# STRATEGIC PETROLEUM RESERVE

## ENGINEERING CHANGE PROPOSAL

**SUMMARY SHEET**

### CLASS I CHANGE

| ECP NUMBER | TITLE |
|---|---|
| SJ-M/O-4638 | **Removal of Thermal Pressure Safety Valves (PSV)** |

**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 03 |
|---|---|---|
| DESIGN | | |
| CONSTRUCTION | **$5,000** | |
| TOTAL | **$5,000** | |

| PCCB/ECC SIGNATURES | DISPOSITION: CONCUR | DISPOSITION: NON CONCUR | DISPOSITION: DATE | COMMENTS CONDITIONS/LIMITATIONS |
|---|---|---|---|---|
| APM Management and Admin. ~~DOE SENIOR SITE OFFICIAL~~ | ✓ | | 3/23/04 | |
| APM TECHNICAL ASSURANCE | ✓ | | 3/23/04 | |
| APM SYSTEMS AND PROJECTS | ✓ | | 22 March 2004 | |
| APM MAINTENANCE AND OPERATIONS | ✓ | | 3/15/04 | |
| DEPUTY PROJECT MANAGER | | | | |
| DOE CMO | | | | |
| PROJECT MANAGER | | | | |
| DEPUTY ASSISTANT SECRETARY - SPR | | | | |

**PCCB/ECC ACTION**

☑ FULL APPROVAL ☐ CONDITIONAL/LIMITED APPROVAL ☐ DISAPPROVAL

ECPFM (4)

Subject: REVIEW OF ECP SJ-M/O-4638
"REMOVAL OF THERMAL PRESSURE SAFETY VALVES"

We have reviewed the subject ECP submitted by Shell Pipeline.

We find no issue with the conceptual aspects of the change. The check valves installed in place of the former thermal PSVs ought to be functionally equivalent.

However, we note that:

1. These check valves serve principally to prevent flange leaks. They do not directly contribute to personnel safety. The check valves have been in service for three (3) years prior to submission of the ECP indicating that they are satisfactory for the service.

2. The valve described in the ECP is a "NUPRO differential check valve". The NUPRO brand was retired by Swagelock in 1999. Swagelock does not maintain historical data for the NUPRO line on their website. The rebranded Swagelock check valves do not include any that are described as "differential check valves". Consequently, we cannot assess the valves themselves at this time.

Thanks,
Charlie DeLuca
Patrick Mihalik

c mpleted 2000

STRATEGIC PETROLEUM RESERVE

# ENGINEERING CHANGE PROPOSAL

| ECP NUMBER | ECP TITLE | PAGE 1 OF 4 |
|---|---|---|
| SJ-M/O-4638 | **Removal of Thermal Pressure Safety Valves (PSV)** | |

| CONTRACTOR CHANGE NO. / REV. | INITIATED BY | DATE | SUBMITTED BY | DATE |
|---|---|---|---|---|
| | **Richard Krebs** | **1/22/03** | **Jill Derise** | **1/22/03** |
| PRIORITY | ORG / CONTRACTOR | PHONE NO. | ORG/CONTRACTOR | PHONE NO. |
| ☐ EMERGENCY | **Shell Pipeline Company LP** | **728-3573** | **Shell Pipeline Company** | **728-7366** |
| ☐ URGENT | | | | |
| ☒ ROUTINE | | | | |

| VALUE ENGINEERING | DRAWDOWN CRITICAL | ROM ESTIMATE |
|---|---|---|
| ☐ VEP (MANDATORY) | ☐ YES | |
| ☐ VECP (VOLUNTARY) | ☐ NO | $ 5,000 |

## DESCRIPTION:

PROBLEM / EXISTING CONFIGURATION

**This ECP is being submitted as documentation of work that was done at Sugarland in 2000. Thermal relief valves were identified in piping locations where differential check valves could be used instead or thermal relief is not required.**

PROPOSED SOLUTION / ENHANCEMENT

**Relief valves were replaced with Nupro differential check valves. The check valves open at 1 psi of differential pressure. The tag numbers of relief valves removed and replaced with 1psi check valves are as follows: PSV-T-720, PSV-T-1020, PSVD-103, PSVD-107, PSV-2D20F2, PSV-2D20F1, PSV-1D20F2, PSVD-211, PSVD-207, PSVD-203, PSVD-111, and PSV-T-820.**

**Relief valve PSV-WI20W2 was not needed for overpressure protection and was therefore removed without replacement. Adequate protection is provided by PSV-WI20F1 and surge relief valves WI120 and WI220.**

**[Reference Shell AFE NA – work charged to location]**

REASON/JUSTIFICATION

**By replacing the relief valves with the check valves the requirement by DOT for testing was eliminated and required maintenance was reduced. The potential for a release was also reduced since unused equipment was removed. The work was not considered "unfunded liability" due to the nature of the work – removal or replacement of equipment that performs same function.**

CI'S AFFECTED

| TECHNICAL ANALYSIS/RECOMMENDATION | IMPLEMENTATION METHOD |
|---|---|
| | ☐ SUBCONTRACT<br>☐ M&O LABOR (LOE)<br>☐ COMBINATION |

| ENGINEERING | DATE | DOE SSR | DATE |
|---|---|---|---|
| | | | ☐ CONCUR<br>☐ NONCONCUR |

# STRATEGIC PETROLEUM RESERVE

## ENGINEERING CHANGE PROPOSAL
### SOFTWARE, HARDWARE, FIRMWARE CHANGE

| CONTRACTOR CHANGE NUMBER | REVISION NUMBER | ECP NUMBER | |
|---|---|---|---|
| | | SJ-M/O-4638 | Page 3 of 4 |

| 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 |
|---|---|---|---|
| SJ-M/O-4638 | | | ☑ CLASS I ☐ CLASS II PAGE 4 OF 4 |

| 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 |
| | | | | | 915 - ELECTRICAL SAFETY |
| | | | | | 920 - I/O DOCUMENT |
| | | | | | 930 - OPERATION AND MAINTENANCE MANUALS |
| | | | | | 950 - STANDARD SPECIFICATIONS |
| | | | | | 970 - TASK SPECIFICATIONS |
| | | | | | 990 - CONFIGURATION MANAGEMENT REPORTS 1.B.0.M |
| | | | | | 999 - RESERVED |

| DOCUMENTS AFFECTED | | |
|---|---|---|
| Y | N | ITEMS |
| | | PIPING |
| | | 101 - PROCESS FLOW DIAGRAMS |
| | | 102 - MECHANICAL FLOW DIAGRAMS |
| | | 103 - PIPING AND INSTRUMENTATION DIAGRAMS (P&ID'S) |
| | | 104 - UTILITY FLOW DIAGRAMS |
| Y | | 105 - GENERAL PIPING PLANS |
| | | 106 - AREA PLANS (MECHANICAL EQUIPMENT LOCATION) |
| | | 122 - WELLLHEAD DRAWINGS |
| | | 130 - VALVE LIST |
| | | 135 - LINE LIST |
| Y | | 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 |

COMMENTS:xn

| Engineering | DATE | CONFIGURATION MANAGEMENT | DATE |
|---|---|---|---|

# ENGINEERING CHANGE PROPOSAL
## LIFE CYCLE COST FORM

| ECP NUMBER: SJ-M10-4638 | ECP TITLE: Removal of Thermal Pressure Safety Valves (PSV) |
|---|---|

**EXECUTIVE SUMMARY:**

This ECP is being submitted as documentation of work that was done at Sugarland in 2000. Thermal relief valves were identified in piping locations where differential check valves could be used instead or thermal relief is not required.

