GW - 51

GENERAL CORRESPONDENCE

YEAR(S):

1998 - 1988

VAL VERDE GAS PROCESSING PLANT
MODIFICATION TO
DISCHARGE PLAN NO. GW-51

March 25, 1998

Prepared for:

Burlington Resources Gathering System, Inc.

Updated by:

Jeffery Schoenbacher

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MODIFICATION TO DISCHARGE PLAN NO. GW-51

VAL VERDE GAS PROCESSING PLANT

1.0 GENERAL INFORMATION

1.1 Val Verde Gas Processing Plant (Val Verde Plant) is owned and operated by

Burlington Resources, Inc.
3535 East 30th Street
P.O. Box 4289
Farmington, NM 87499-4289
(505) 326-9700

1.2 Name of Legally Responsible Party

Mark Ellis
Vice President, Regional Operations
Burlington Resources, Inc.
P.O. Box 4289
Farmington, New Mexico 87499-4289
(505) 326-9700

1.3 Name of Contact Person or Representative

BR requests that all correspondence regarding this plan be sent to:

Jeff Schoenbacher
Environmental Representative
Burlington Resources, Inc.
P.O. Box 4289
Farmington, New Mexico 87499-4289
(505) 326-9537

BR requests that copies of correspondence also be sent to:

Greg Kardos
Senior Plant Supervisor
Burlington Resources, Inc.
P.O. Box 4289
Farmington, New Mexico 87499-4289
(505) 326 9508

1.4 Plant location

SE/4 of the SE/4 of Section 11,
T29N, R11W, NMPM
San Juan County, NM (Figure 1)

1.5 Purpose of Plant

Val Verde Plant is a facility, which removes CO_2 from a coal seam gas stream by contacting the gas with an amine based solvent that has a high affinity for CO_2. CO_2 stripped from the coal seam gas stream is vented to the atmosphere. The residue gas is contacted with Triethylene Glycol (TEG) to provide a set dew point.

Val Verde Plant produces a natural gas stream that is stripped of CO_2 After the natural gas stream is treated within the facility it is sold and transported to El Paso Natural Gas or Trans-Western Pipeline.

1.6 Copies

Three copies of this modification to Discharge Plan No. GW-51 has been provided to the Santa Fe office of the OCD. The OCD will make available copies for District offices and public review.

1.7 Affirmation

"I hereby certify that I am familiar with the information contained in and submitted with this discharge plan, and that such information is true, accurate, and complete to the best of my knowledge and belief."

Mark E. Ellis — 5/12/98

Signature — Date

Mr. Mark Ellis
Regional Vice President

2.0 PLANT PROCESS

2.1 Process Description

Dehydrated coal seam natural gas enters Val Verde Plant via pipeline from individual gas production facilities located throughout northwest New Mexico and southwest Colorado. The natural gas entering the plant is essentially methane and carbon dioxide (CO_2). The CO_2 laden natural gas stream is sent to one of eight process trains for CO_2 removal.

Chemicals used in each process train include a Methyldiethanoloamine based solvent (MDEA) to remove CO_2 and Triethylene Glycol (TEG) to remove water entrained in the natural gas stream during CO_2 stripping.

The natural gas stream in each process train is contacted in a vertical trayed countercurrent absorber vessel with a 65% water and a 35% MDEA solution.

The rich MDEA solvent leaving the absorber vessels is regenerated in a typical MDEA regeneration system consisting of the following equipment (Figure 3a) for trains 1 and 2:

- Rich MDEA Flash Tank
- Lean/Rich Cross Exchanger
- Hot Oil Heated Reboiler (Gas Fired Hot Oil Heater)
- Lean MDEA Surge Tank
- Hot Oil Surge Tank
- Stripping Column
- Stripper Reflux Condenser (Fan Cooled)
- Lean MDEA Cooler (Fan Cooled)
- Reflux Condenser Cooler

The MDEA regeneration process for Train 3 is identical to Trains 1 and 2 except for the addition of a Final Lean/Rich Amine Exchanger (Figure 3b).

The typical amine regeneration system for trains 4, 5, and 6 (Figure 3c) is the same, except the amine heated reboiler is a direct fired reboiler, in place of a hot oil heated reboiler. Trains 4, 5, and 6 also have two flash tanks (high pressure and low pressure) as opposed to only one in trains 1, 2, and 3.

Train 7 and 8 MDEA regeneration system utilizes the same equipment as trains 4, 5 and 6 with the addition of a Hot Water Surge Tank, and Still Side Reboilers to accommodate an indirect fired heater rather that a direct fired reboiler.

CO_2 removed from the MDEA solution from trains 1, 2, and 3 is piped to a common 16-inch vent line, through an 8-foot diameter by 32-foot seam-to-seam, carbon steel, horizontal, vent scrubber and then discharged to the atmosphere via a vertical vent stack. Trains 4, 5 and 6 use a common 20-inch vent line, through a 10-foot by 25-foot seam-to-seam, carbon steel, horizontal, vent scrubber. Condensed water vapor collected in the vent scrubber is pumped back into the regeneration units.

Trains 1, 2, and 3 have a combined gas treating capacity of 135 MMSCF/d. Trains 4 through 8 each have a gas treating capacity of 117 MMSCF/d per train.

The dehydration process for the Val Verde Plant includes a common contactor (countercurrent absorber) for trains 1 and 2 and individual contactors for each of trains 3 through 8. Trains 1 through 3 share a common TEG regeneration system (Figure 4a) and train groups 4 through 8 (Figures 4b) each has its own TEG regeneration system.

A TEG regeneration system includes the following equipment:

- TEG flash tank
- Lean/Rich TEG cross exchangers
- Direct fired TEG reboiler with packed stripping column
- Lean TEG surge tank
- Lean TEG cooler (Fan cooled)

2.2 Water System

Process water is supplied to the Val Verde Plant by a set of raw water storage tanks to the east of the plant location. The water is passed through an ion exchange softening system prior to distribution throughout the plant.

Make-up water for the regeneration units for trains 1, 2, and 3 amounts to approximately 9400 gpd. A hot oil heated water vaporizer is utilized to provide part of this make-up. The remainder of the make-up water is purchased.

Make-up water for trains 4 through 8 for regeneration units amounts to approximately 36,000 gpd. A two bed (anion/cation) water demineralizer provides this make-up.

Reject water for trains 1, 2 and 3 is approximately 1 gpm (TDS 747 ppm). Reject water for trains 4 through 8 is estimated at 7.0 gpm. Reject water is collected in an aboveground welded steel storage tank.

Wastewater from the process water system is drained into the wastewater drain system (WWD) to a sump. Trains 4 through 6 share a common sump and trains 7 and 8 share a common sump. From the sump the wastewater is transferred to an above ground tank. Water treatment system backwash wastewater is also drained into the WWD and transferred into the same above ground tank. Trains 1, 2 and 3 do not have a wastewater system. Trains 1 through 3 utilize a hot oil heat transfer media.

Figure 5 and Figure 6 contain the Process and Instrumentation Diagrams (P&ID) for train 5 and train 8 respectively. The P&ID for train 5 are representative of the process fluids and wastewater systems in trains 4 through 6. Train 8 P&ID are representative of the process fluids and wastewater systems of trains 7 and 8.

2.3 Effluent Sources

Domestic discharges are made through one septic tank system shown on the facility diagram (Figure 2). The warehouse building, control rooms, shop building, and the new office building will discharge into the septic tank.

Liquid streams that have the potential to be unintentionally discharged above or below the ground surface are classified as leaks and spills. Leaks and spills may consist of one or more of the following process fluids:

- Neutralized demineralized wastewater (wastewater)
- Unrecyclable process fluids
- MDEA test samples
- MDEA
- TEG
- Heat Transfer Oil

Spills or leaks are more likely to occur around fluid pumps, gas contactors, flash tanks and heaters.

Neutralized demineralized wastewater originates from the regeneration process of the ion exchange water treatment system. A caustic and an acid solution is used to regenerate the ion exchange beds. After regeneration, the beds are rinsed with fresh water.

MDEA test samples are collected once every day to determine MDEA strength and lean loading. Total sample volume collected per day is 1750 ml. Included in this sample volume are small amounts of the following test reagents:

- Distilled H_2O
- Methyl Red Indicator
- N Sulfuric Acid
- Methyl Alcohol
- Thymolphthalen Indicator 0.05%
- Normal Potassium Hydroxide

This sample is poured into the laboratory sink which drains to the wastewater sump and is then transferred to an aboveground wastewater tank.

Spent MDEA and TEG that cannot undergo a recycling process are characterized as unrecyclable process fluids.

2.4 Proposed Site Changes

Val Verde Plant will consider a CO_2 injection pilot program in the future. The pilot program will involve setting a single compressor unit to the west of train 7 (refer to Figure 2, Plot Plan and Equipment Layout). The compressor unit is rated at 2050 hp. CO_2 will be compressed and sent via pipeline for off-site injection to enhance gas production.

BR plan will consider the pilot program in the future depending on the success of the pilot program. In the event the program is feasible, four more compressor units will be set next to the pilot compressor unit. Any possible discharges from the compressor units will be addressed to reduce the risk of groundwater contamination.

3.0 TRANSFER/STORAGE OF PROCESS FLUIDS

The WWD system for trains 4, through 6 is independent of Trains 7 and 8. Each WWD system includes a general sump that is transferred to an above ground steel tank. Fluids stored in the waste water tank are periodically hauled off site to an OCD approved Class II disposal well.

Makeup TEG and MDEA in trains 1-3 are stored in aboveground 500 gallon steel storage tanks. A small portable centrifugal pump is used to transfer from the storage tank into the system. In trains 4 through 8 makeup TEG and MDEA are stored in separate aboveground 90 bbl steel storage tanks.

The hot oil systems for trains 1, 2 and 3 are closed-loop systems, utilizing an elevated surge drum. Hot oil makeup requires a bulk truck delivery.

All high pressure process vessels and piping are installed above grade with the exception of a small amount of 2-inch glycol piping. This 2-inch line is externally coated and is welded utilizing schedule 80 pipe and weld fittings. Design pressure for this line is 1000 psig and it was hydrotested at 1500 psig. The line was doped and wrapped for external corrosion protection.

All pressure vessels in this plant are ASME Coded. All process piping was designed and fabricated per ASME/ANSI B31.3. All pressure piping welds 2-inch and larger were 100 percent x-rayed.

Critical areas in the high pressure gas piping have been inspected by ultrasonic thickness examination for corrosion. This will be repeated as needed. Mobile Inspection Services, Inc., 2104 River Road, Farmington, NM 87401, has been contracted to inspect the critical areas in the liquid process piping for corrosion.

On May 11, 1998, three 400 bbl steel storage tanks will be installed to facilitate the storage of spent MDEA generated from Trains 1 through 8. These tanks will be situated within the proximity of the MDEA reclaimer and the spent product will be stored in these units until reclaimed. In addition, one 100 bbl steel storage tank will be installed adjacent to the reclaimer to retain residual by-product generated from the MDEA reclamation activities. Furthermore, the tanks will be situated on gravel within an earthen berm to contain any release that may occur.

3.1 Spill/Leak Prevention and Reporting

3.1.1 Operating Procedures

The Val Verde Plant is operated in a manner to prevent and mitigate any unplanned releases to the environment. The plant is manned 24 hours per day and 365 days per year including holidays. Plant process and storage units are regularly observed by a number of personnel during normal operation, and any evidence or sign of spill/leaks are routinely reported to supervisory personnel so that repairs or cleanup can be promptly performed. Routine maintenance procedures conducted at the Val Verde Plant also help to assure that equipment remains functional and that the possibility of spills/leaks is minimized.

If a spill/leak occurs, general cleanup procedures may involve minor earthwork to prevent migration, and recovery of as much free liquid as possible. Recovered fluids would then be transported off-site for recycling or disposal. Based on existing literature, analysis and regulatory guidelines, any contaminated soil will either be left in place, transferred to other existing waste-management areas, or transported off-site for proper disposal.

3.1.2 Spill/Leak Containment

To reduce the risk of spilled process fluids from contacting the ground surface, Val Verde Plant has constructed curbed concrete containment basins under process areas with a higher probability of a spill/leak (described in Section 2.3). Each of the containment basins either has a small open top sump or a drain to the general sump for that particular train. The small open top sumps are periodically cleaned and vacuumed out. Concrete curbing around process equipment is illustrated on the Facility Site Diagram, Figure 2.

Process pumps without concrete containment basins are equipped with seal pans for collecting seal or packing leakage. Drum storage and general storage of any equipment which may leak are placed inside a 20' x 20' curbed concrete area. Some equipment cleaning is also performed inside this area.

All above ground tanks are located within bermed areas with a capacity of at least 1.5 times the largest tank within each bermed area. A gravel pad is placed under each tank to assist in leak detection efforts.

3.1.3 Reporting

Should a release of materials occur, BR will comply in accordance with provisions described in NMOCD Rule and Regulation #116.

4.0 EFFLUENT AND SOLID WASTE DISPOSAL

On-Site Disposal:

The Val Verde Plant does not conduct any on-site waste disposal, except for sewage, which is processed through an approved septic system. All other waste streams are taken off-site for recycling or disposal.

Off-Site Disposal:

The following table provides information about off-site disposal:

Waste Stream	Collection Method	Shipment Method	Final Disposition	Receiving Facility
Waste water	Aboveground Steel Tank with Containment	Truck See Note 1	Class II Injection Well	See Note 2
Unrecyclable process fluids	Aboveground Steel Tank with Containment	Truck See Note 1	Class II Injection Well	See Note 2
Caustic wash rinsate	Aboveground Steel Tank with Containment	Truck See Note 1	Class II Injection Well	See Note 2
Amine Mechanical Filter Bag Filter	20 cyd. Roll-Off	Waste Management Trucking	Landfill	Control Recovery, Inc. Hobbs, New Mexico
Horizontal Inlet Filter Coalescer Inlet Filter Hot Oil Filter Glycol Filter	20 cyd. Roll-Off	Waste Management Trucking	Landfill	County Municipal Landfill
Lubricating Oil	Aboveground Steel Tank with Containment	Vendor Truck	Fuel Blending or Recycling	Waste Oil Recycling Facility
Heat transfer oil	Aboveground Steel Tank with Containment	Truck See Note 1	Fuels Blending or Recycling	Waste Oil Recycling Facility
Charcoal filter media	***Concrete Charcoal Drainage Pad***	***Truck See Note 1***	***Soil Remediation Landfarm***	***Envirotech or Tierra Landfarm***

Note 1. The trucking agent contracted to ship effluents off-site will be one of the following:

Dawn Trucking Co. 318 Hwy. 64 Farmington, New Mexico.	Chief Transport 604 W. Pinon Farmington, New Mexico	Three Rivers Trucking 603 Murray Drive Farmington, New Mexico	Sunco Trucking 708 S. Tucker Ave. Farmington, New Mexico

Note 2. The off-site Disposal facility will be one of the following:

McGrath SWD #4	Basin Disposal	Sunco Disposal
Sec. 34, T-30-N, R-12-W	Sec. 3, T-29-N, R-11-W	Sec. 2, T-29-N, R-12-W
San Juan County	6 County Rd 5046	323 County Rd. 3500
New Mexico	Bloomfield, New Mexico	Farmington, New Mexico

5.0 SITE CHARACTERISTICS

Much of the information for the site characteristics of the Val Verde Plant was taken from two reports prepared by Buys and Associates, Inc. One report, dated September 11, 1990 (1990 Report), was written during the initial assessment of the Val Verde Plant before BR purchased the property from South-Tex Treaters Inc. The second report, dated April 24, 1991 (1991 Report), is a groundwater monitoring and sampling report. The two Buys and Associates, Inc. reports are not attached to this discharge plan.

