)_____

COMPONENT COMPATIBILITY (LIST COMPONENTS SEPARATELY IF COMPATIBILITIES ARE DIFFERENT)

☐ INTERCHANGABLE ☐ DRAWDOWN COMPATIBLE ☐ NONCOMPATIBLE

OPCS SUPPORT ENGINEER	DATE	FUNCTIONAL MANAGER	DATE

IMPLEMENTATION/TEST COMMENTS

WITNESSED BY	DATE

TEST APPROVED BY	DATE	CHANGE RELEASE AUTHORITY	DATE

STRATEGIC PETROLEUM RESERVE
ENGINEERING CHANGE PROPOSAL
CONFIGURATION CHANGE AFFECTED REPORT

"TO BE COMPLETED BY TECHNICAL REVIEW PROCESS, ENGINEERING AND CONFIGURATION MANAGEMENT ORGANIZATION DEFINED PROCESS"

ECP NO.	CONTRACTOR CHANGE NO	REV.	CHANGE CLASSIFICATION	PAGE 4 OF 4
SJ-M/O-4630			☑ CLASS I ☐ CLASS II	

FUNCTIONS AFFECTED			DOCUMENTS AFFECTED		
Y	N	ITEM	Y	N	ITEM
		LEVEL 1 ☐ II ☒ III ☐ CRITERIA			ELECTRICAL
		PERFORMANCE CRITERIA			315 - CATHODIC PROTECTION
		RAM			350 - STANDARDS
		INTERFACE CHARACTERISTICS			INSTRUMENTATION
		I/O POINTS			401 - BLOCK DIAGRAM
		DOE LEVEL I, II, III SCHEDULES			402 - LOOP DIAGRAMS
		GUARANTEES/DELIVERABLES			403 - INSTRUMENT PLANS AND DETAILS
		SAFETY/ENV/FP (CIRCLE ONE)			404 - INSTRUMENT WIRING DIAGRAM
		SECURITY REQUIREMENTS			409 - INSTRUMENT INDEX
		OPCS SOFTWARE			450 - STANDARDS
		OPCS HARDWARE			MAPPING
		OPCS FIRMWARE			501 - ALIGNMENT SHEETS
		RANGES/ I/O POINTS			509 - PIPELINE DWGS (MAINLINE VALVES, DRIPS, SCRAPER, TRAPS
		DIP SWITCH SETTINGS/JUMPERS			550 - STANDARDS
		MASTER CI LIST			ARCHITECTURAL
		WELLHEAD CONFIGURATION			720 - ELEVATIONS AND FLOOR PLANS
		SPARES/PROVISIONING REQUIREMENTS			750 - STANDARDS
		OPERATIONS MANUALS			DOCUMENTATION
		MAINTENANCE MANUALS			900 - RESERVED
		GOVERNMENT FURNISHED EQUIPMENT			901 - TECHNICAL/PERFORMANCE/DESIGN CRITERIA
		ENERGY USAGE			910 - DESIGN DESCRIPTION/BASIS
		VALUE ENG. (COST SAVINGS)			911 - PROCESS SET POINT DOCUMENTS
		OPERATIONS MODELS			912 - EQUIPMENT LIST
		OTHER			913 - MOV LIST
DOCUMENTS AFFECTED					915 - ELECTRICAL SAFETY
Y	N	ITEMS			920 - I/O DOCUMENT
		PIPING			930 - OPERATION AND MAINTENANCE MANUALS
		101 - PROCESS FLOW DIAGRAMS			950 - STANDARD SPECIFICATIONS
		102 - MECHANICAL FLOW DIAGRAMS			970 - TASK SPECIFICATIONS
		103 - PIPING AND INSTRUMENTATION DIAGRAMS (P&ID'S)			990 - CONFIGURATION MANAGEMENT REPORTS 1.B.0.M
		104 - UTILITY FLOW DIAGRAMS			999 - RESERVED
		105 - GENERAL PIPING PLANS	COMMENTS:xn		
		106 - AREA PLANS (MECHANICAL EQUIPMENT LOCATION)			
		122 - WELLLHEAD DRAWINGS			
		130 - VALVE LIST			
		135 - LINE LIST			
		140 - PSV LIST			
		150 - STANDARDS			
		CIVIL/STRUCTURAL			
		201 - PLOT PLANS			
		202 - SITE WORK, GRADING (ROUGH & FINISH DRAINAGE FENCING			
		210 - FOUNDATIONS: LOCATION PLANS			
		216 - MINES (WEEKS ISLAND ONLY)			
		250 - STANDARDS			
		ELECTRICAL			
		301 - AREA CLASSIFICATION			
		302 - ONE LINE DIAGRAMS			
		303 - SCHEMATIC DIAGRAMS			
		304 - POWER PLANS AND DETAILS			
		305 - LIGHTING PLANS AND DETAILS			
		307 - SUBSTATION PLANS AND DETAILS			
		308 - WIRING DIAGRAMS			
		310 - GROUNDING			
		311 - CONDUIT & CABLE SCHEDULES (INCLUDING INSTRUMENTS)			
		313 - MCC/SWITCH GEAR EVALUATION & SCHEDULE			