**IMPLEMENTATION PLAN:**

Relief valves were replaced with Nupro differential check valves. The check valves open at 1 psi of differential pressure. The tag numbers of relief valves removed and replaced with 1psi check valves are as follows:
PSV-T-720, PSV-T-1020, PSVD-103, PSVD-107, PSV-2D20F2, PSV-2D20F1, PSV-1D20F2, PSVD-211, PSVD-207, PSVD-203, PSVD-111, and PSV-T-820.

Relief valve PSV-WI20W2 was not needed for overpressure protection and was therefore removed without replacement. Adequate protection is provided by PSV-WI20F1 and surge relief valves WI120 and WI220.

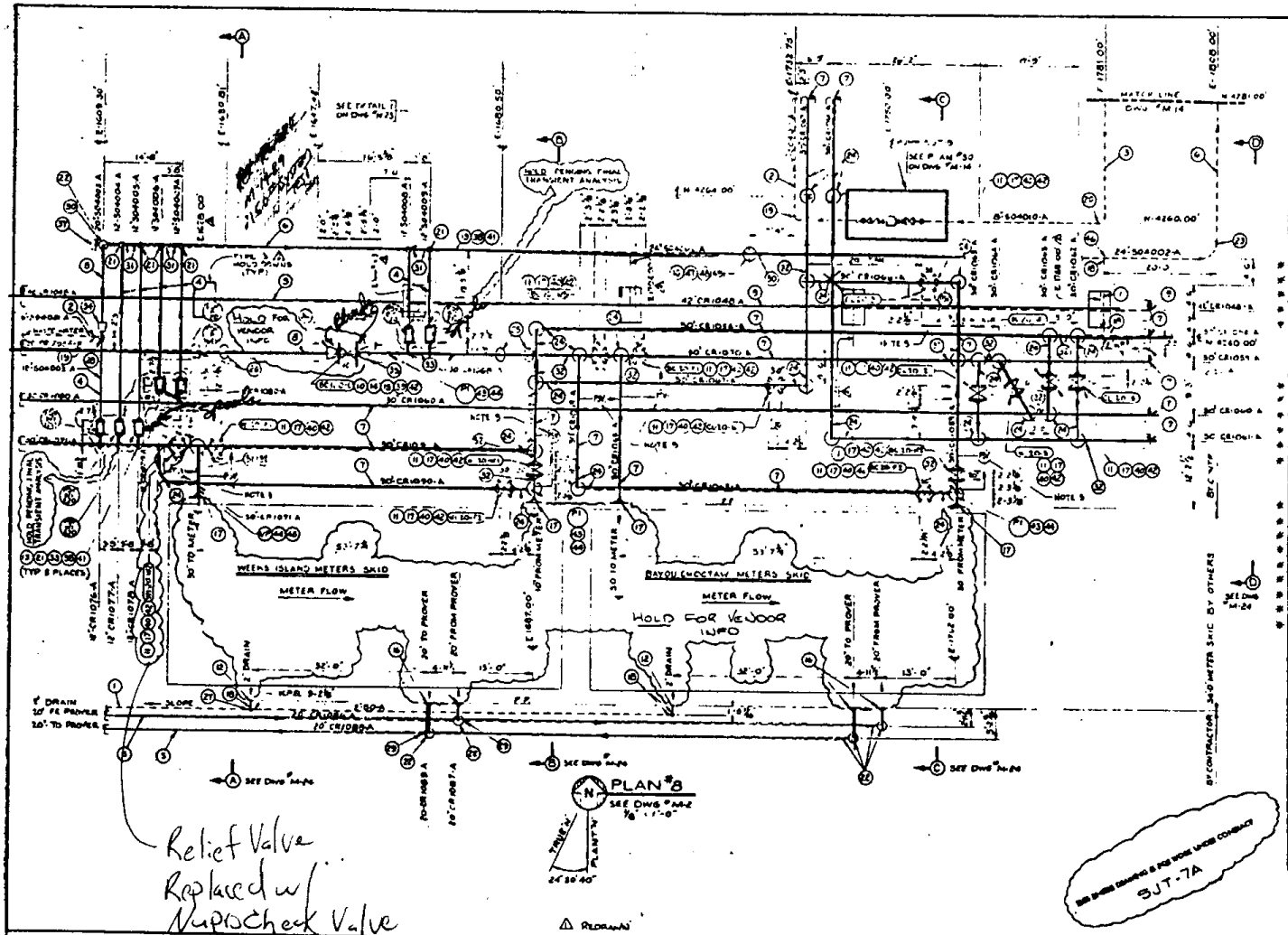
**IMPLEMENTATION COST:**

| | |
|---|---|
| DESIGN: | |
| CONSTRUCTION: | $5,000 |
| TOTAL: | $5,000 |

**LIFE CYCLE COST:**
Not applicable. Not a capital improvement project.

**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: Work performed in 2000 |




| ITEM | QTY | DESCRIPTION |
|---|---|---|
| 1 | 2 | 1" PIPE SCH. 80 ASTM A106 GR. B SMLS |
| 2 | 1 | 4" PIPE SCH. 40 A-106 A53 GR. A OR B CL. B SMLS |
| 3 | 1 | 6" PIPE SCH. 40 A106 A53 GR. A OR B CL. B SMLS |
| 4 | 1 | 1" PIPE [illegible] |
| 5 | 1 | 20" PIPE [illegible] |
| 6 | 1 | 4" PIPE .375 WL A106 A53 GR. A OR B CL. B SMLS |
| 7 | 1 | 20" PIPE .375 WL A-36 A53 [illegible] |
| 8 | 1 | 20" PIPE [illegible] |
| 9 | 2 | 4" PIPE .375 WL A106 A53 GR. A OR B CL. B SMLS |
| 10 | 1 | 24" MAX VALVE 300# R.F. PLUG W/SLIC. [illegible] |
| 11 | 14 | 3" CONDUIT GATE VALVE 150# R.F. PLG B W/SLIC. OPER AP-40 |
| 12 | 2 | 2" 150# R.F. WN FLG. (1 [illegible]) BORE) ASTM A105 |
| 13 | 14 | 2" 150# R.F. WN FLG. (15 [illegible]) BORE) ASTM A105 |
| 14 | 1 | 4" 300# R.F. WN FLG. (15.2") BORE) ASTM A105 |
| 15 | 1 | 6" 300# R.F. WN FLG. (13.50") BORE) ASTM A105 |
| 16 | 2 | 20" 150# R.F. WN FLG (19.25") BORE) ASTM A105 |
| 17 | 14 | 20" 150# R.F. WN FLG (19.25") BORE) ASTM A105 |
| 18 | 4 | 2" 90° ELL S.W. SCH. 80 ASTM A234 WPB |
| 19 | 2 | 4" 90° ELL S.W. SCH. 40 ASTM A234 WPB |
| 20 | 1 | 6" 90° ELL S.W. SCH. 40 ASTM A234 WPB |
| 21 | 1 | 12" 90° ELL S.W. .375" WL. ASTM A234 WPB |