5.1 Surface water

Surface water near the Val Verde Plant consists of the San Juan River and a nearby irrigation canal named Citizens Ditch. Citizens Ditch runs from east to west and is approximately ½ mile south of the plant site. The San Juan River is approximately 1.5 miles south of the plant site.

5.2 Soils

The 1990 Report characterized the subsurface at the Val Verde Plant as clayey sand and silt, and silty clay and sand resting on top of the sandstone and mudstone units of the Naciemento Formation.

The sandstone and mudstone units only appear in the northern half of the plant site. It is thought that these units in the southern half of the plant were eroded away by what is now the San Juan River, and subsequently replaced with sediments eroded from the north and east.

Underling the plant site is erosion-resistant sandstone that was encountered during the drilling of monitoring wells in the area. This sandstone layer is thought to be the bedrock feature underling the Val Verde Plant site.

5.3 Groundwater

Groundwater levels were measured on March 11 and 12, 1991 by Buys and Associates, Inc. Depth to groundwater in the plant area was measured to range from 55.5 feet to 26.5 feet within the southern half of the plant site. No groundwater was encountered in the northern half of the plant site. No total dissolved solids (TDS) measurements were taken during the May 11 and 12, 1991 monitoring program at the Val Verde Plant (1991 Report).

Groundwater monitoring efforts at the El Paso Natural Gas (EPNG) Blanco Plant show the TDS in the groundwater to range from 5330 mg/l to 7620 mg/l. The EPNG Blanco Plant is directly adjacent to BR's Val Verde Plant (See Figure 2).

6.0 FLOOD POTENTIAL

Flood hazard data for Val Verde Plant is limited to Flood Insurance Rating Maps (FIRM) from the Federal Emergency Management Association (FEMA). Val Verde Plant lies approximately 160 feet above the San Juan River. According to the FIRM maps for San Juan County, Val Verde Plant would not be threatened by flood from a 100 year storm event. Flood protection is not necessary.

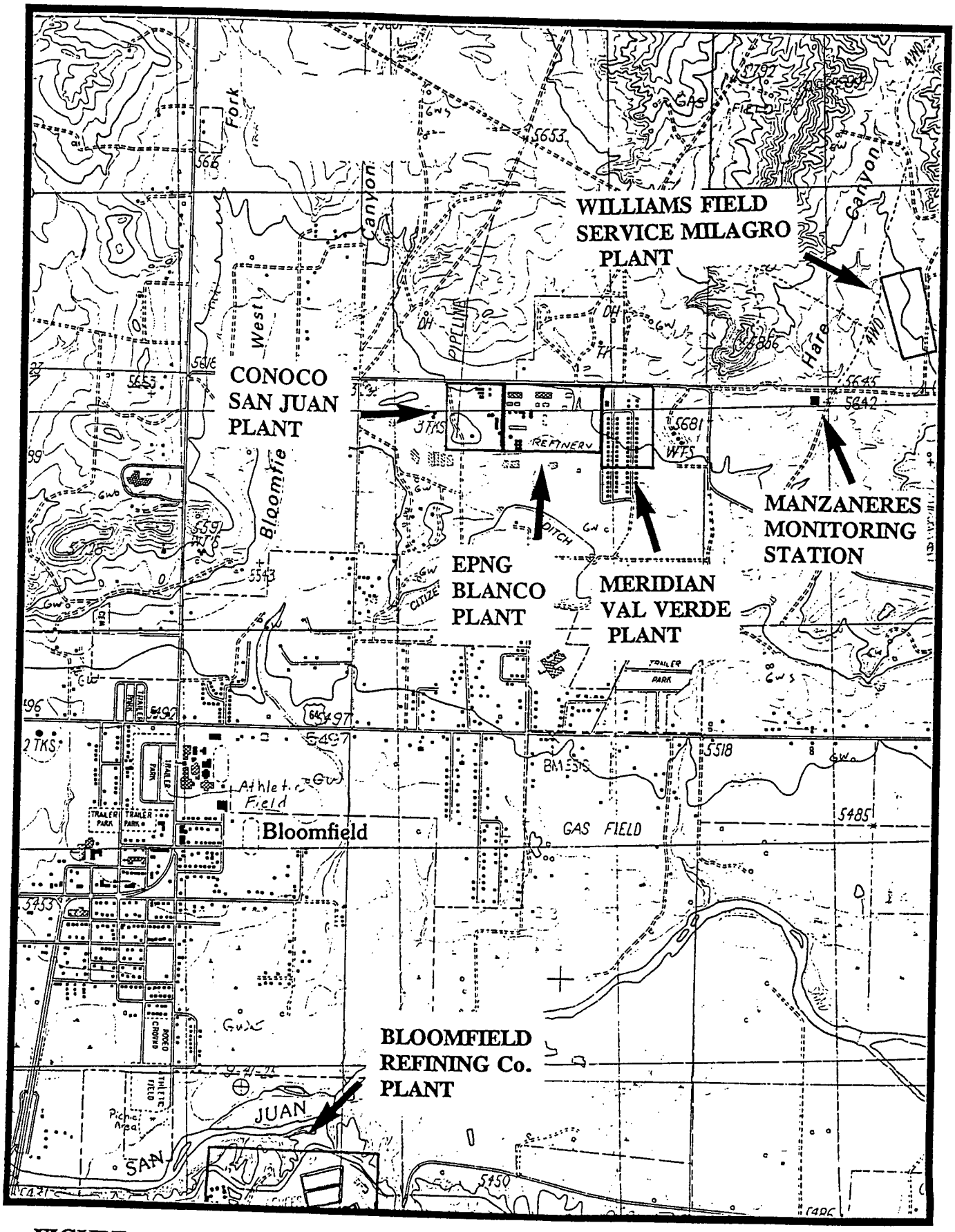


FIGURE 1: VAL VERDE SITE MAP

CONTOUR INTERVAL 20 FEET
SCALE 1:24 000

PROPERTY FENCE LINE
METERING STATION
PWR. POLE
SEWER MANHOLE
SEWER LINE
UNDERGROUND 24" RESIDUE HEADER
H2O VALVE BOX
LIGHT POLE
POWER POLE
AMINE SETTLING TANKS
CHARCOAL BED
FUEL & FILTER STORAGE
VENT STACK
P-7818
V-7420
UNDERGROUND 16" INLET HEADER
UNDERGROUND 16" RESIDUE HEADER
UNDERGROUND 2" DRAIN FROM RESIDUE M.U.
13.8 KV SWITCH GEAR BLDG.
EXISTING BLDG.
MAIN OFFICE BLDG. W.14+00'
PICNIC AREA
CONCRETE DITCH
REF. POINT FOR THIS DRAWING N.& S.0+00'-0", E.& W.0+00'-0"
EXIST. ROAD
EDGE OF GRAVEL
PUMP BLDG.
PIPE BACK
PIPE RACK
FUTURE TRAIN #7
FUTURE TRAIN #8
PROPOSED ROAD LOCATION
MOTOR CONTROL CENTER
I.A. COMPR.
HEADER K.O. DRUM
GLYCOL RECOVER TANK
WATER TREATING BLDG.
AMINE BOOSTER PUMP SKID
WATER PUMP SKID
FIRING CONTROL SKIDS
AMINE SKID
CONTROL VALVE SKID
FLASH GAS SKID
INLET SKID
PUMP SKID
REBOILER FIRING CONTROL SKIDS
REBOILER SKID
REFLUX COND.
AMINE COOLER
100 KW GENERATOR
NEW CONTROL ROOM
EXISTING CONTROL ROOM
UNDERGROUND 13200 V POWER LINES
UNDERGROUND 20" BLOWDOWN HEADER
UNDERGROUND 20" RESIDUE HEADER
CONDUIT VAULT
EXIST. ELECTRICAL EQPT.
EXIST. CAPACITORS
PROPANE TANK
WASHDOWN AREA
RECLAIMER FEED TANKS
RECLAIMER PRODUCTS TANKS
DISCLAIMER DEH SKID
RECLAIMER CHEMICALS
RECLAIMER REBOILER SKID
QC BLDG
DEIONIZED WATER STORAGE
PUMPS
CO2 VENT K.O. DRUM
UNDERGROUND 24" INLET HEADER
VENT STACK
BLOWDOWN STACK
BLEND STATION
K.O. DRUM
2" RETURN
2" LOW POINT DRAW TO K.O. DRUM
8" TO BLEND STATION
20" BLOW DOWN HEATER
16" TRANSWESTERN INTERCONNECT
24" TO TRANSWESTERN
EXIST. H2O LINE
375'-0"
PIG RECEIVER
FILTER SEPS
INLET WATER TANK
COALESCER

GRID COORDINATE SYSTEM
DWG. SCALE: 1"=50'
T.H. RUSSELL CO. JOB NO. 427

FOR TRAIN #8
PLOT DATE: 06-04-91
DWG. FILE: 427\VVM0100.DWG

PRINT DISTRIBUTION RECORD

REV.	DATE	P	F.A.	A	SHOP	FIELD	CUST.	VEND.	FILE	PURCH.	BID	PE	
4	1/17			✓		1	3	3	1				HP
6	10/15		✓				3		1			1	HP
7	4/2			✓		5	4		1			1	

REVISIONS

REV.	DESCRIPTION	ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
4	AFC			ASHMORE	07-03-90	
5	CHG'D 10C OF CTI BLDG & PULL VAULT; ADD TRAIN 6; ADD V-4/5/6415 & V-5412; ADD TRAIN 1,2 & 3 FOR REFERENCE		11/27/89	JUDI	06-15-90	VV-1-M0100
6	ADDED TRAIN 7/8/9; CHG'D DWG SCALE (ISSUED FOR APPROVAL FOR TRAIN #8			HDA	09-26-90	
7	REVISED TRAIN #8; ISSUED FOR TRAIN #8 A.F.C.		4/2/91	JUDI	03-06-91	DRAFTED BY
8	REMOVED WASHDOWN AREA ON TRAIN #8			JUDI	06-04-91	
9	ADDED TRAIN 9 AND UPDATED ALL EQUIPMENT		5/4/98	CRF	05-04-98	T.H. RUSSELL CO. TULSA, OK.

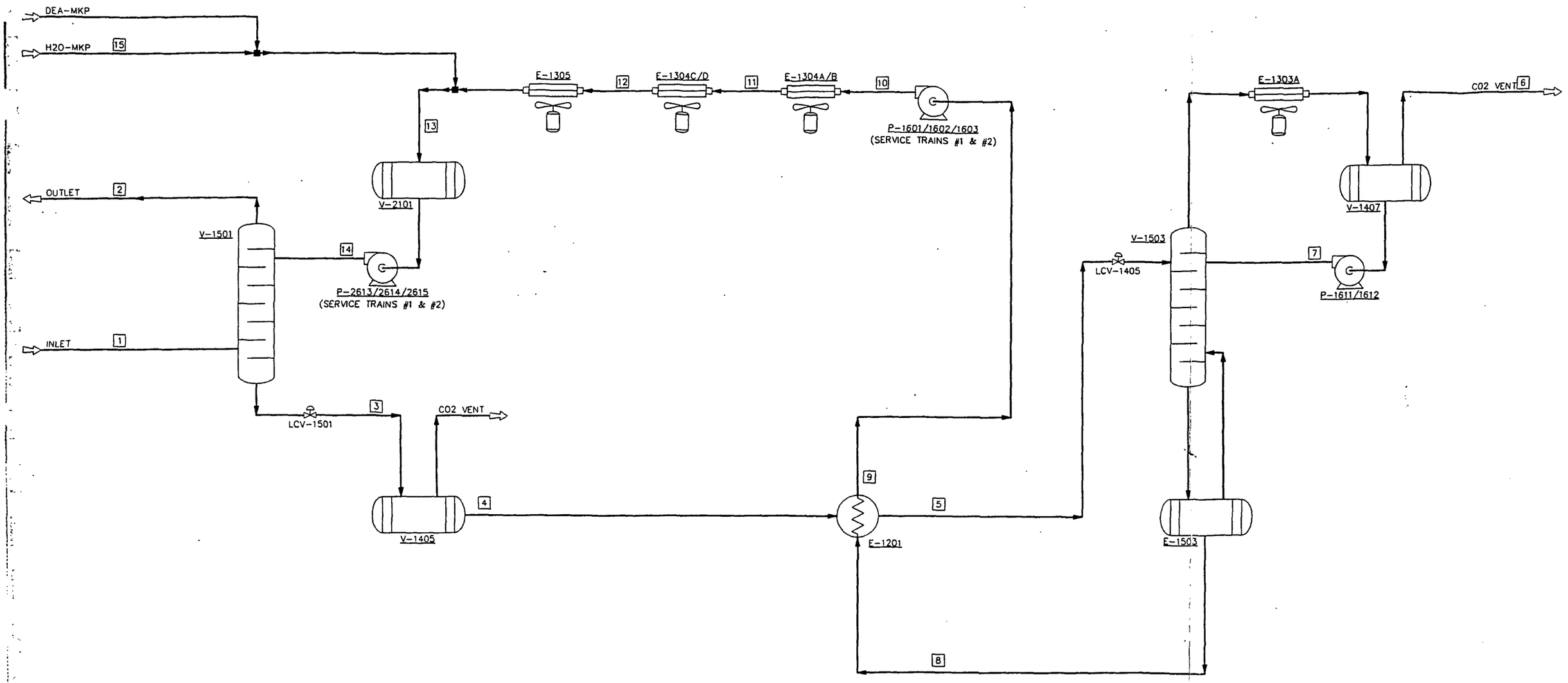
MERIDIAN OIL

VAL VERDE PLANT
TRAINS 4-8

9

PLOT PLAN
EQUIPMENT LAYOUT

V-1501 AMINE CONTACTORS	V-2101 AMINE SURGE TANK	P-2613/2614/2615 AMINE HI. PRESS. PUMPS (SERVICE TRAINS #1 & #2)	V-1405 AMINE FLASH TANK	E-1305 AMINE FINAL COOLER 5,600 MBTU/HR	E-1304C/D AMINE SOLUTION COOLER 7,500 MBTU/HR	E-1304A/B AMINE PRE-COOLER 8,300 MBTU/HR	P-1601/1602/1603 AMINE BOOSTER PUMPS (SERVICE TRAINS #1 & #2)	E-1201 LEAN/RICH AMINE EXCHANGER 6,800 MBTU/HR	V-1503 AMINE REGEN	E-1503 AMINE REGEN REBOILER 22,600 MBTU/HR	E-1303A AMINE REFLUX CONDENSER 3,900 MBTU/HR	V-1407 AMINE REFLUX ACCUMULATOR	P-1611/1612 AMINE REFLUX PUMPS