Engineering	DATE	CONFIGURATION MANAGEMENT	DATE

ENGINEERING CHANGE PROPOSAL
LIFE CYCLE COST FORM

ECP NUMBER: SJ-M/O-4630	ECP TITLE: Remove and Replace Secondary Seals on Tanks 1 & 3

EXECUTIVE SUMMARY:
This ECP is being submitted as documentation of work that was done at Sugarland in 1997. New seals were required to comply with EPA air emission requirements.

IMPLEMENTATION PLAN:

Tanks were isolated; roofs were vapor-freed; existing Graver secondary wiper seals were removed and disposed; new Matrix stainless steel conventional wiper seals with Buna tips and bolting hardware were installed. See attached vendor documentation for FAS-1 Flex-A-Seal compression plate secondary seal system, which was known as a Matrix conventional compression secondary seal in 1997.

IMPLEMENTATION COST:

DESIGN:	$
CONSTRUCTION:	$52,046
TOTAL:	$52,046

LIFE CYCLE COST:
Not applicable. The work was not considered to be a capital improvement (therefore not "unfunded liability") because the project entailed replacing one secondary seal brand with another brand.

IMPACT SUMMARY:

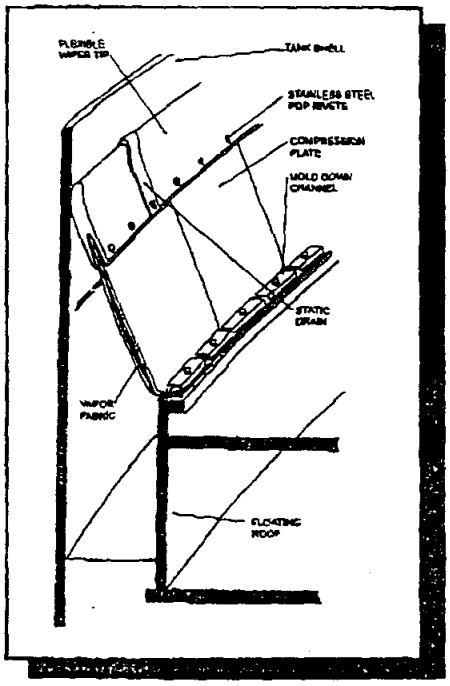
LEVEL I, II, and III CRITERIA:	CONTRACT COMPLETION DATES:
CODES, REGULATIONS, PERMITS, ETC.:	GOVERNMENT-FURNISHED EQUIPMENT:
SAFETY, ENVIRONMENTAL, FIRE PROTECTION SYSTEMS, SECURITY:	SCHEDULE: Installed in 1997

PETROTANK®
EQUIPMENT, INC.