| 22 | 2 | 20" 90° ELL S.W. .375" WL. ASTM A234 WPB |
| 23 | 1 | 20" 90° ELL S.W. .375" WL. ASTM A234 WPB |
| 24 | 2 | 20" 90° ELL S.W. .375" WL. ASTM A234 WPB |
| 25 | 2 | 20" 90° ELL S.W. .375" WL. ASTM A234 WPB |
| 26 | 1 | 20" 90° ELL S.W. .375" WL. A53-GR-B-TS-W-STD-CL |
| 27 | 1 | 8" TEE S.W. SCH. 80 ASTM A234 WPB |
| 28 | 1 | 12" X 12" X 8" RED TEE .375" WL. ASTM A234 WPB |
| 29 | 1 | 20" TEE S.W. .375" WL. ASTM A234 WPB |
| 30 | 1 | 20" X 20" X 12" RED. TEE .375" WL. ASTM A234 WPB |
| 31 | 1 | 20" X 20" X 12" RED. TEE .375" WL. ASTM A234 WPB |
| 32 | 11 | 20" TEE S.W. .375 WL. ASTM A234 WPB |
| 33 | 2 | 20" X 20" X 12" RED TEE S.W. .375" WL. ASTM A234 WPB |
| 34 | 1 | 20" X 12" CONC. RED S.W. .375" WL. ASTM A234 WPB |
| 35 | 1 | 20" X 16" CONC. RED S.W. .375" WL. ASTM A234 WPB |
| 36 | 1 | 20" X 12" CONC. RED S.W. .375" WL. A53-GR-B-TS-W-STD-CL |
| 37 | 1 | 20" CAP S.W. .375" WL. ASTM A234 WPB |
| 38 | 14 | 12" 150# RING GASKET 1/16" THK. ASBESTOS |
| 39 | 2 | 16" 300# RING GASKET 1/16" THK. ASBESTOS |
| 40 | 28 | 20" 150# RING GASKET 1/16" THK. ASBESTOS |
| 41 | 168 | 7/8" DIA. X 6 1/4" LG. STUDBOLTS A-193 GR. B7 W/2-193 GR. 2H NUTS |
| 42 | 888 | 1" DIA. X 6 3/4" LG. STUDBOLTS A-193 GR. B7 W/2-193 GR. 2H NUTS |
| 43 | 3 | 1" [illegible] 600# BAR STOCK VALVE W/316 DISCS F.S. BODY X S. TTL TRIM |
| 44 | 2 | 1" THREADOLET 3000# F.S. ASTM A105 |
| 45 | 1 | 1" PLUG SCH 80 3000# F.S. ASTM A105 |
| 46 | 1 | 20 X 2 WELDOLET SCH. 80 ASTM A234 |
| 47 | 1 | 20"-150# BLIND FLG. ASTM A105 |
| 48 | 1 | 20"-150# RING GASKET 1/16" THK. ASBESTOS |
| 49 | 16 | 1 1/8" DIA. X 6" LG. STUDBOLTS A-193 GR. B7 W/2-194 2H NUTS |

1. FOR GENERAL NOTES SEE DWG. "M-1"
2. MATERIAL LIST IS FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR SUPPLYING ALL MATERIAL EXCEPT THOSE FURNISHED BY THE GOVERNMENT. FOR TOTAL PIPE QTY SEE DWG. M-1.
3. FOR RELIEF VALVES SEE DET "AA" ON DWG." M-39
4. FOR DETAILS OF HOLD DRUMS, SEE DWG "S-60.

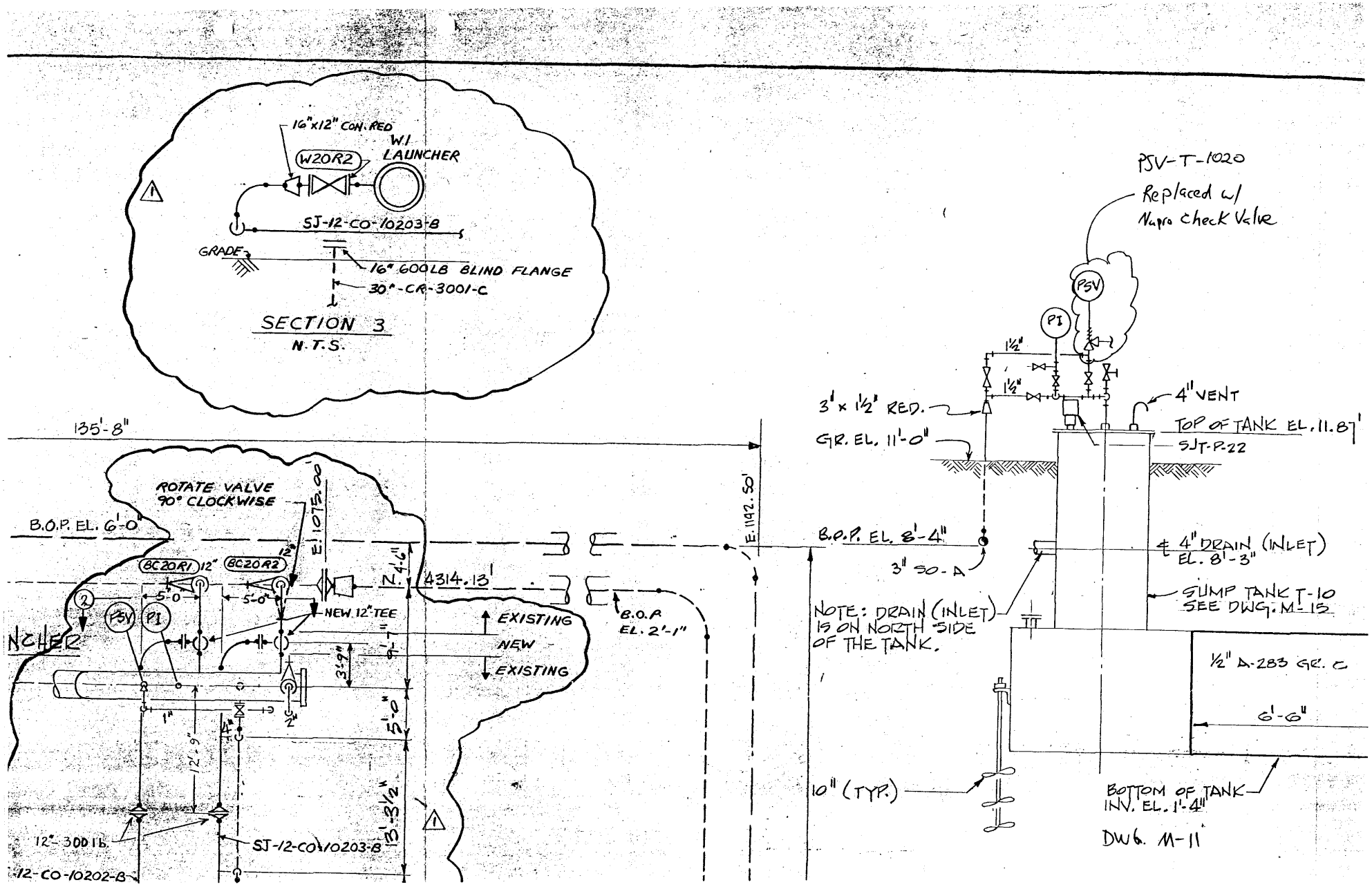
WALK, HAYDEL & ASSOCIATES, INC.
ENGINEERS
NEW ORLEANS MOBILE BATON ROUGE
PROJECT NO. 76-2394