TRAIN #1

STREAM ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
TOTAL FLOW															
GPM	–	–	–	–	–	–	6.4	425	425	425	425	425	425	425	1.46
MMCF/D	35.0	31.2	–	–	–	4.1	–	–	–	–	–	–	–	–	–
LBMOL/HR	3843	3429	7480	7480	7480	454	177	7066	7066	7066	7066	7066	7066	7066	40
PRESSURE, PSIG	655	650	85	85	60	18	30	20	16	65	60	55	35	800	800
TEMPERATURE, DEG.F	75	120	178	178	211	120	120	255	222	222	183	147	120	120	120
COMPONENT FLOW, LBMOL/HR															
GAS SPEC CS+	–	–	1061.84	1061.84	1061.84	–	–	1061.84	1061.84	1061.84	1061.84	1061.84	1061.84	1061.84	–
WATER	1.85	10.48	5964.2	5964.2	5964.2	31.78	177.000	5972.84	5972.84	5972.84	5972.84	5972.84	5972.84	5972.84	40.5
CARBON DIOXIDE	434.16	17.14	448.87	448.87	448.87	417.01	0.001	31.86	31.86	31.86	31.86	31.86	31.86	31.86	–
METHANE	3407.79	3402.02	5.77	5.77	5.77	5.77	–	–	–	–	–	–	–	–	–

FIGURE 3a:

NOTE:
STREAM DATA IS FOR OPERATING CONDITIONS AFTER 93/94 ADDITIONS.

APP'D	MARK	REVISION	BY	DATE
	2	ISSUED FOR AS-BUILT	K.J.S.	9-24-93

REVIEWED BY: DESIGN ENGR. / PROJ. ENGR. / DIV. ENGR. / PROD. SUPT. / CONST. SUPT.

RELEASED ONLY FOR:

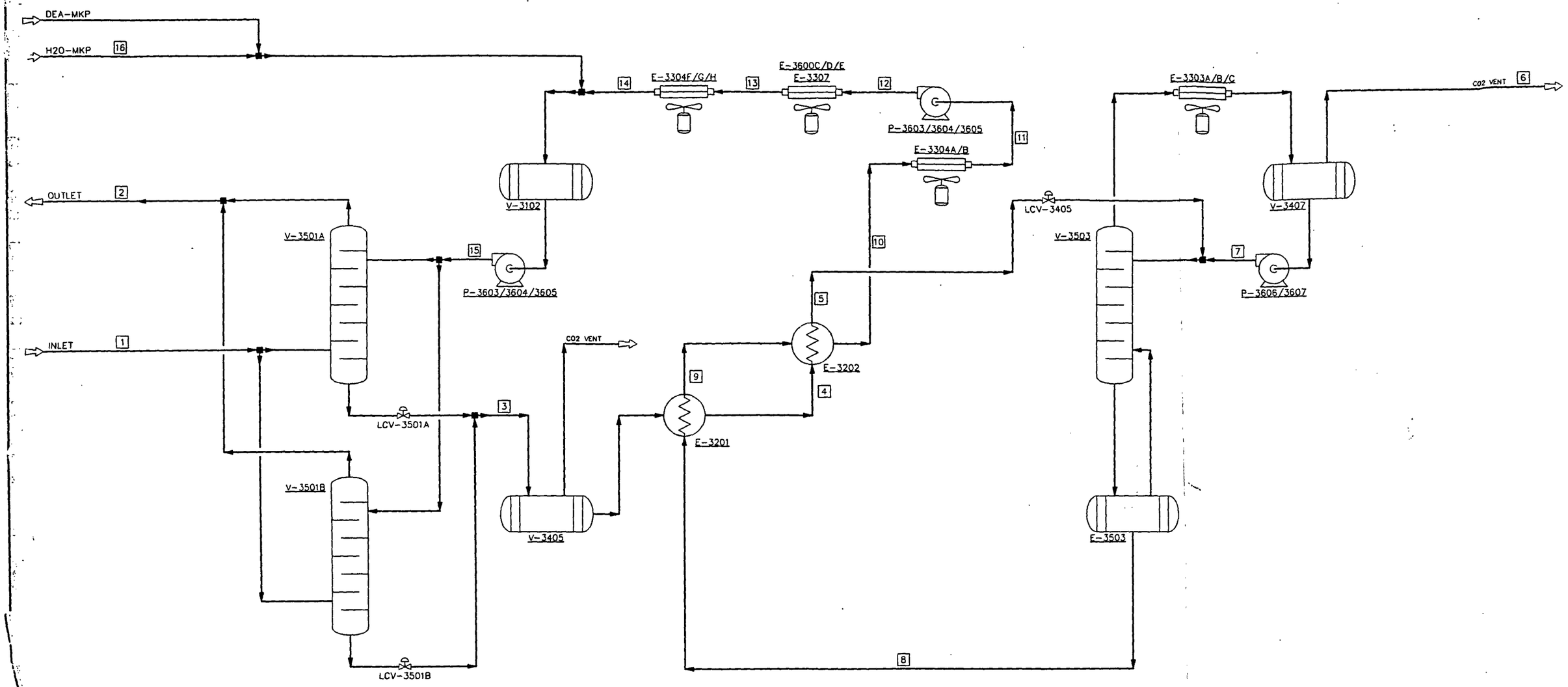
	PROJ. ENGR.	DIV. ENGR.	DESIGN ENGR.	DATE
CHECKING				
PRELIMINARY				
BIDDING				
FABRICATION				
ERECTION				

MERIDIAN OIL
VAL VERDE GAS PLANT
TRAIN #1
PROCESS FLOW DIAGRAM

DRAWN: Karen S | DATE: 08/24/90 | CHK'D: | DIV:

BCCK ENGINEERING, INC. MIDLAND, TEXAS | DWG. NO. VV-1-M1301 | 2

V-3501A/B	V-3102	P-3603/3604/3605	V-3405	E-3304C/D/E/F/G/H & E-3307	P-3600A/B/C	E-3304A/B	E-3202	E-3201	V-3503	E-3503	E-3303A/B/C	V-3407	P-3606/3607
AMINE CONTACTORS	AMINE SURGE TANK	AMINE HI. PRESS. PUMPS	FLASH TANK	AMINE SOLUTION COOLERS 36,300 MBTU/HR	AMINE BOOSTER PUMPS	AMINE PRE-COOLERS 5,000 MBTU/HR	FINAL L/R AMINE EXCHANGER 3,900 MBTU/HR	LEAN/RICH AMINE EXCHANGER 11,900 MBTU/HR	AMINE REGEN	AMINE REGEN REBOILER 48,600 MBTU/HR	AMINE REFLUX CONDENSER 8,900 MBTU/HR	AMINE REFLUX ACCUMULATOR	AMINE REFLUX PUMPS



TRAIN #3

STREAM ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TOTAL FLOW																
GPM	–	–	–	–	–	–	14.7	900	900	900	900	900	900	900	900	3.3
MMCF/D	80.0	71.3	–	–	–	9.4	–	–	–	–	–	–	–	–	–	–
LBMOL/HR	8785	7847	15995	15995	15995	1031	408	14964	14964	14964	14964	14964	14964	14964	14964	92
PRESSURE, PSIG	655	650	85	75	65	14	30	19	19	17	15	50	45	35	800	35
TEMPERATURE, DEG.F	75	120	175	202	211	120	120	255	228	219	207	207	140	120	120	120
COMPONENT FLOW, LBMOL/HR																
GAS SPEC CS+	–	–	2248.61	2248.61	2248.61	–	–	2248.61	2248.61	2248.61	2248.61	2248.61	2248.61	2248.61	2248.61	–
WATER	4.22	23.98	12720.99	12720.99	12720.99	72.63	408.000	12648.36	12648.36	12648.36	12648.36	12648.36	12648.36	12648.36	12648.36	91.63
CARBON DIOXIDE	992.36	39.19	1020.63	1020.63	1020.63	953.17	0.003	67.46	67.46	67.46	67.46	67.46	67.46	67.46	67.46	–
METHANE	7789.23	7783.88	5.35	5.35	5.35	5.35	–	–	–	–	–	–	–	–	–	–

FIGURE 3b:

NOTE:

STREAM DATA IS FOR OPERATING CONDITIONS AFTER 93/94 ADDITIONS.

APP'D	MARK	REVISION	BY	DATE
	2	ISSUED FOR AS-BUILT	K.J.S	1/24/95

REVIEWED BY: DESIGN ENGR. / PROJ. ENGR. / DIV. ENGR. / PROD. SUPT. / CONST. SUPT. / SAFETY MGR.

RELEASED ONLY FOR:

	PROJ. ENGR.	DIV. ENGR.	DESIGN ENGR.	DATE
CHECKING				
PRELIMINARY				
BIDDING				
FABRICATION				
ERECTION				

MERIDIAN OIL

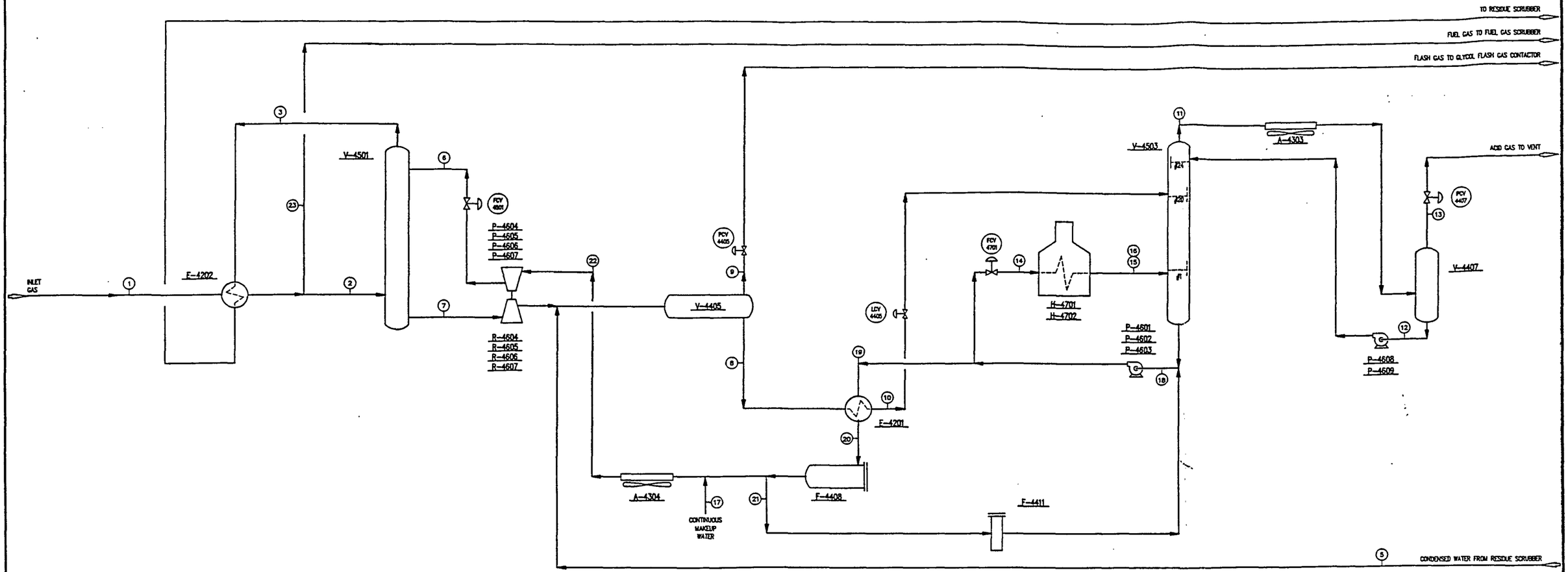
VAL VERDE GAS PLANT

PROCESS FLOW DIAGRAM

DRAWN: Karen S | DATE: 08/24/90 | CHK'D: | DIV:

BCCK ENGINEERING, INC. MIDLAND, TEXAS | DWG. NO. VV-1-M3301 | 2

F-4202	V-4501	R-4604/5/6/7	P-4604/5/6/7	A-4304	V-4405	F-4408	F-4201	F-4411	P-4601/2/3	V-4503	A-4303	H-4701/2	P-4604/5	V-4407
UNTREATED/TREATED GAS EXCHANGER 3400 MBTU/HR	GAS CONTACTOR	POWER RECOVERY TURBINES	AMINE CIRCULATION PUMPS 431 GPM EACH	AMINE COOLER 43857 MBTU/HR	AMINE FLASH TANK	AMINE FILTER	AMINE/AMINE EXCHANGER 34074 MBTU/HR	AMINE CHARCOAL FILTER	AMINE BOOSTER PUMPS 1466 GPM EACH	AMINE STILL/SURGE	STILL REFLUX COND 29297 MBTU/HR	AMINE REBOILER 78874 MBTU/HR	REFLUX PUMPS 56 GPM EACH	AMINE STILL REFLUX ACCUMULATOR