FLEX-A-SEAL™

Flex-A-Seal™ Compression Plate Secondary Seal System (FAS-1)

The Flex-A-Seal™ is the only secondary seal on the market that can offer both a continuous vapor barrier fabric and "zero gap" compliance tip for welded tanks.



Specifically designed to fit all types of support mountings the Flex-A-Seal™ requires no "hot work" or special fitments to the tank roof for installation.

Unlike other seal manufacturers who offer a "one size fits all", the Flex-A-Seal™ is custom designed for each tank, ensuring proper fit and compliance of all air quality regulations. The Flex-A-Seal™ maintains a force of 20 lbs. minimum per foot against the tank shell. This force remains constant around the circumference of the floating roof and at all shell contact levels, even as the roof travels during normal operation. Each seal is designed to accommodate a plus or minus of four (4) inches from the nominal rim space measurement.

Flex-A-Seal's™ patented tip design reduces product contamination due to weather conditions such as rain, snow, blowing sand and dust with up to 98% shedding control capacity. This dramatically reduces water draw-off, as well as the loss of many additives in the stored product that are often lost with water.

The 16 gauge galvanized or stainless steel compression plates are not bolted together allowing each individual area to conform to the contours of the tank shell. The reinforced fabric placed under the compression plates provides a continuous vapor barrier and protects the underside of the plates from corrosion caused by product aromatics.

The PVC Nitrile flexible wiper tip blade is mounted vertically on the end of the compression plate to even further increase the sealing efficiency and virtually eliminates the release of hydrocarbons within the tank.

PETROTANK - *"Total Response-Ability"*
800-678-0871

The AST PETROTANK Total Compliance People

6/99

PETROTANK®
EQUIPMENT, INC.

FAS-1 SPECIFICATIONS

Flex-A-Seal™ Compression Plate Secondary Seal System (FAS-1)

CONFIGURATION(S)

Petrotank's Flex-A-Seal™ Seal System is engineered and fabricated individually for each tank. Depending on service environments and installation requirements, the FAS-1 is designed for either In-Service or Out-of-Service installations. Several variations and options are available. Please contact your sales representative for recommendations and quotations for your specific needs.

COMPRESSION PLATES

Description: Designed for 1-1/2" min. overlap to each adjoining plate, will maintain 20 lbs. per foot min. against tank shell. Compression plates are not bolted or riveted together to allow for lateral flexure.

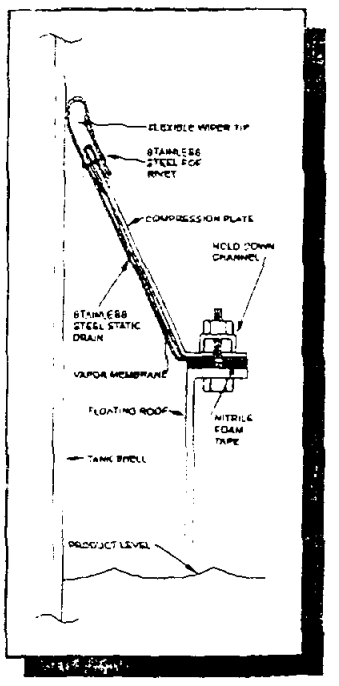
Galvanized: 16 Gauge minimum with no less than G90 Galvanized Coating

Stainless Steel: 16 Gauge minimum 304 stainless steel with 2B surface finish

FLEX-A-TIP (See "Flex-A-Tip")

Description: No-gap installation with stainless steel rivet or bolt. A protector clip is installed on the shell side of the compression plate at each rivet or bolt to protect the tip from damage should the seal be taken above the tank wall.

Material(s): PVC Nitrile/Buna Compound
Viton Available



PROTECTOR CLIP

Description: See Above

Material(s): Stainless Steel

VAPOR FABRIC (See "Fabrics")

Description: Product compatible membrane forming a continuous circumferential seal with no gaps, holes, tears, or openings. Necessary splices accomplished with compatible adhesive and mechanical joining.

Standard Configurations:

RPI2020 - 20 mil Urethane
Coated Teflon - 10 mil min