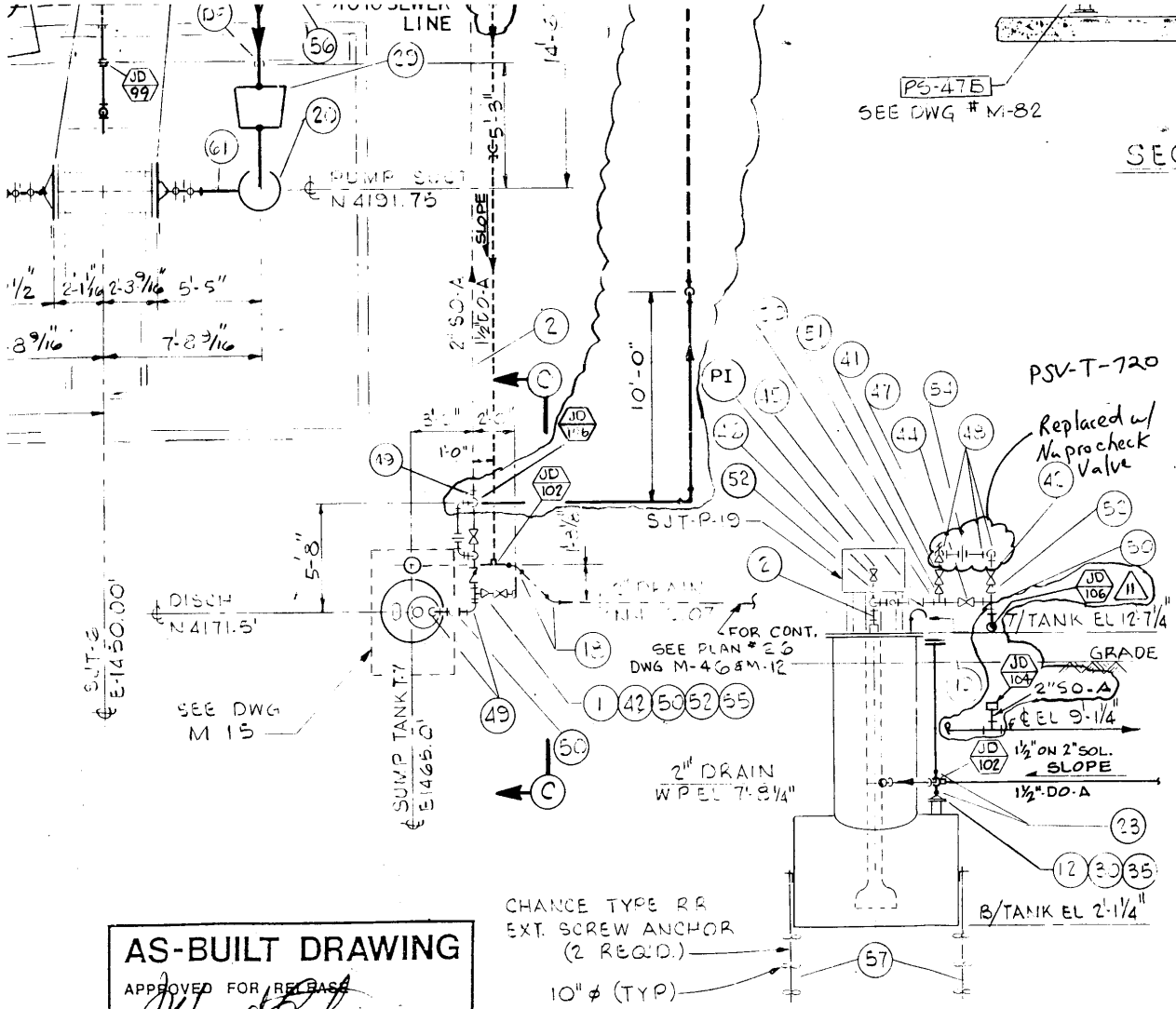
AS BUILT
REVISION
CHANGE ORDER
ADDENDUM

TRANSFER METERS PIPING PLAN
MECHANICAL PACKAGE
ST. JAMES TERMINAL
ST. JAMES PARISH, LOUISIANA

FACILITY DEVELOPMENT AND CONSTRUCTION DIVISION
Strategic Petroleum Reserve

SJT-7A
MECHANICAL
M-12
SHEET 13 OF 109


16"x12" CON. RED
W.I. LAUNCHER
W20R2
SJ-12-CO-10203-B
GRADE
16" 600LB BLIND FLANGE
30"-CR-3001-C
SECTION 3
N.T.S.
135'-8"
ROTATE VALVE 90° CLOCKWISE
B.O.P. EL. 6'-0"
BC20R1
BC20R2
12"
5'-0"
PSV
PI
NEW 12" TEE
E. 1075.00
N. 4314.13'
EXISTING
NEW
EXISTING
9'-7"
3'-9"
5'-0"
13'-3 1/2"
12'-9"
1"
2"
12"-300 LB.
SJ-12-CO-10203-B
12-CO-10202-B
E. 1192.50'
B.O.P. EL. 2'-1"
PSV-T-1020
Replaced w/ Napco Check Valve
1 1/2"
3' x 1 1/2" RED.
GR. EL. 11'-0"
4" VENT
TOP OF TANK EL. 11.87'
SJT-P-22
B.O.P. EL. 8'-4"
3" SO-A
℄ 4" DRAIN (INLET) EL. 8'-3"
SUMP TANK T-10 SEE DWG. M-15
NOTE: DRAIN (INLET) IS ON NORTH SIDE OF THE TANK.
1/2" A-283 GR. C
6'-6"
10" (TYP.)
BOTTOM OF TANK INV. EL. 1'-4"
DWG. M-11