STREAM NUMBER	1	2	3	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	STREAM NUMBER
DESCRIPTION	INLET GAS	GAS TO AMINE CONTACTOR	AMINE CONTACTOR OHD	LEAN AMINE TO CONTACTOR	RICH AMINE FROM CONTACTOR	RICH AMINE FROM FLASH TANK	FLASH TANK VAPORS	RICH AMINE FROM AMINE EXCHANGER	AMINE STILL OHD VAPOR	AMINE STILL REFLUX LIQUID	ACID GAS TO VENT	AMINE TO REBOILER	AMINE VAPOR FROM REBOILER	LIQUID FROM REBOILER	MAKE-UP WATER	LEAN AMINE FROM SURGE	LEAN AMINE TO AMINE EXCHANGER	LEAN AMINE FROM AMINE EXCHANGER	LEAN AMINE TO CHARCOAL FILTER	LEAN AMINE TO COOLER	FUEL GAS	DESCRIPTION
TEMPERATURE (F.)	80.00	108.6	130.00	115.00	170.12	168.71	168.71	213.00	206.07	120.00	120.00	239.83	241.95	241.95		239.83	239.83	189.21	189.23	189.23	108.6	TEMPERATURE (F.)
PRESSURE (PSIA)	700.00	695	695.00	700.00	695.00	75.00	75.00	70.00	21.80	18.80	18.80	53.80	23.80	23.80		53.80	53.80	43.80	43.80	43.80	695	PRESSURE (PSIA)
MASS FLOW (LB/HR)	244809	239380	185789.44	666714	720229	718257	1972.76	718257	79756	25434	54323	750072	82741	667331		1510900	760836	760836	94122	666714	5429	MASS FLOW (LB/HR)
MMCFD (14.7 PSIA & 60F.)	117.59	114.98	103.96				0.528		24.69		11.86		41.50								2.607	MMCFD (14.7 PSIA & 60F.)
LIQ. VOL. FLOW (GPM, 60F.)				1294	1425	1419				50.9		1456		1290	4.82	2932	1478	1478	182.6	1294		LIQ. VOL. FLOW (GPM, 60F.)
DENSITY (LB/CF)	2.29	2.16	1.79	65.23	68.59	68.59	0.38	15.49 ◆	0.09	65.72	0.13	65.23	0.06	65.53		65.23	65.23	65.21	65.23	65.23	2.16	DENSITY (LB/CF)
MOL WT.	18.94	18.94	16.26	25.41	26.24	26.22	33.98	26.22	29.38	18.03	41.66	25.41	18.13	25.74		25.41	25.41	25.41	25.41	25.41	18.94	MOL WT.
CO2 (MOLS/HR)	1318.23	1288.98	65.10	45.85	1286.16	1229.25	36.91	1229.25	1186.64	0.60	1186.04	51.58	18.61	32.97	0	103.90	52.32	52.32	6.47	45.85	29.25	CO2 (MOLS/HR)
DEA (MOLS/HR)	0.00	0.00	0.00	2212.71	2212.65	2212.65	0.00	2212.65	0.07	0.07	0.00	2489.36	0.53	2488.83	0	5014.44	2525.08	2525.08	312.37	2212.71	0.00	DEA (MOLS/HR)
TEG (MOLS/HR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	TEG (MOLS/HR)
H20 (MOLS/HR)	3.46	3.39	42.00	23978.91	23953.01	23948.79	4.22	23948.79	1527.08	1409.70	117.38	26976.96	4543.57	22433.39	133.87	54341.05	27364.09	27364.09	3385.18	23978.91	.07	H20 (MOLS/HR)
C1 (MOLS/HR)	11566.79	11310.31	11284.08	0.00	17.51	0.82	16.89	0.82	0.82	0.00	0.82	0.00	0.00	0.00	0	0.00	0.00	0.01	0.00	0.00	256.48	C1 (MOLS/HR)
C2 (MOLS/HR)	38.77	37.92	37.82	0.00	0.06	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.01	0.00	0.00	.85	C2 (MOLS/HR)
TOTAL	12927.24	12640.59	11429.00	26237.47	27449.38	27391.31	58.06	27391.31	2714.41	1410.37	1304.04	29.517.89	4562.71	24955.18	133.87	59459.38	29941.49	29941.49	3704.02	26237.47	286.65	TOTAL

◆ = TWO PHASE

FIGURE 3c:

PLOT DATE: 03-20-90
DWG FILE: 427\VV1M4221.DWG

PRINT DISTRIBUTION RECORD																REVISIONS			
REV.	DATE	P	FA	A	SHOP	FIELD	CUST.	VOG	FILE	PURCH						REV	DESCRIPTION	DATE	REVISED BY

MERIDIAN OIL

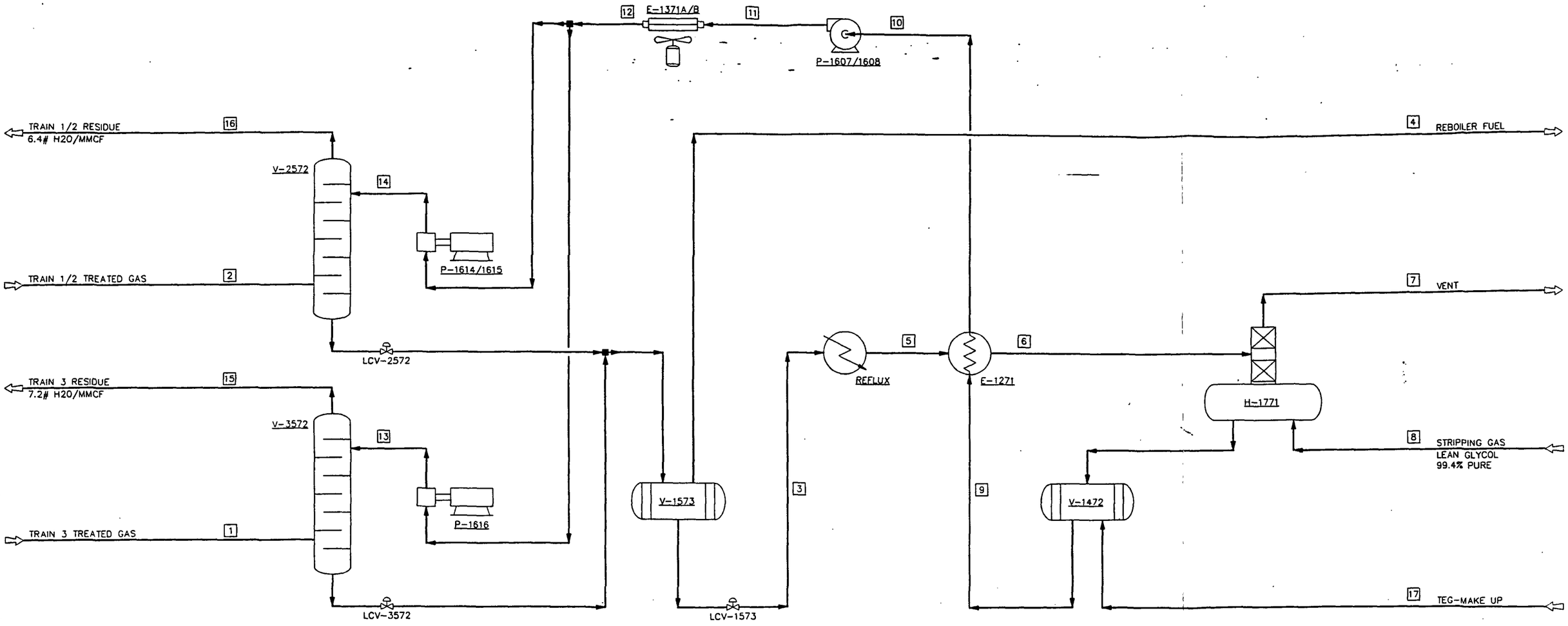
VAL VERDE PLANT
TRAIN 4

PROCESS FLOW DIAGRAM
AMINE - SUMMER CONDITIONS

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
		ASHORE	03-01-90	W-1-M4221

DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK.

V-2572/3572	P-1614/1615/1616	V-1573	E-1371A/B	P-1607/1608	E-1271		V-1472	H-1771
GLYCOL CONTACTORS	GLYCOL HI. PRESS. PUMPS 5 BHP EACH	GLYCOL FLASH TANK	GLYCOL COOLERS 579 MBTU/HR	GLYCOL PUMPS 0.5 BHP EACH	LEAN/RICH GLYCOL EXCHANGER 816 MBTU/HR	REFLUX CONDENSER 275 MBTU/HR	SECONDARY SURGE TANK	GLYCOL REBOILER 1,360 MBTU/HR



GLYCOL UNIT

STREAM ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
TOTAL FLOW																	
GPM	–	–	18	–	18	–	–	–	16.5	16.5	16.5	16.5	8.3	8.3	–	–	0.007
MMCF/D	71.2	62.6	–	0.014	–	–	0.478	0.100	–	–	–	–	–	–	71	62.4	–
LBMOL/HR	7820	6873	106	1.6	106	106	53	10.8	64.7	64.7	64.7	64.7	32.4	32.4	7796	6852	–
PRESSURE, PSIG	650	650	38	38	33	28	5	8	5	5	18	16	738	738	633	633	5
TEMPERATURE, DEG.F	120	120	125	125	171	300	208	95	367	228	228	120	120	120	124	124	100
COMPONENT FLOW, LBMOL/HR																	
GAS SPEC CS+	–	–	61.60	–	61.60	61.60	–	–	61.60	61.60	61.60	61.60	30.80	30.80	0.01	0.01	0.03
WATER	23.30	20.70	44.60	0.02	44.60	44.60	41.60	–	3.00	3.00	3.00	3.00	1.50	1.50	1.18	0.92	–
CARBON DIOXIDE	19.50	17.10	0.04	0.04	0.04	0.04	0.09	0.05	–	–	–	–	–	–	38.94	34.22	–
METHANE	7777.20	6835.20	0.13	1.49	0.13	0.13	10.90	10.80	0.04	0.04	0.04	0.04	0.02	0.02	7755.87	6816.85	–

FIGURE 4a:

NOTE:
STREAM DATA IS FOR OPERATING CONDITIONS AFTER 93/94 ADDITIONS.

APPD	MARK	REVISION	BY	DATE
	2	ISSUED FOR AS-BUILT	K.J.S.	9/24/93

REVIEWED BY: DESIGN ENGR. / PROJ. ENGR. / DIV. ENGR. / PROD. SUPT. / CONST. SUPT. / SAFETY DEP.

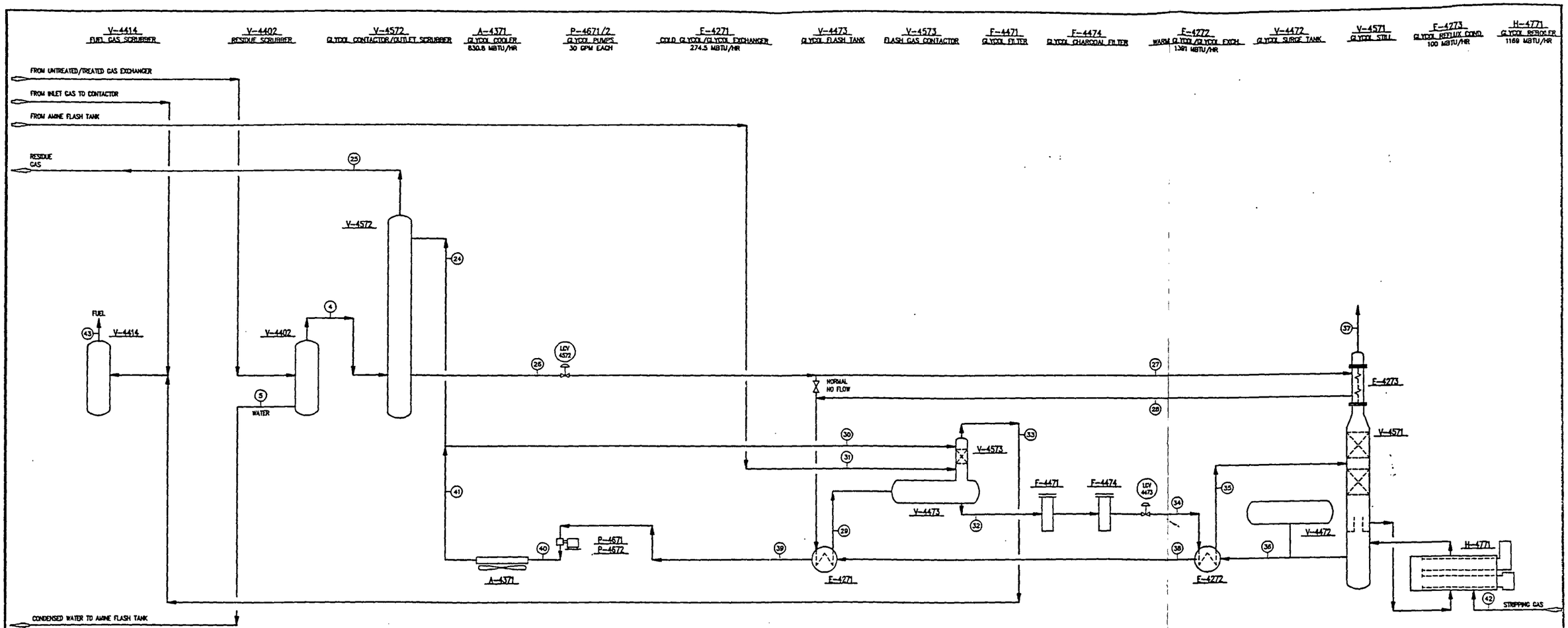
RELEASED ONLY FOR:

	PROJ. ENGR.	DIV. ENGR.	DESIGN ENGR.	DATE
CHECKING				
PRELIMINARY				
BIDDING				
FABRICATION				
ERECTION				

MERIDIAN OIL
VAL VERDE GAS PLANT
TRAIN #1, #2 & #3
GLYCOL PROCESS FLOW DIAGRAM

DRAWN: Karen S | DATE: 08/24/90 | CHK'D: | DIV:

BCCK ENGINEERING, INC. MIDLAND, TEXAS | DWG. NO. VV-1-M1310 | 2



STREAM NUMBER	4	5	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	STREAM NUMBER
DESCRIPTION	TEG CONTACTOR INLET	CONDENSED WATER	LEAN TEG TO CONTACTOR	CONTACTOR OHD	RICH TEG FROM CONTACTOR	RICH TEG TO REFLUX CONDENSER	RICH TEG FROM REFLUX CONDENSER	RICH TEG FROM COLD GLYCOL EXCH.	LEAN TEG TO FLASH CONTACTOR	AMINE FLASH VAPOR	RICH TEG FROM FLASH TANK	FLASH CONTACTOR OHD	RICH TEG TO WARM GLYCOL EXCH.	RICH TEG FROM WARM GLYCOL EXCH.	LEAN TEG FROM REBOILER	TEG STILL OHD	LEAN TEG FROM WARM GLYCOL EXCH.	LEAN TEG FROM COLD GLYCOL EXCH.	LEAN TEG TO COOLER	LEAN TEG FROM COOLER	GLYCOL REBOILER STRIPPING GAS	TOTAL FUEL GAS	DESCRIPTION
TEMPERATURE (F.)	102.02	102.02	115	105.55	104.82	112.12	127.2	167	115	168.71	173.27	150.02	171.97	310	400	204.15	255.16	227.89	203.6	115	105	115	TEMPERATURE (F.)
PRESSURE (PSIA)	690	690	685	685	690	75	70	65	685	70	66	65	20	15	14.8	14.7	14.8	14.55	690	685	15.3	65	PRESSURE (PSIA)
MASS FLOW (LB/HR)	185392	398	15115	185016	15467	15467	15467	15467	2011	1973	17658	1791	17658	17658	17125	533	17125	17125	17125	17125		6366	MASS FLOW (LB/HR)
MMCFD (14.7 PSIA & 60F.)	103.76			103.57						0.528		0.482				0.223						3.072	MMCFD (14.7 PSIA & 60F.)
LIQ. VOL. FLOW (GPM, 60F.)		0.8	26.8		27.7				3.56		31.5				30.3		30.3	30.3	30.3	30.3			LIQ. VOL. FLOW (GPM, 60F.)
DENSITY (LB/CF)	1.86	62.22	69.25	1.99	69.05	40.38 ◆	38.36 ◆	35.16 ◆	69.25	0.35	67	0.34	17.2 ◆	2.49 ◆	59.67	0.04	64.73	65.69	66.86	69.25	.022	2.24	DENSITY (LB/CF)
MOL WT.	16.25	18.02	141.09	16.25	121.07	122.15	122.15	122.15	141.10	33.97	121	33.8	121	121	141.09	21.69	141.09	141.09	142.87	141.09	16.24	20.2	MOL WT.
CO2 (MOLS/HR)	65.09	0	0	64.93	0.16	0.16	0.16	0.16	0	35.91	3.48	33.59	3.48	3.48	0	3.48	0	0	0	0	64.92	62.84	CO2 (MOLS/HR)
DEA (MOLS/HR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	DEA (MOLS/HR)
TEG (MOLS/HR)	0	0	99.77	0.01	99.77	99.77	99.77	99.77	0.98	0	113.04	0	113.04	113.04	113.04	0	113.04	113.04	113.04	113.04	0	0	TEG (MOLS/HR)
H20 (MOLS/HR)	19.95	22.05	7.36	1.48	24.50	24.50	24.50	24.50	13.27	4.22	29.3	0.38	29.3	29.3	8.33	20.97	8.33	8.33	8.33	8.33	1.48	.45	H20 (MOLS/HR)
C1 (MOLS/HR)	11284.05	0.02	0	11251.89	2.16	2.16	2.16	2.16	0	16.89	0.09	18.95	0.09	0.09	0	0.09	0	0	0	0	11281.89	275.43	C1 (MOLS/HR)
C2 (MOLS/HR)	37.82	0	0	37.80	0.02	0.02	0.02	0.02	0	0.05	0.01	0.06	0.01	0.01	0	0.01	0	0	0	0	37.8	.91	C2 (MOLS/HR)
TOTAL	11406.92	22.07	107.13	11366.11	126.62	126.62	126.62	126.62	14.25	56.06	145.93	52.98	145.93	145.93	121.37	24.56	121.37	121.37	121.37	121.37	11366.1	339.64	TOTAL

◆ = TWO PHASE

FIGURE 4b:

PRINT DISTRIBUTION RECORD

REV.	DATE	P	FA	A	SHOP	FIELD	EST.	VEND.	FILE	PURCH.

REVISIONS	
REV.	DESCRIPTION

PLOT DATE: 03-20-90
DWG FILE: 427\WM4221.DWG

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 4

PROCESS FLOW DIAGRAM
GLYCOL - SUMMER CONDITIONS

A

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
		ASHWORTH	03-03-90	W-1-M4222
				DRAFTED BY
				T.H. RUSSELL CO. TULSA, OK.

E-5202
UNTREATED/TREATED GAS EXCHANGER
1152.8 MBTU/HR
30-188 - ADJ
950 PSI D.P. @ 150°F - SHELL
950 PSI D.P. @ 175°F - TUBE

V-5402
RESIDUE SCRUBBER
66" ID x 12'-0" S/S
950 PSI D.P. @ 250 °F

V-5501
GAS CONTACTOR
90" ID x 58'-0" S/S
950 PSI D.P. @ 250 °F

V-5422
ANTI-FOAM TANK
12 3/4" O.D. x 4'-0" S/S
14 PSIG @ 150°F

P-5618
CHEMICAL INJECTION PUMP
1.5 GPM @ 1000 PSID
1/8 HP MOTOR

P-5604
AMINE CIRCULATION PUMP
448 GPM @ 1832 FT. TDH
350 H.P. MOTOR
W/ PELTON TURBINE
181 R HP

P-5605
AMINE CIRCULATION PUMP
448 GPM @ 1832 FT. TDH
350 H.P. MOTOR

P-5606
AMINE CIRCULATION PUMP
448 GPM @ 1832 FT. TDH
350 H.P. MOTOR

P-5607
AMINE CIRCULATION PUMP
448 GPM @ 1832 FT. TDH
350 H.P. MOTOR

V-5405
AMINE FLASH TANK
60" ID x 24'-0" S/S
150 PSI D.P. @ 200 °F

TO BLOWDOWN DWG. W-3-M4204
FROM AT-4902 DWG. W-3-M4201
FROM FT-5414A (AGA FLOW CALCULATION) SHT. 3-M5203
FROM INLET HEADER DWG. W-3-M4201
TO RESIDUE HEADER DWG. W-3-M4201
TO V-5414 SHT. 3-M5203
DRY GAS FROM V-5572 SHT. 4-M5201
TREATED GAS TO V-5572 SHT. 4-M5201
TO REM. SET PT. PIC-5701/2 SHT. 3-M5203
5127-A-10"SR FROM A-5306 SHT. 3-M5202
TO V-5573 SHT. 4-M5201
FROM INLET GAS 5312-F-1" SR SHT. 3-M5203
TO E-5306 SHT. 3-M5202
TO V/A-5405 (LCV-5405) SHT. 3-M5202

NOTE:
ITEMS SHOWN DASHED IN ARE FUTURE ITEMS. VALVES AND INSTRUMENTS PROVIDED BY T.H.R. CO.

TYPICAL ALL SHEETS

AD AMINE DRAIN (SEE SHT. 8-M5201)
WD WASTE WATER DRAIN (SEE SHT. 8-M5201)
V VENT HEADER (SEE DWG. W-3-M4894)
GD GLYCOL DRAIN (SEE SHT. 8-M5201)
LO LOCK OPEN
DCS DISTRIBUTIVE CONTROL SYSTEM
PP PRESSURE POINT, 3/4"VI1 W/ PLUG
SP SAMPLE POINT, 1"VI1 W/ PLUG
CC CORROSION COUPON, 2" NPT W/VALVE

* ITEMS PROVIDED AND INSTALLED BY MERIDIAN OIL CO.
** ITEMS PROVIDED AND INSTALLED BY MERIDIAN OIL CO., SPECIFIED BY T.H.R. CO.

PLOT DATE: 03-15-90
DWG. FILE: 433\W3M5201.DWG

T.H. RUSSELL CO. JOB NO. 433

PRINT DISTRIBUTION RECORD

REV.	DATE	F	F.A.	A	SHOP	FIELD	CUST.	VENDR.	FILE	PURCH.	PE	AS BUILT
0	11/28											
1	2/5			✓	3	2	3	3	1		1	

REVISIONS

REV.	DESCRIPTION
0	AFC
1	ADDED THR NOTES TO AMINE CIRC. PUMP LINES
2	GENERAL REVISION

MERIDIAN OIL
VAL VERDE PLANT
TRAIN 5
MECHANICAL FLOW SHEET
AMINE CONTACTOR

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
	11-14-89	ASMORE	10-3-89	W-3-M5201
		JJD	01-31-90	
		JJD	03-15-90	

DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK.

A-5304A/B/C/D
AMINE COOLER
48,959.0 MBTU/HR
100 PSI D.P. @ 225°F
W/ (4) 30 HP MOTORS AND
(4) 30 / 7.5 HP 2 SPEED MOTORS

F-5408
AMINE FILTER
54" OD x 8'-2" S/S
100 PSI D.P. @ 225 °F

F-5411
AMINE CHARCOAL FILTER
66" ID x 12'-0" S/S
100 PSI D.P. @ 225 °F
8' BED

V-5503
AMINE STILL/SURGE TANK
108" ID x 64'-0" S/S
50 PSI D.P. @ 350 °F

A-5303A/B
STILL REFLUX CONDENSER
3,918.0 MBTU/HR.
50 PSI D.P. @ 275°F
W/ (2) 30 HP MOTORS
AND (2) 30/7.5 HP 2 SPEED MOTORS

V-5407
STILL REFLUX ACCUMULATOR
48" ID x 12'-0" S/S
50 PSI D.P. @ 350 °F

P-5608
STILL REFLUX PUMP
85 GPM @ 118 FT. TDH
10 H.P. MOTOR

P-5609
STILL REFLUX PUMP
85 GPM @ 118 FT. TDH
10 H.P. MOTOR

F-5201A/B/C
AMINE/AMINE EXCHANGER
57,331 MBTU/HR
(2) 37 x 240 - AES
150 PSI D.P. @ 275°F - SHELL
150 PSI D.P. @ 275°F - TUBE
TEMA C

P-5601
AMINE BOOSTER PUMP
1524 GPM @ 83 FT. TDH
50 H.P. MOTOR

P-5602
AMINE BOOSTER PUMP
1524 GPM @ 83 FT. TDH
50 H.P. MOTOR

P-5603
AMINE BOOSTER PUMP
1524 GPM @ 83 FT. TDH
50 H.P. MOTOR

T.H. RUSSELL CO. JOB NO. 433

PRINT DISTRIBUTION RECORD

REV.	DATE	P	P.A.	A	SHOP	FIELD	ELEC.	INSTR.	PLE	PLANNER	PE	
0	1/28											
1	3/5			✓	3	1	3	3	1		1	

REVISIONS

REV.	DESCRIPTION
0	APC
1	GENERAL REVISION
2	GENERAL REVISION

MERIDIAN OIL
VAL VERDE PLANT
TRAIN 5
MECHANICAL FLOW SHEET
AMINE REGENERATION

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
APC	10-14-89	ASHMORE	11-8-89	VV-3-M5202
		APC	01-31-90	
		APC	03-13-90	
				DRAFTED BY
				T.H. RUSSELL CO. TULSA, OK.

PLOT DATE: 03-15-90
DWG. FILE: 433\VV3M5202.DWG

V-5414
FUEL GAS SCRUBBER
18" OD x 8'-0" S/S
250 PSI D.P. @ 150°F

H-5701
AMINE REBOILER
40.8 MMBTU/HR
50 PSI D.P. @ 400°F

H-5702
AMINE REBOILER
40.8 MMBTU/HR
50 PSI D.P. @ 400°F

NOTE:
RETURN LINE FROM H-5701 AND H-5702 TO V-5503 TO BE LEVEL (NO ELEV. CHANGES) AND MINIMUM DISTANCE.

TO V-5503 SHT. 3-M5202 — 5138-A-24" SR
FROM P-5601/2/3 SHT. 3-M5202 — 5134-A-8"SR
FROM P-5601/2/3 SHT. 3-M5202 — 5133-A-8"SR
5135-A-18"SR
5134-A-8"SR
18" V11-347
18" V11-350
H-5701
H-5702
H-5701 FLOW CONTROL | OFF | SKID | SKID
H-5702 FLOW CONTROL | OFF | SKID | SKID
R/S
BURNER #1
BURNER #1
H-5701 LOCAL CONTROL PANEL
H-5702 LOCAL CONTROL PANEL
HEATER ALARM
HEATER ALARM
FROM FIC-5604 SHT. 3-M5201
FROM FIC-5604 SHT. 3-M5201
OVERRIDE
TO BURNERS #2 - #8 B,C,D,E,F,G, & H
TO BURNERS #2 - #8 B,C,D,E,F,G, & H
H-5701 FIRING CONTROL | OFF | SKID | SKID
H-5702 FIRING CONTROL | OFF | SKID | SKID
VENT TO ATMOSPHERE
VENT TO ATMOSPHERE
5305-A-3"
5306-A-1"
5307-A-3"
5308-A-3"
5309-A-3"
5310-A-1"
5304-A-3"
5308-A-4"
5311-A-3"
TO H-5771 SHT. 4-M5201

TO CAL-5902 (AGA FLOW CALCULATED) SHT. 3-M5201
OFF INLET EXCH. SKID | SKID
TO V-5405 SHT. 3-M5201 — 5312-F-1" SR
FROM LINE 5003-F-2" SR SHT. 3-M5201 — 5300-F-2" SR
SENSOR RUN
FROM V-5573 SHT. 3-M5201 — 5225-A-3" SR
OFF INLET SKID | SKID
V-5414
5301-A-4"
5302-A-4"
5303-A-4"
AMINE UNIT S.D.
OFF INLET EXCH. SKID | SKID
FROM PLANT S.D.
TO PCV-5503 SHT. 3-M5202 — 5314-A-2"
2" FUEL TO GENERATOR TO SHT. 3-M4204

PLOT DATE: 03-15-90
DWG. FILE: 433\W3M5203.DWG

PRINT DISTRIBUTION RECORD

REV.	DATE	BY	P.A.	A.	SHOP	FIELD	ELEC.	VENDR.	FILE	PUBLIC	PE	
0	1/28				1	3	3	3	1			AL
1	2/5		✓	5	2	5	5	1		1		GL

T.H. RUSSELL CO. JOB NO. 433

REVISIONS

REV.	DESCRIPTION
0	AFE
1	GENERAL REVISION
2	GENERAL REVISION

MERIDIAN OIL
VAL VERDE PLANT
TRAIN 5
MECHANICAL FLOW SHEET
AMINE REBOILERS
2

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
APPR.	11-15-89	A.SHAW	11-9-89	W-3-M5203
		J.FU	01-31-90	
		J.FU	03-15-90	
				DRAFTED BY
				T.H. RUSSELL CO. HOUSTON, TX.

V-5572
GLYCOL CONTACTOR/OUTLET SCRUBBER
72" ID x 36'-6" S/S
850 PSI D.P. @ 150 °F

V-5473
FLASH TANK
24"OD x 10'-0" S/S
150 PSI D.P. @ 200 °F

V-5573
FLASH GAS CONTACTOR
10.75"OD x 12'-0" S/S
150 PSI D.P. @ 200 °F

F-5471
RICH TEG FILTER
14"OD x 60" OAH
150 PSI D.P. @ 200 °F

F-5474
GLYCOL CHARCOAL ABSORBER
36"OD x 8'-0" S/S
150 PSI D.P. @ 200 °F
30 GPM

F-5273
GLYCOL REFLUX CONDENSER
122.3 MBTU/HR
10-90 - BE-
150 PSI D.P. @ 400 °F - SHELL
14 PSI D.P. @ 400 °F - TUBE

V-5571
GLYCOL STILL COLUMN
20"OD x 18'-6" S/S
14 PSI D.P. @ 450 °F

H-5771
GLYCOL REBOILER
2084.0 MBTU/HR
14 PSI D.P. @ 450 °F
3 HP BLOWER MOTOR

A-5371
GLYCOL COOLER
1,109.2 MBTU/HR
850 PSI D.P. @ 230 °F
W/ (2) 10 / 2.5 HP 2 SPEED MOTORS

FUEL GAS TO V-5414 SHT. 3-M5203
FROM V-5405 SHT. 3-M5201
TO RESIDUE HEADER SHT. 3-M5201
TREATED GAS FROM V-5402 SHT. 3-M5201
LOW PT. DRAIN
HEATER ALARM
LOCAL CONTROL PANEL
WITH WARM AIR RECIRCULATION
STEAM OUTLET
FUTURE SPARGER
DO NOT POCKET LINE
3' OF .625"ø PALL RINGS
6' OF 1.5" PALL RINGS
6' OF 5/8"ø PACKING
* = BY BURNER MFG.