SECTION "B-B"
3/16" = 1'-0"
(TYP 3)

| MATERIAL LIST | | |
|---|---|---|
| ITEM | QUAN. | DESCRIPTION |
| 49 | 9 | 1½" 90° ELL. SCR'D 3000# F.S. ASTM A105 |
| 50 | 4 | 1½" TEE SCR'D 3000# F.S. ASTM A105 |
| 51 | 1 | 1½" x 3/4" SWAGE SCH. 80 (TBE) ASTM A234 WPB |
| 52 | 2 | 1½" x 1" SWAGE SCH. 80 (TBE) ASTM A234 WPB |
| 53 | 3 | 2" x 1" SWAGE SCH. 80 (BLE-TSE) ASTM A234 WPB |
| 54 | 1 | 1" UNION SCR'D 3000# F.S. ASTM A105 |
| 55 | 1 | 1" QUICK DISCONNECT COUPLING |
| 56 | 3 | 30"-150# CONE TEMP. STRAINER 316 S. STL. |
| 57 | | SCREW ANCHOR CHANCE TP RR EXTENSION OR EQ. |
| 58 | 3 | 4" x 2" CONC. RED. B.W. SCH. 80 ASTM A234 WPB |
| 59 | 15 | 1" 3000# THREDOLET F.S. ASTM A105 GR. 11 |
| 60 | 15 | 1" x 3" LG. PIPE NIPPLE SCH. 80 ASTM A106 GR. B SMLS. |
| 61 | 6 | 24" x 20" RED. 90° ELL. B.W. .375" WL. ASTM A234 WPB |
| 62 | 3 | 20" x 12" ECC. RED. B.W. .375" WL. ASTM A234 WPB |
| 63 | 3 | 20" x 12" CONC. RED. B.W. .375" WL. ASTM A234 WPB |
| 64 | 6 | 12" 300# R.F. W.N. FLG. (12.00" BORE) ASTM A105 |
| 65 | 6 | 12" 300# RING GASKET 1/16" THK ASBESTOS |
| 66 | 96 | 1 1/8" DIA. x 7 1/4" LG. STUD BOLTS A-193 GR. B7 W/A-1 GR. 2H NUTS |
| 67 | NOTE 2 | 24" PIPE .375" WALL API 5L GR. B SMLS. OR DSAW |
| 68 | 6" | 24" X 12" RED. 90° ELL'S. STD. WT. |
| 69 | 6" | 300# SMOOTH BORE 12" RF WN FLG'S. |

**AS-BUILT DRAWING**

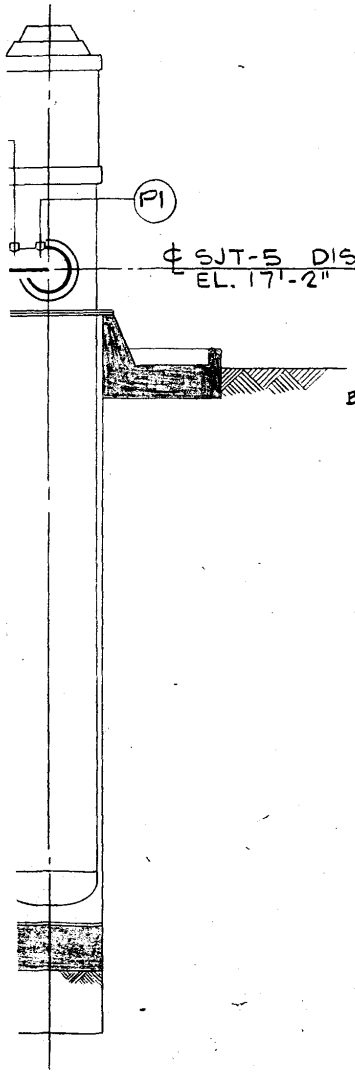
APPROVED FOR RELEASE

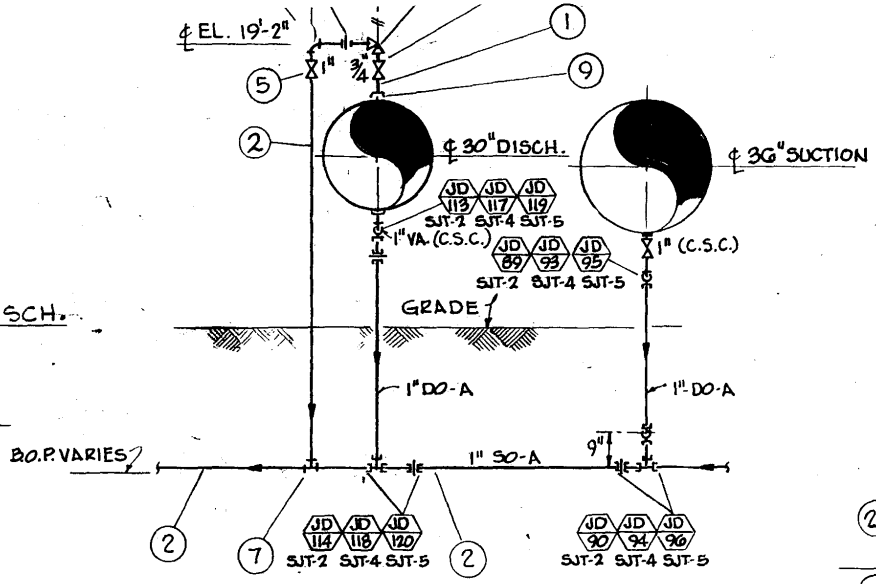
DEPARTMENT OF ENERGY
STRATEGIC PETROLEUM RESERVE
ENGINEERING & CONSTRUCTION
DATE: 7-8-87

| | | | | | |
|---|---|---|---|---|---|
| 11 | AS-BUILT PER TASK SJ-M-045 & ECP-SJ-CIP-4052, 4071 & 4073 | WEF J.J. | CBF | DK 3-19-87 | |
| A | MODIFICATION OF | | | | |