F-5271
COLD GLYCOL/GLYCOL EXCHANGER
81.1 MBTU/HR
B-192 BCM - - -
50 PSI D.P. @ 250 °F - SHELL
150 PSI D.P. @ 200 °F - TUBE

F-5272
WARM GLYCOL / GLYCOL EXCHANGER
1784.6 MBTU/HR
17 x 218 - AES
50 PSI D.P. @ 450 °F - SHELL
150 PSI D.P. @ 350 °F - TUBE

V-5472
GLYCOL SURGE TANK
48"OD x 20'-0" S/S
14 PSI D.P. @ 450 °F

P-5671
GLYCOL PUMP
33 GPM @ 800PSID
30 H.P. MOTOR

P-5672
GLYCOL PUMP
33 GPM @ 800PSID
30 H.P. MOTOR

30 GPM GLYCOL DEHY.

T.H. RUSSELL CO. JOB NO. 433

PRINT DISTRIBUTION RECORD

REV.	DATE	P	P.A.	A	SHOP	FIELD	ELEC	VENDOR	FILE	PLANNER	PE	
0	1/28											AS
1	2/5		✓	1	1	1	1		1		1	PE

REVISIONS

REV.	DESCRIPTION
0	AFE
1	GENERAL REVISION
2	ADDED PCV-5771C AND GENERAL REVISION

PLOT DATE: 03-16-90
DWG. FILE: 433/VW4M5201.DGN

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 5
MECHANICAL FLOW SHEET
GLYCOL UNIT

2

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
JMW	11-14-89	ASHWORTH	11-6-89	VW-4-M5201
		AJD	01-31-90	
		AJD	03-16-90	

DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK.

P-5613A
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 78 FT. TDH
2 H.P. MOTOR

P-5613B
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 78 FT. TDH
2 H.P. MOTOR

P-5613C
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 78 FT. TDH
2 H.P. MOTOR

P-5614
AMINE/WATER MAKEUP/FILL PUMP
108 GPM @ 78 FT. TDH
7.5 H.P. MOTOR

P-5617
AMINE RECHARGE PUMP
108 GPM @ 78 FT. TDH
7.5 H.P. MOTOR

T-5415
WATER MAKE-UP TANK
210 BBL
10' DIA. x 15' HIGH

T-5416
AMINE MAKE-UP TANK
90 BBL
7'-11" DIA. x 10' WIDE

T-5417
AMINE RUN DOWN TANK
210 BBL
10' DIA. x 15' HIGH

M-5901
WATER TREATER
17,000 GPD CAPACITY

T-5418
WASTE WATER TANK
500 BBL
15'-6" DIA. x 16' HIGH

T-5423
HCL STORAGE
500 GAL

T-5424
NAOH STORAGE
500 GAL

T-5475
GLYCOL STORAGE TANK
90 BBL
7'-11" DIA. x 10' HIGH

P-5615A
WASTEWATER TRANSFER PUMP
40 GPM @ 50 FT. TDH
1 H.P. MOTOR

P-5615B
WASTEWATER TRANSFER PUMP
40 GPM @ 50 FT. TDH
1 H.P. MOTOR

P-5673
GLYCOL MAKEUP/DRAIN PUMP
115 GPM @ 44 FT. TDH
5 H.P. MOTOR

T-5419
WASTE WATER SUMP TANK
150 GAL

INST. AIR FR. M-4602
150 SCFM @ 100 PSIG

2" INSTR. AIR TO PLANT

CONT. WATER M.U.
DWG. W-3-M4202

CONTINUOUS WATER MAKE-UP
TO 5125-A-10"
SHT. 3-M5202

CONTINUOUS WATER MAKE-UP
TO 6125-A-10"
SHT. 3-M6202

5142-A-PVC-2"
AMINE/WATER MAKEUP FROM P-5614
AMINE RECHARGE FROM P-5617
TO V-5503
SHT. 3-M5202

UNTREATED WATER SUPPLY

BY OTHERS

NOTE:
H.T. AND INSULATE TO
MIN. 3' BELOW GRADE

H.T. AND INSULATE ABOVE GRADE AND TO 3' BELOW GRADE.

TO V-5472
SHT. 4-M5201

FROM P-4618
DWG. W-3-M4804

FR. W.W. DRAIN SYSTEM
DWG. W-8-M4301

FR. FUTURE TRAIN 6
W.W. DRAIN SYSTEM

FR. CO2 VENT
SHT. W-3-M4304

NOTE:
T-5417 ELEVATION TO ALLOW
FREE DRAINING OF AMINE TO TANK

CONCRETE VAULT

H.T. & INSUL TO 3' MIN. BELOW GRADE

TO LINE 5142-A-PVC-2"
DWG. W-3-M4202

AMINE/WATER MAKEUP TO V-4503 FROM P-5614 & T-5415/5416

AMINE RUNDOWN TRANSFER FROM P-4617 & T-4417 TO V-4503

PRINT DISTRIBUTION RECORD

REV.	DATE	P	P.E.	S	BSP	FIELD	ENV.	VEND.	FILE	PURSU.	M	
0	11/28											
1	3/2			✓	3	2	3	3	1	1		

REVISIONS

REV.	DESCRIPTION
0	AFC
1	ADDED H.T. AND INSULATION
2	GENERAL REVISION

PLOT DATE: 03-16-90
DWG. FILE: 433\W8M5201.DWG

MERIDIAN OIL

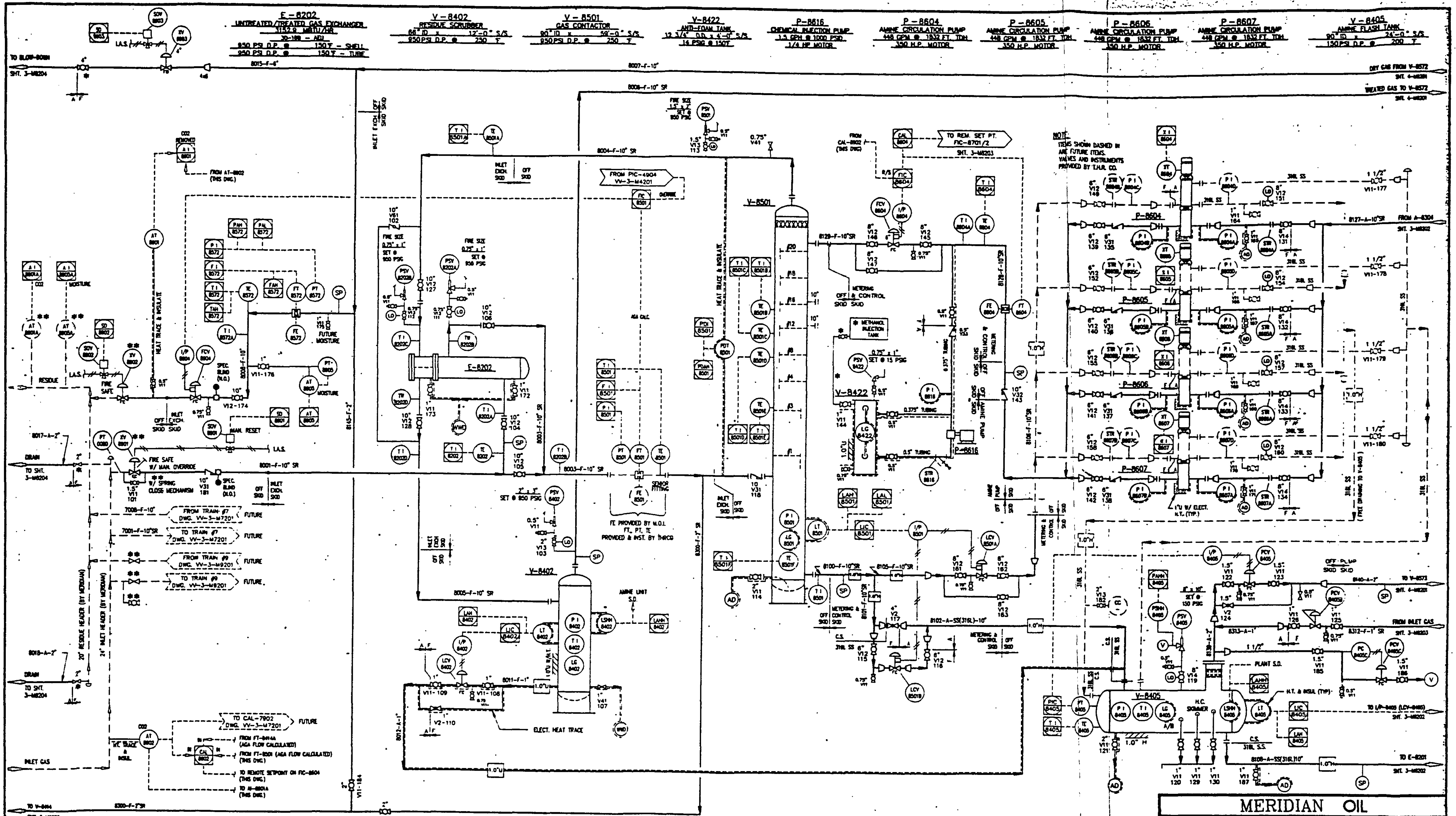
VAL VERDE PLANT
TRAIN 5
MECHANICAL FLOW SHEET
UTILITIES

2

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
	11-14-89	ASHOK	11-01-89	W-8-M5201
		JKH	01-31-90	
		JKH	03-16-90	

DRAFTED BY

T.H. RUSSELL CO.
TULSA, OK.



SYMBOL LEGEND: TYP. ALL FLOW SHEETS

- (AD) AMINE DRAIN (SEE SHT. 8-M4201)
- (WWD) WASTE WATER DRAIN (SEE SHT. 8-M4202)
- (V) VENT HEADER (SEE SHT. 3-M4204)
- (GD) GLYCOL DRAIN (SEE SHT. 8-M4202)
- (WRH) WATER HEATER RELIEF HEADER (SEE SHT. 8-M4201)
- (WB) WATER HEATER BLOWDOWN (SEE SHT 8-M4201)
- DISTRIBUTIVE CONTROL SYSTEM
- (PP) PRESSURE POINT, 3/4"V11 W/ PLUG
- (CC) CORROSION COUPON, 2" NPT W/VALVE
- (SP) SAMPLE POINT, 1"V11 W/ PLUG
- (LO) LOCK OPEN

* ITEMS PROVIDED AND INSTALLED BY MERIDIAN OIL CO.

** ITEMS PROVIDED AND INSTALLED BY MERIDIAN OIL CO., SPECIFIED BY T.H.R. CO.

PLOT DATE: 05-30-91
DWG FILE: 445\VV3M8201.DWG

PRINT DISTRIBUTION RECORD

REV	DATE	P	FA	A	SHOP	FIELD	CUST	VEND	FILE	PURCH	PE		
C	2/5				5				1				
1	5/14			✓	5	6	1		1		1		HP

REVISIONS

REV	DESCRIPTION
C	GENERAL REVISION
0	GENERAL REVISION, ISSUE AFC
1	ADD SD-8803 TO SOV-8803, MOVE PI-8604B - 8607B, ADD HT @ LCV-8501A & FCV-8804
2	GENERAL REVISION

T.H. RUSSELL CO. JOB NO. 445

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 8

MECHANICAL FLOW SHEET
AMINE CONTACTOR

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
	4-3-91	JJD	10-23-90	VV-3-M8201
		JJD	04-01-91	
		HDA	05-10-91	DRAFTED BY
	6-4-91	JJD	05-30-91	T.H. RUSSELL CO. TULSA, OK.

M-8902
INSTRUMENT AIR COMPRESSOR PACKAGE
150 SCFM @ 100 PSIG
(3) 30 HP MOTORS

T-8416
WASTE WATER TANK
500 BBL
15'-6" DIA. x 16' HIGH

P-8615A
WASTEWATER TRANSFER PUMP
40 GPM @ 60 FT. TDH
1 H.P. MOTOR

P-8615B
WASTEWATER TRANSFER PUMP
40 GPM @ 60 FT. TDH
1 H.P. MOTOR

T-8426
WASTE WATER SUMP TANK
150 GAL

T-8475
GLYCOL STORAGE TANK
80 BBL
7'-11" DIA. x 10' HIGH

V-8412
CLOSED DRAIN K.O.
48" OD x 8'-0" S/S
50 PSI O.P. @ 150 °F

P-8673
GLYCOL MAKEUP/DRAIN PUMP
125 GPM @ 44 FT. TDH
5 H.P. MOTOR

FUTURE INSTR. AIR TO TRAIN 7
2" INSTRUMENT AIR TO TRAIN 8
EXISTING, NEW (TRAIN 8)
INSTRUMENT AIR TO/FROM TRAIN 5
TO TRAIN 9 DWG. W-8-M8201
2 AIR RECEIVERS 60" O.D. x 15'-6" S/S
M-8902

T-8475
FILL
DRAIN
UTILITY OFF, PUMP SKID
8423-A-1.5"
8421-A-3"
8422-A-2"
8433-A-2"
TO V-8472 SHT. 4-M8201
P-8673
H.T. AND INSULATE TO 3' BELOW GRADE
8424-A-2"

V-8571 GLYCOL STILL 15#
H-8771 GLYCOL REBOILER 150#
E-8571 COLD GLYCOL/ GLYCOL EXCHANGER 150#
V-8472 GLYCOL SURGE 43 GAL.
P-8671 / P-8672 SUCTION & DISCHARGE
LOW POINT DRAIN
E-8571 COLD GLYCOL/ GLYCOL EXCHANGER 150#
V-8476 PUMP DRAIN TANK
A-8571 GLYCOL COOLER 600#
V-8572 (IN LINE 600) GLYCOL CONTACTOR 600#
LOW POINT DRAIN LINE 8231-1-1"
F-8471 GLYCOL FILTER 150#
F-8474 GLY. CHARCOAL FILT. 150#
V-8473 GLYCOL FLASH TANK 150#
V-8573 FLASH GAS CONT. 150#

VENT
T-8416
DRAIN
8905-A-SS(316L)-2"
FROM P-8616 SHT. 3-M8205
H.T. AND INSULATE TO 3' BELOW GRADE
8420-A-2"
P-8615A
P-8615B
VENT
T-8426
GRADE
TRAP
8415-A-3"
CONCRETE VAULT
* = FOOT VALVE SUPPLIED WITH PUMPS

CO2 VENT STACK AND V-8420
8435-A-SS(316L)-2"
FUTURE FROM TRAIN 7 SHT. W-8-M7201
7437-A-SS(316L)-2"
FUTURE FROM TRAIN 9 SHT. W-8-M8201
8437-A-SS(316L)-2"
8438-A-SS(316L)-3"
8440-A-SS(316L)-3"
8439-A-SS(316L)-2"
DRAIN FROM LINE 8415-A-SS(316L)-3"
A-8303 A/B AMINE STILL REFLUX CONDENSER
W-8601 WATER TREATER BLDG. DRAINS
UTILITY PUMP SKID DRAIN
8441-A-PVC-3"
8442-A-PVC-3"
C.O.
GRADE
TRAP
18"

V-8412
25' ABOVE GRADE
8415-A-3"
8415-A-2"
7415-A-2"
FR. FUTURE TRAIN 7 W.W. DRAIN SYSTEM
FR. FUTURE TRAIN 9 W.W. DRAIN SYSTEM

V-8407 STILL REFLUX ACCUMULATOR 150#
V-8425 RELIEF HEADER K.O. DRUM
WATER PUMP SKID (P-8651/8652/8653)
V-8450 WATER HEATER SURGE
V-8402 REGEN. SCRUBBER 600#
V-8572 GLYCOL CONTACTOR OUTLET SCRUBBER 600#
E-8202 WATER/GLYCOL/TRIETHYLENE GAS EXCHANGER 600#
V-8414 F.G. SCRUBBER 150#
FUTURE LINE 7418
V-8421 DRAIN HEADER K.O. DRUM 150#

1 1/2" TO WATER HEATER BUILDING
EMERGENCY EYE-WASH (LOCATED IN TANK AREA)
POTABLE WATER
2" PVC
V13-680
V13-681
V13-682

T.H. RUSSELL CO. JOB NO. 445

PRINT DISTRIBUTION RECORD

REV.	B.W.	P	Y.A.	A	SHOP	FIELD	CUST.	VEND.	FILE	AUDIO	RE	
0	3/11			✓	5	5	6		1		1	1SP
1	3/11			✓	5	5	6		1		1	1SP

REVISIONS

REV.	DESCRIPTION
0	THIS DRAWING CREATED FROM PORTIONS OF W-8-M8201, ISSUED AFC.
1	ADD P-8651, REVISED BND HEADERS
2	GENERAL REVISION

PLOT DATE: 05-31-91
DWG. FILE: 445\W8M8202.DWG

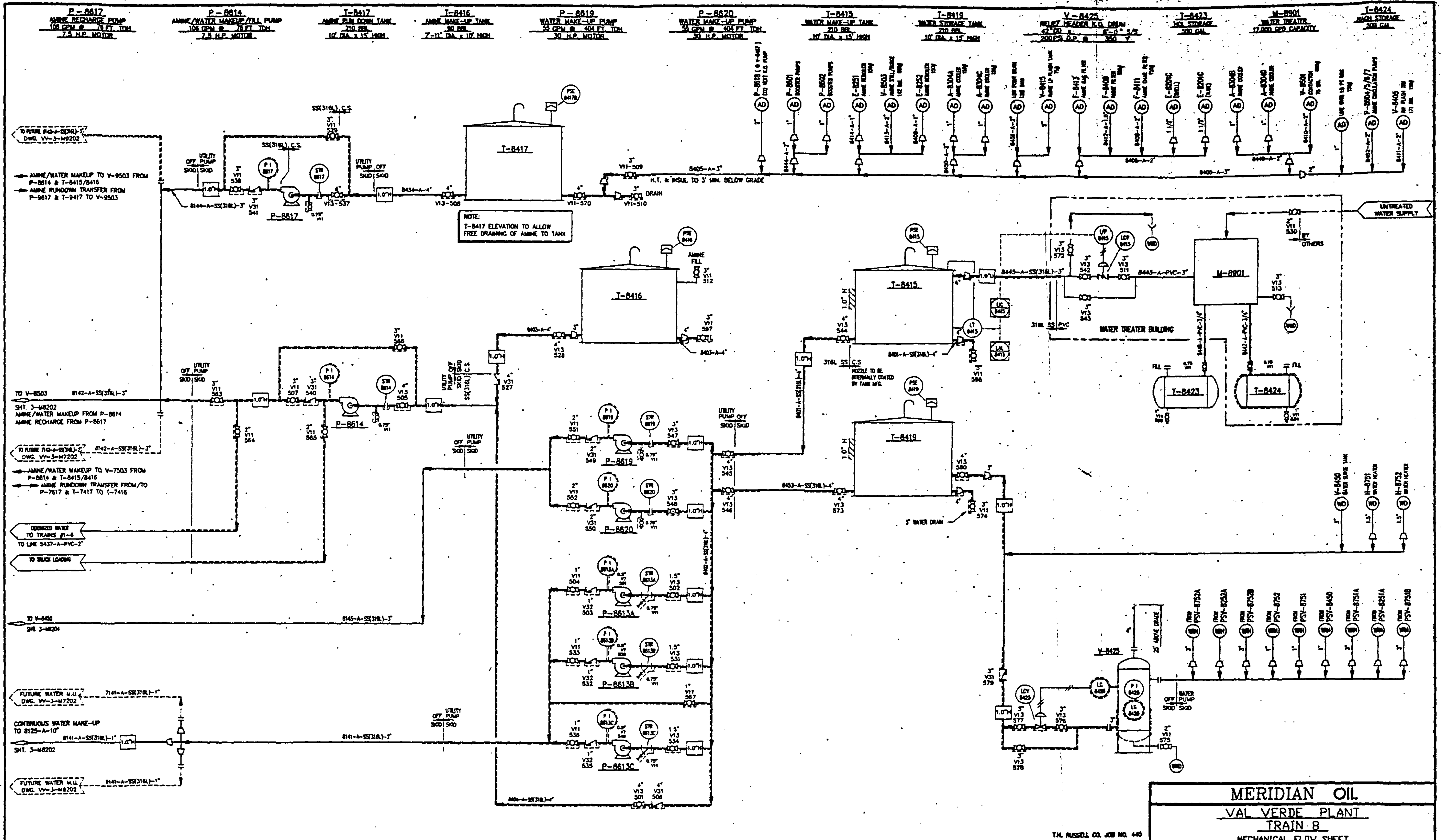
MERIDIAN OIL

VAL VERDE PLANT
TRAIN 8

MECHANICAL FLOW SHEET
INSTRUMENT AIR, GLYCOL AND WASTEWATER UTILITIES

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
	4-3-91	JAB	05-06-91	W-8-M8202
		MDH	05-10-91	
	4-30-91	JAB	05-31-91	

DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK.



P-8613A
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 78 FT. TDH
2 H.P. MOTOR

P-8613B
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 78 FT. TDH
2 H.P. MOTOR

P-8613C
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 78 FT. TDH
2 H.P. MOTOR

PLOT DATE: 05-31-91
DWG. FILE: 445\VV8M8201.DWG

T.H. RUSSELL CO. JOB NO. 445

PRINT DISTRIBUTION RECORD

REV.	DATE	P	F.A.		SHOP	FIELD	ELECT.		FILE				
C	2/5				5				1				
0	4/1			✓	5	3	4		1		1		HP
1	5/14			✓	5	8	1		1		1		HP

REVISIONS

REV.	DESCRIPTION
C	GENERAL REVISION
0	PORTIONS OF DRAWING NOW ON VV-8-M8202. ISSUED A.F.C.
1	[illegible]
2	GENERAL REVISION

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 8

MECHANICAL FLOW SHEET
AMINE AND TREATED WATER UTILITIES

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
[illegible]	4-1-91	ADI	10-25-90	VV-8-M8201
		ADI	03-12-91	
		HDA	05-10-91	DRAFTED BY
[illegible]	[illegible]	ADI	05-31-91	T.H. RUSSELL CO. TULSA, OK

V-8572	V-8473	V-8573	F-8471	F-8474	F-8273	V-8571	H-8771	A-8371
GLYCOL CONTACTOR/OUTLET SCRUBBER	FLASH TANK	FLASH GAS CONTACTOR	RICH TEG FILTER	GLYCOL CHARCOAL ABSORBER	GLYCOL REFLUX CONDENSER	GLYCOL STILL COLUMN	GLYCOL REBOILER	GLYCOL COOLER
72"ID x 36'-6" S/S	24"OD x 10'-0" S/S	10.75"OD x 12'-0" S/S	14"OD x 60" OAH	36"OD x 8'-0" S/S	127.5 MBTU/HR	20"OD x 18'-6" S/S	20650 MBTU/HR	1,109.2 MBTU/HR
950PSI D.P. @ 150 °F	150PSI D.P. @ 200 °F	150PSI D.P. @ 200 °F	150PSI D.P. @ 200 °F	150PSI D.P. @ 200 °F	150 PSI D.P. @ 400 °F - SHELL	14PSI D.P. @ 450 °F	14 PSI D.P. @ 450°F	850 PSI D.P. @ 250°F
			30 GPM		14 PSI D.P. @ 400 °F - TUBE		3 HP BLOWER MOTOR	W/ (2) 10 / 2.5 HP 2 SPEED MOTORS

V-8472	P-8671	P-8672	V-8476
GLYCOL SURGE TANK	GLYCOL PUMP	GLYCOL PUMP	GLYCOL PUMP DRAIN TANK
48"OD x 20'-0" S/S	33 GPM @ 900PSID	33 GPM @ 900PSID	12.75"OD x 9'-6" S/S
14PSI D.P. @ 450 °F	30 H.P. MOTOR	30 H.P. MOTOR	14PSI D.P. @ 250 °F

F-8271	F-8272
COLD GLYCOL/GLYCOL EXCHANGER	WARM GLYCOL / GLYCOL EXCHANGER
51.1 MBTU/HR	1744.6 MBTU/HR
A=192 SQ.FT. - -	17 x 218 - M3
50 PSI D.P. @ 250 °F - SHELL	50 PSI D.P. @ 450 °F - SHELL
150 PSI D.P. @ 200 °F - TUBE	150 PSI D.P. @ 350 °F - TUBE

PRINT DISTRIBUTION RECORD

REV	DATE	P	P.A.	A	SHOP	FIELD	CUST.	V&S	FILE	DRAWN	H	
C	2/5				5				1			
D	4/1			✓	5	5	4		1	1	HP	
E	5/14			✓	5	6	1		1	1	HP	

REVISIONS

REV.	DESCRIPTION
C	GENERAL REVISION
D	GDL REV. ISSUE ATC
E	GDL REV AS NOTED
1	GENERAL REVISION

MERIDIAN OIL

VAL VERDE PLANT

TRAIN 8

MECHANICAL FLOW SHEET

GLYCOL UNIT

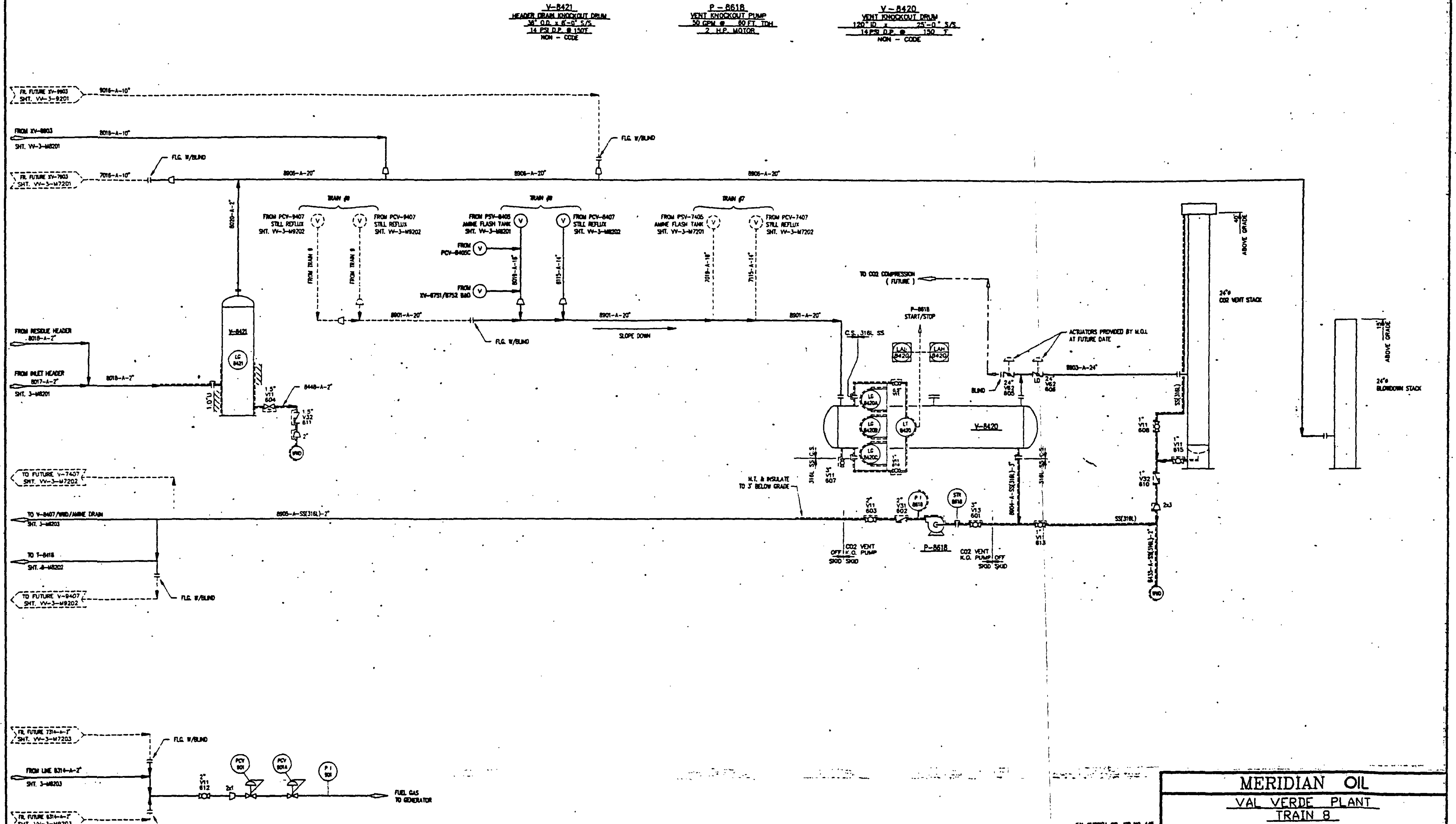
2

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
	4-1-91	JDD	10-16-90	W-4-M8201
		JDD	03-08-91	
		HDA	05-10-91	
	4-8-91	JDD	05-31-91	DRAFTED BY

T.R. RUSSELL CO. TULSA, OK.