| | | | | |
|---|---|---|---|---|
| 8 | FIELD VERIFICATION | SJT-7A | | 1/19/81 |
| 7 | CCB-7A-2587 | | | |

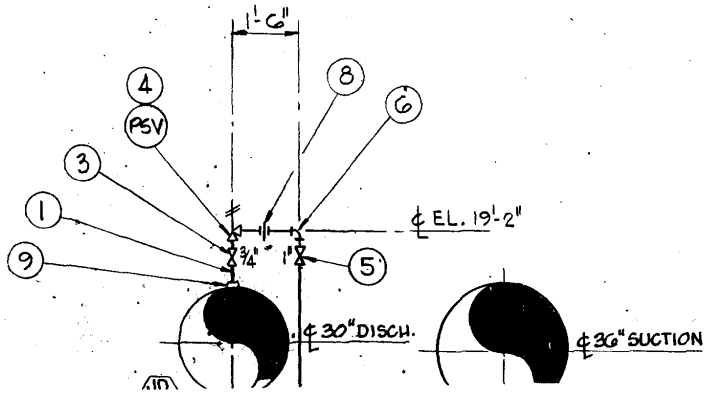
TEMPORARY TRANSF
PIPING PLAN, SE

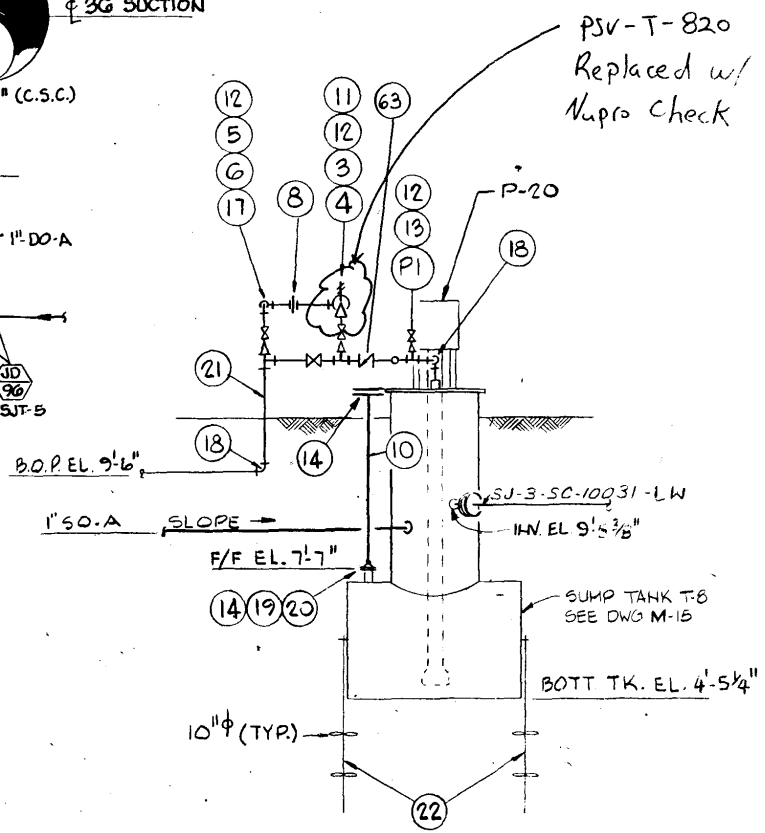



## DETAIL #3

PUMPS, SJT-2, 4, & 5
SEE DWG # M-33
3/8" = 1'-0"

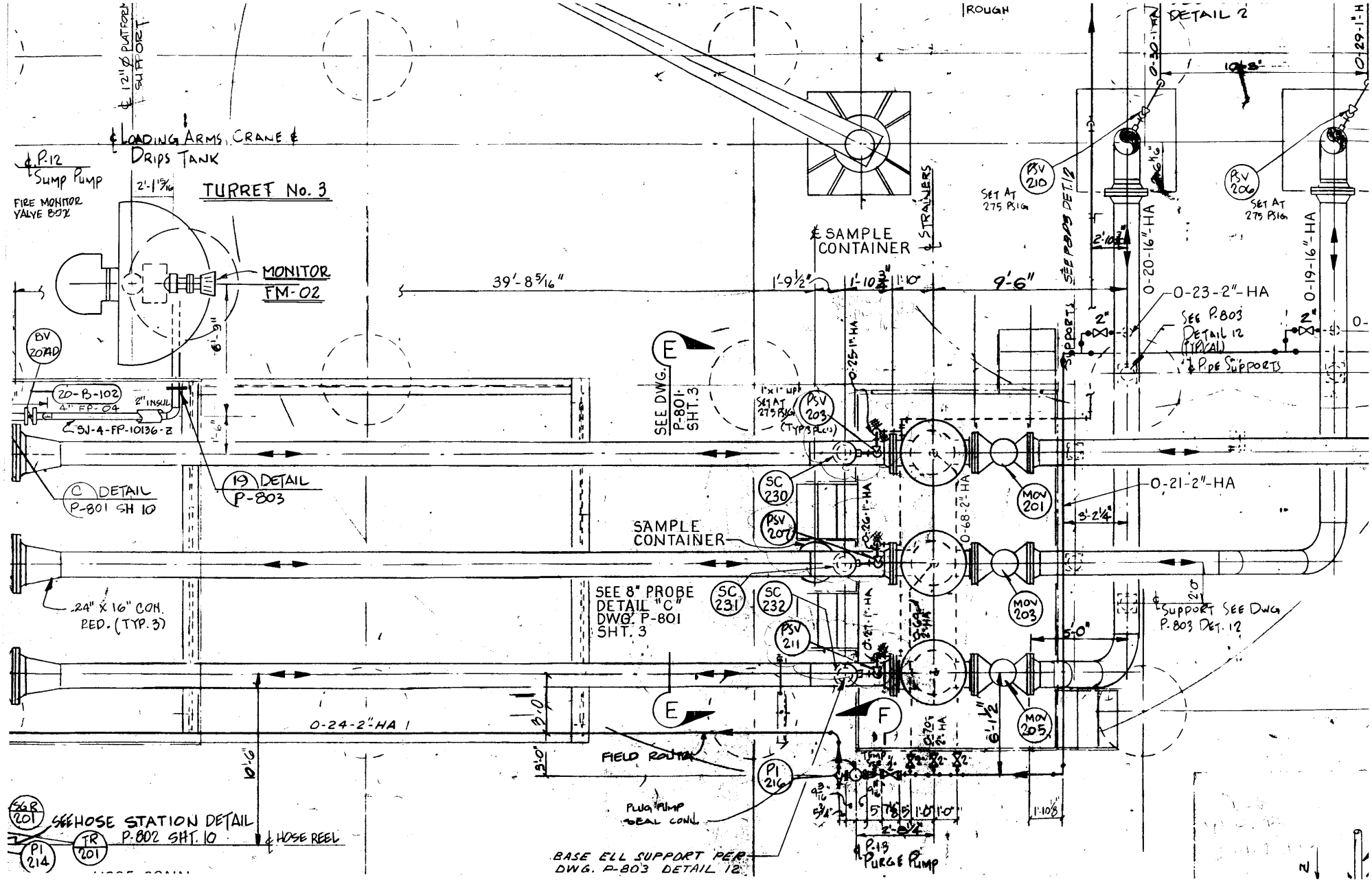


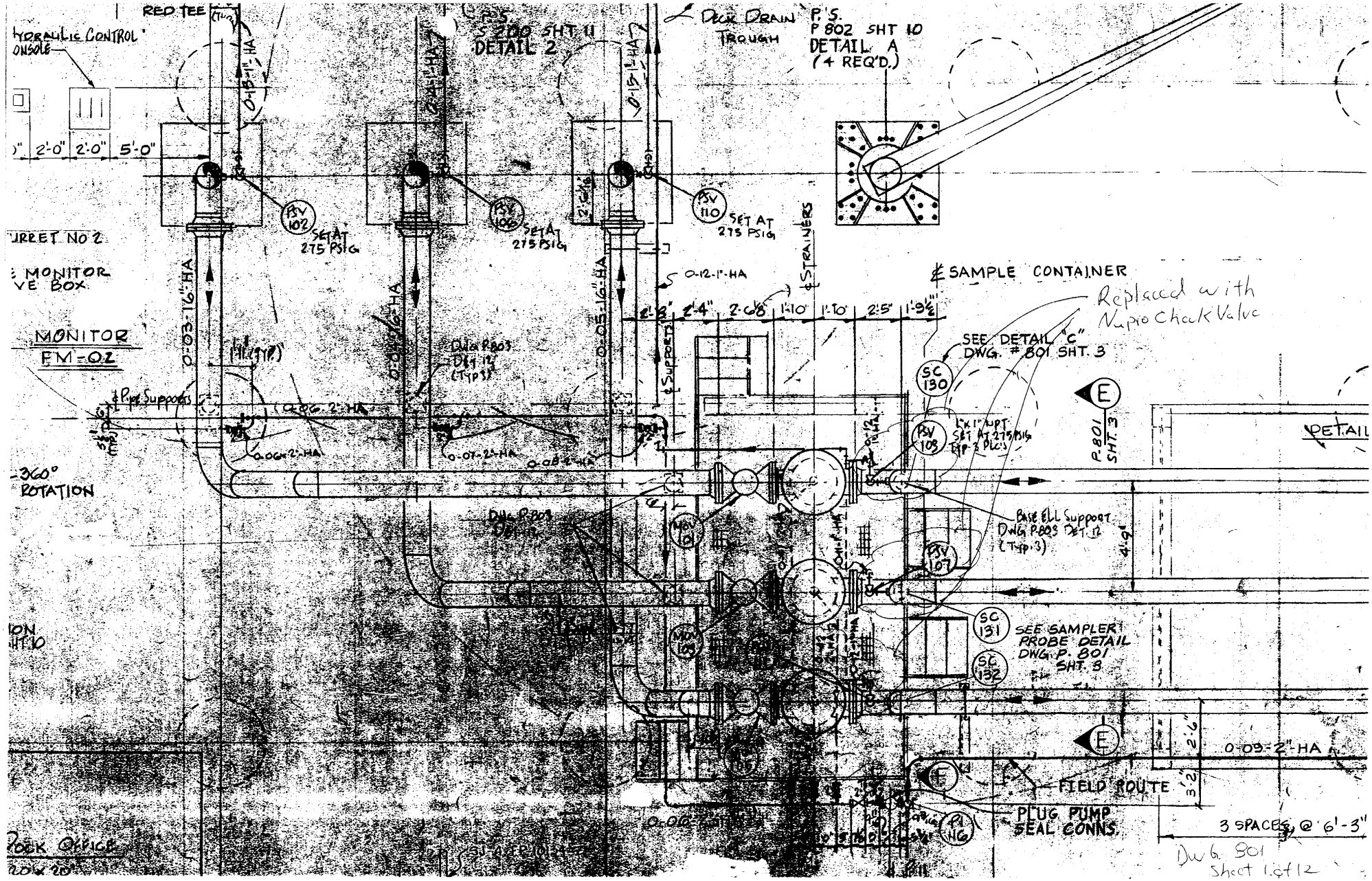

## SECTION "C-C"

SEE DWG # M-33
3/16" = 1'-0"

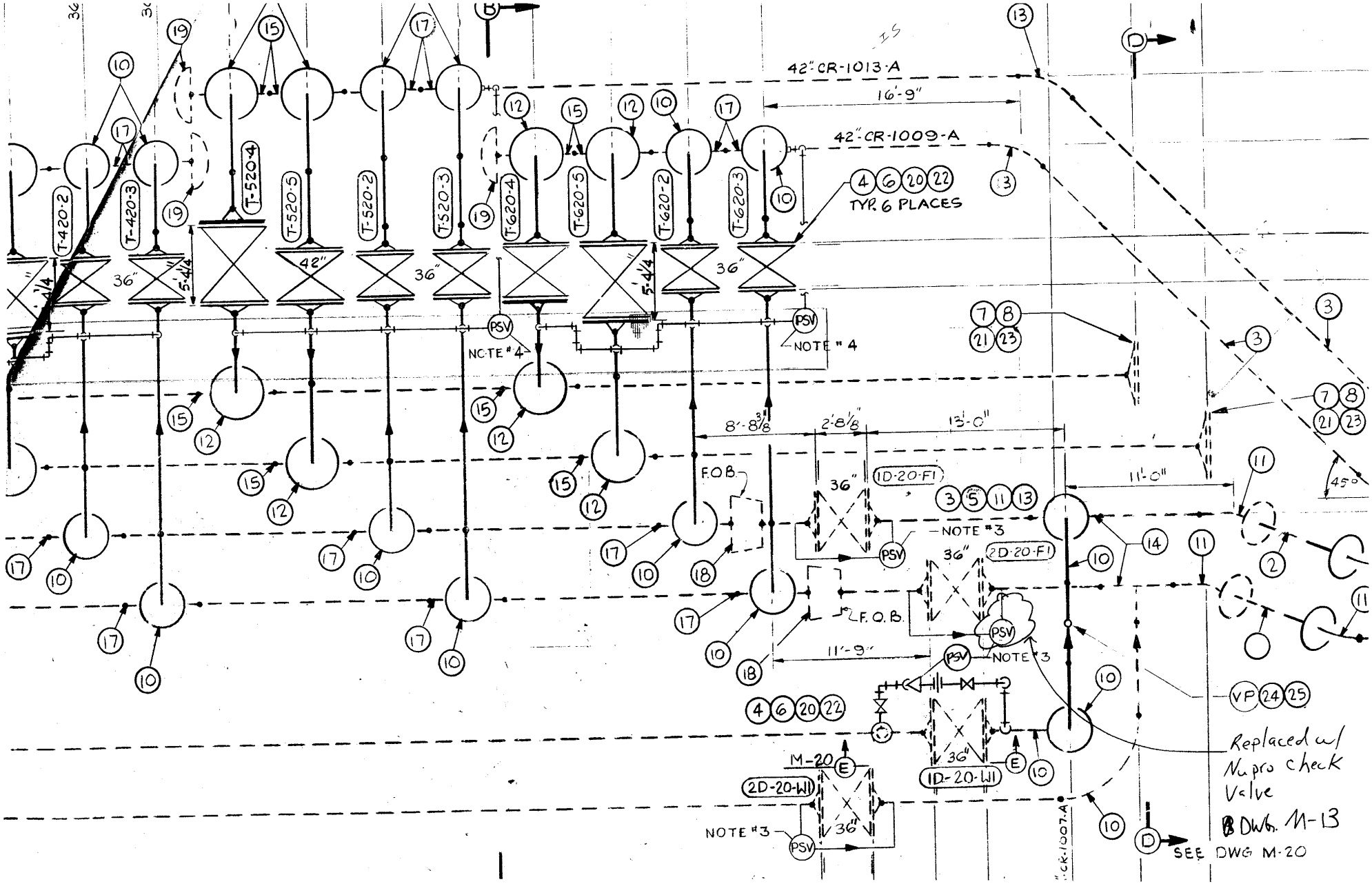
DWG.
M-34



TURRET No. 3
MONITOR FM-02
℄ LOADING ARMS, CRANE & DRIPS TANK
℄ P-12 SUMP PUMP
FIRE MONITOR VALVE BOX
℄ 12" Ø PLATFORM SUPPORT
39'-8 5/16"
1'-9 1/2"
1'-10 3/4"
1'-10"
9'-6"
℄ SAMPLE CONTAINER
℄ STRAINERS
SEE DWG. P-801 SHT. 3
SAMPLE CONTAINER
SEE 8" PROBE DETAIL "C" DWG. P-801 SHT. 3
C DETAIL P-801 SH 10
19 DETAIL P-803
20-B-102
4" FP-04
2" INSUL
SJ-4-FP-10136-Z
BV 207AD
24" X 16" CON. RED. (TYP. 3)
0-24-2"-HA
FIELD ROUTE
PLUG PUMP SEAL CONN.
BASE ELL SUPPORT PER DWG. P-803 DETAIL 12
℄ P-13 PURGE PUMP
SEE HOSE STATION DETAIL P-802 SHT. 10
℄ HOSE REEL
SGR 201
PI 214
TR 201
PI 216
SC 230
SC 231
SC 232
PSV 207
PSV 211
PSV 203
PSV 210
PSV 206
MOV 201
MOV 203
MOV 205
SET AT 275 PSIG
SEE P-803 DET. 12
0-20-16"-HA
0-19-16"-HA
0-23-2"-HA
SEE P-803 DETAIL 12 (TYPICAL)
℄ PIPE SUPPORTS
0-21-2"-HA
0-68-2"-HA
℄ SUPPORT SEE DWG P-803 DET. 12
DETAIL 2
ROUGH

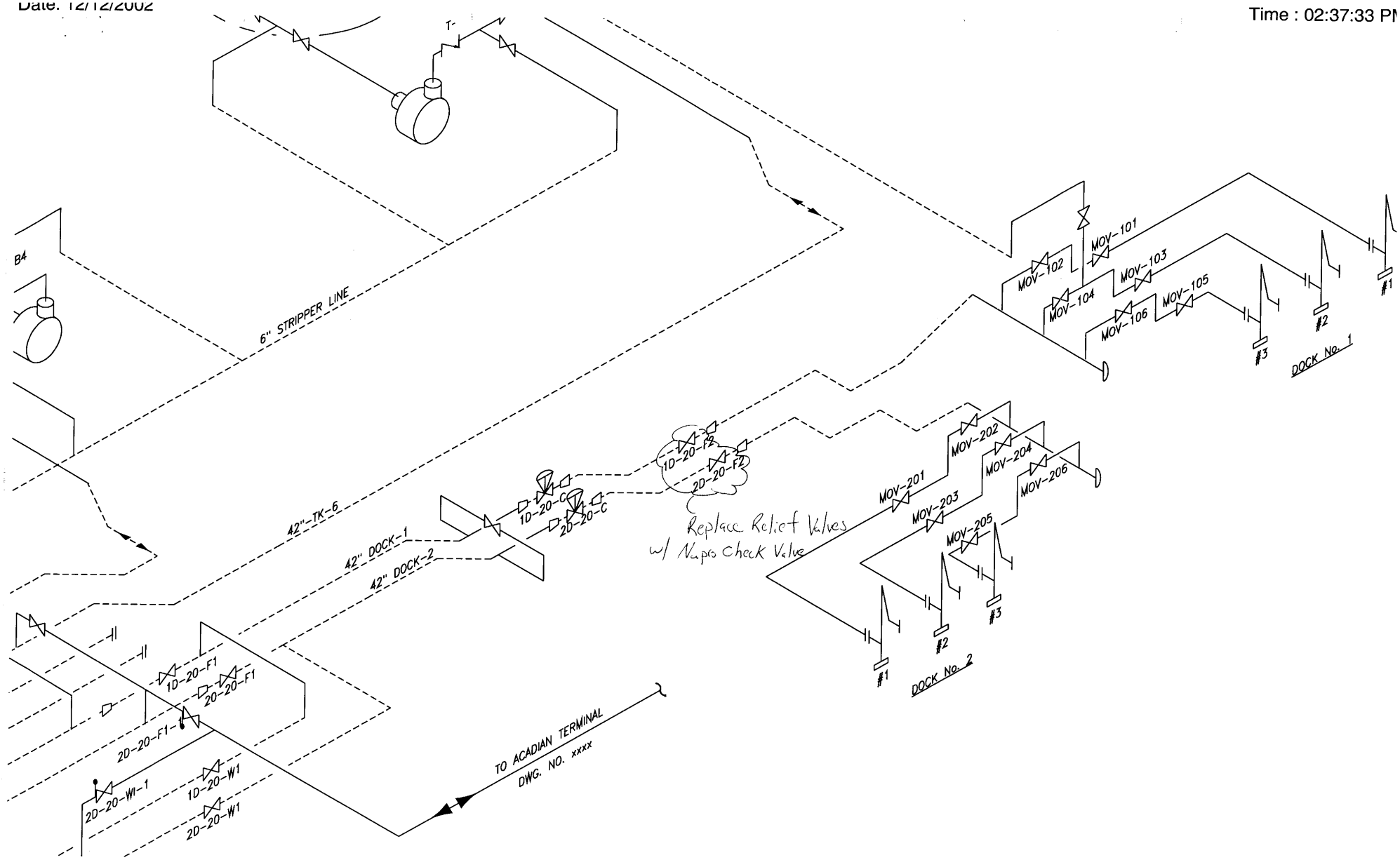


RED TEE
HYDRAULIC CONTROL CONSOLE
P.S. S 200 SHT 11 DETAIL 2
DECK DRAIN TROUGH
P.S. P 802 SHT 10 DETAIL A (4 REQ'D.)
2'-0" 2'-0" 5'-0"
PSV 102 SET AT 275 PSIG
PSV 106 SET AT 275 PSIG
PSV 110 SET AT 275 PSIG
TURRET NO 2
MONITOR VE BOX
MONITOR FM-02
0-03-16"-HA
0-05-16"-HA
0-12-1"-HA
STRAINERS
SUPPORTS
SAMPLE CONTAINER
Replaced with Nupro Check Valve
SEE DETAIL "C" DWG. # 801 SHT. 3
SC 130
PSV 103
P-801 SHT. 3
DETAIL
Pipe Supports
0-06-2"-HA
0-07-2"-HA
0-08-2"-HA
360° ROTATION
DWG P-803 DET 12 (TYP 3)
MOV 101
MOV 103
PSV 107
BASE ELL SUPPORT DWG P-803 DET 12 (TYP 3)
SC 131
SC 132
SEE SAMPLER PROBE DETAIL DWG P. 801 SHT. 3
0-09-2"-HA
FIELD ROUTE
PLUG PUMP SEAL CONNS.
3 SPACES @ 6'-3"
DOCK OFFICE
Dwg. 801 Sheet 1 of 12


42" CR-1013-A
16'-9"
42" CR-1009-A
TYP. 6 PLACES
T-420-2
T-420-3
T-520-4
T-520-5
T-520-2
T-520-3
T-620-4
T-620-5
T-620-2
T-620-3
36"
42"
5'-4¼"
PSV
NOTE #4
8'-8⅜"
2'-8⅛"
13'-0"
11'-0"
45°
F.O.B.
1D-20-F1
2D-20-F1
NOTE #3
11'-9"
VP
M-20
2D-20-W1
1D-20-W1
"CR-1007-A
Replaced w/ Nupro check Valve
DWG. M-13
SEE DWG M-20

Date: 12/12/2002

Time : 02:37:33 PM

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