PLOT DATE: 05-31-91
DWG. FILE: 445/W4M8201.DWG

T.R. RUSSELL CO. JOB NO. 445



PLOT DATE: 05-31-90
DWG FILE: 445\VV3M8205.DWG

T.H. RUSSELL CO. JOB NO. 445

PRINT DISTRIBUTION RECORD

REV.	DATE	F	F.A	A	SHOP	FIELD	CUST	VEND	FILE	PURCH	PC		
C	2/5				5				1				
0	4/1			✓	5	5	1		1		1		HP
1	5/14			✓	5	6	1		1		1		HP

REVISIONS

REV.	DESCRIPTION
C	GENERAL REVISION
0	GEN. REV., ISSUE A.F.C.
1	REV. 8901-A-20", VENT STACK DRAIN, REMOVED V11-608, REV. LINE 8905 DESCRIPTION
2	GENERAL REVISION

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 8

VENT SYSTEM
CO2 VENT SYSTEM

2

ENGINEERS	DATE	REVISED BY	DATE
JDJ		JJDI	10-24-90
		JJD	03-08-91
		HDA	05-10-91
		JJDI	05-31-91

FILE NO. VV-3-M8205

DRAFTED BY T.H. RUSSELL CO. TULSA, OK

V-8451
CHEMICAL INJECTION TANK
12.75" OD x A-0" S/W
14 PSI D.P. @ 150°F
NON-CODE

P-8656
CHEMICAL INJECTION PUMP
1 GPH @ 200 PSIG
1/4 HP MOTOR

V-8450
WATER SURGE TANK
72" ID x 24'-0" S/S
175 PSI D.P. @ 350°F

P-8651
WATER PUMP
3300 GPM @ 126 FT TDH
150 H.P. MOTOR

P-8652
WATER PUMP
3300 GPM @ 126 FT TDH
150 H.P. MOTOR

P-8653
WATER PUMP
3300 GPM @ 126 FT TDH
150 H.P. MOTOR

H-8751
WATER HEATER
43.97 MMBTU/HR
175 PSI D.P. @ 350°F

H-8752
WATER HEATER
43.97 MMBTU/HR
175 PSI D.P. @ 350°F

FROM E-8253 8720-A-16" SHT. 3-M8202
FROM E-8251 8717-A-16" SHT. 3-M8202
NITROGEN
WATER MAKE-UP 3"
2" FUEL GAS FR. LINE 8314-A-2" SHT. 3-M8203
FROM V-8414 SHT. 3-M8203
TO E-8251 8719-A-16" SHT. 3-M8202
TO E-8252 8718-A-16" SHT. 3-M8202
VENT
LOCAL PANEL
H-8750 FIRING CNTL. RACK
SAMPLE COOLER
8716-A-20"
8723-A-16"
8707-A-16"
8709-A-8"
8708-A-8"
8710-A-8"
8711-A-8"
8712-A-8"
8713-A-8"
8714-A-8"
8715-A-8"
8716-A-8"
8722-A-20"
8704-A-10"
8705-A-10"
8706-A-10"
8721-A-16"
8701-A-12"
8702-A-12"
8703-A-12"
8304-A-3"
8305-A-3"
8306-A-1"
8309-A-3"
8310-A-1"
8308-A-3"
8304-A-4"
NORTH STACK
SOUTH STACK
TEST CONN'S
H-8751 LOCAL CONTROL PANEL
H-8752 LOCAL CONTROL PANEL
HEATER ALARM
FR. FIC-8604 SHT. 3-M8201
TO BURNERS #2 THRU #12
VENT TO ATMOSPHERE
BURNER #1
A THRU H
J THRU M
H-8751 FIRING CONTROL OFF SKID
H-8752 FIRING CONTROL OFF SKID
0.75" x 1" SET @ 175 PSIG
0.75" x 1" SET @ 15 PSIG
OFF SKID H₂O PUMP SKID

T.H. RUSSELL CO. JOB NO. 445

PRINT DISTRIBUTION RECORD

REV.	DATE	P	F.A.	A	BMP	FIELD	CUST.	VEND.	FILE	MISCEL.	PI	
C	2/5				3				1			HP
D	2/18					2						HDA
E	4/2				5	3	4				1	HP
I	5/14				5	3	4	1		1	1	HP

REVISIONS

REV.	DESCRIPTION
C	GEN. REV
D	GENERAL REVISION
E	GENERAL REVISION AND ISSUED AFC
I	GEN. REV. AS INDICATED ABOVE
J	GENERAL REVISION

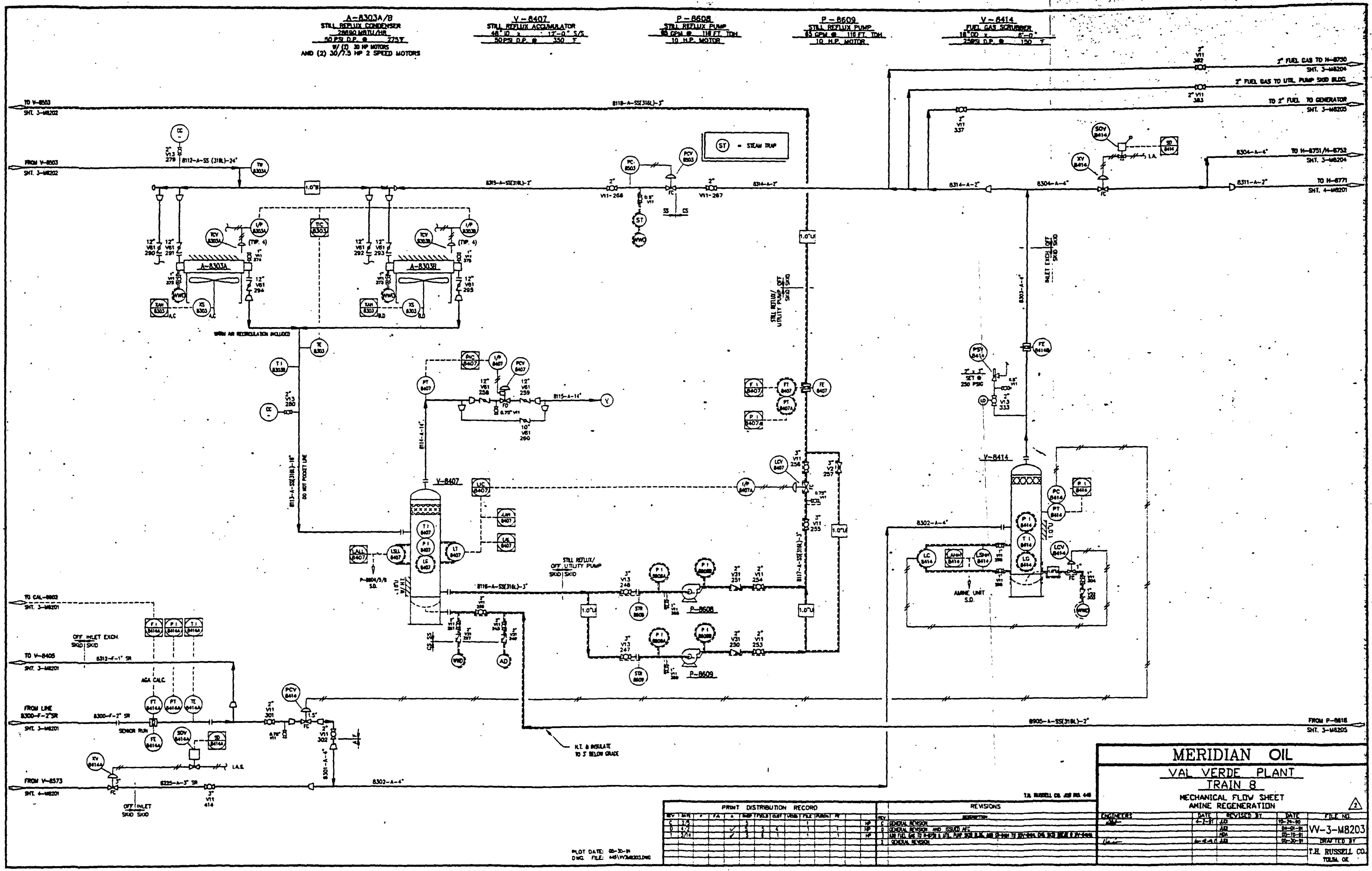
PLOT DATE: 05-31-91
DWG. FILE: 445\W3M8204.DWG

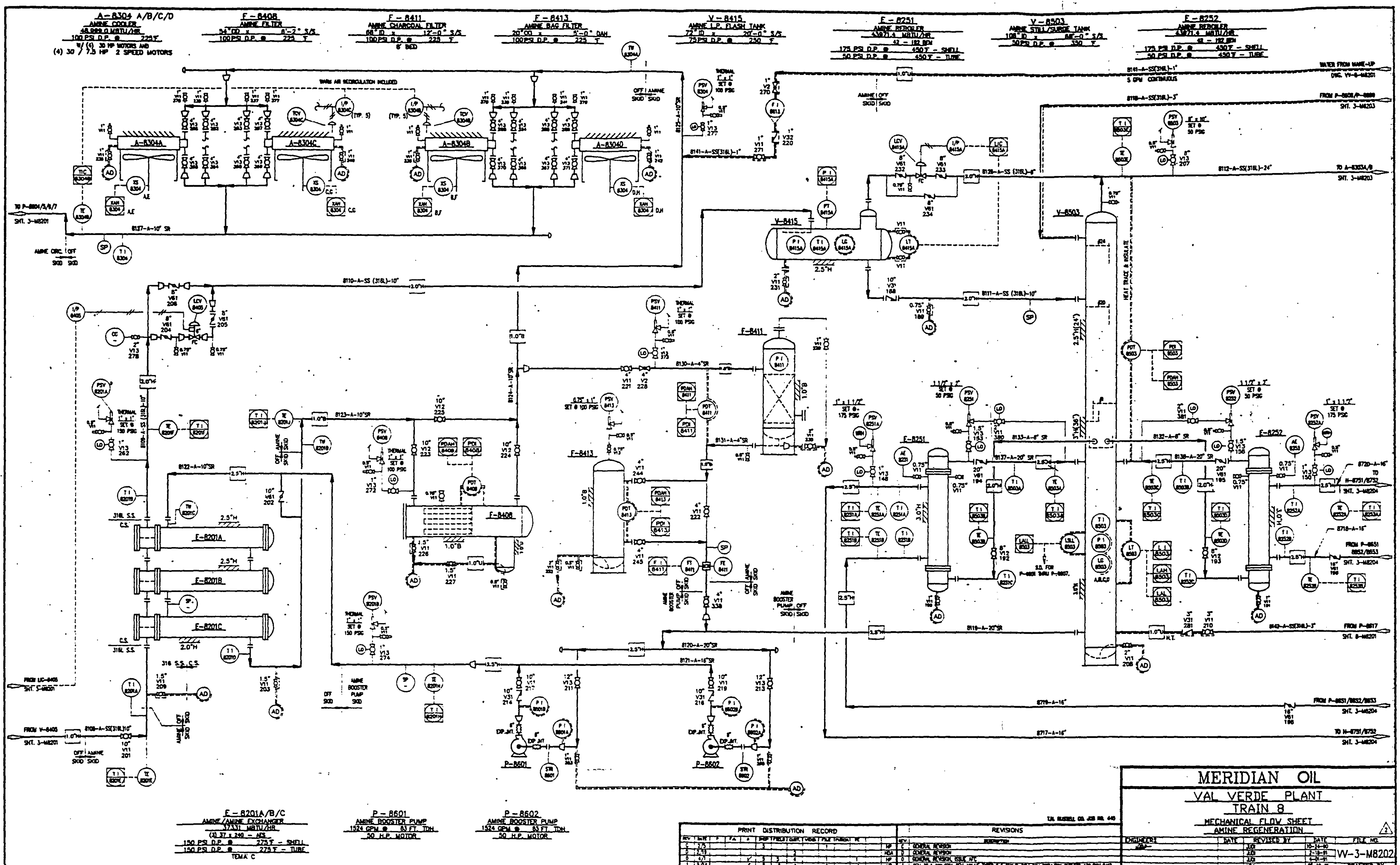
MERIDIAN OIL

VAL VERDE PLANT
TRAIN 8

MECHANICAL FLOW SHEET
AMINE REBOILER WATER HEATER SYSTEM

ENGINEER	DATE	REVISED BY	DATE	FILE NO.
APPR.	4-2-91	HDA	01-14-91	W-3-M8204
		HDA	02-18-91	
		JUD	04-01-91	
		HDA	05-10-91	DRAFTED BY
	4-4-91	JUD	05-31-91	T.H. RUSSELL CO. TULSA, OK.


A-8303A/B
STILL REFLUX CONDENSER
28690 MBTU/HR
50 PSI D.P. @ 275°F
W/ (2) 30 HP MOTORS
AND (2) 30/7.5 HP 2 SPEED MOTORS
V-8407
STILL REFLUX ACCUMULATOR
48" ID x 12'-0" S/S
50 PSI D.P. @ 350 °F
P-8608
STILL REFLUX PUMP
65 GPM @ 118 FT. TDH
10 H.P. MOTOR
P-8609
STILL REFLUX PUMP
65 GPM @ 118 FT. TDH
10 H.P. MOTOR
V-8414
FUEL GAS SCRUBBER
18" OD x 6'-0"
250 PSI D.P. @ 150 °F
TO V-8503
SHT. 3-M8202
FROM V-8503
SHT. 3-M8202
8118-A-SS(316L)-3"
8112-A-SS (316L)-24"
8315-A-SS(316L)-2"
8314-A-2"
ST = STEAM TRAP
2" FUEL GAS TO H-8750
SHT. 3-M8204
2" FUEL GAS TO UTIL. PUMP SKID BLDG.
TO 2" FUEL TO GENERATOR
SHT. 3-M8205
TO H-8751/H-8752
SHT. 3-M8204
TO H-8771
SHT. 4-M8201
8304-A-4"
8311-A-2"
8303-A-4"
INLET EXCH. OFF SKID SKID
WARM AIR RECIRCULATION INCLUDED
8113-A-SS(316L)-16"
DO NOT POCKET LINE
8114-A-14"
8115-A-14"
STILL REFLUX/ UTILITY PUMP OFF SKID SKID
8116-A-SS(316L)-3"
8117-A-SS(316L)-3"
8302-A-4"
AMINE UNIT S.D.
TO CAL-8802
SHT. 3-M8201
OFF INLET EXCH. SKID SKID
TO V-8405
SHT. 3-M8201
8312-F-1" SR
AGA CALC.
FROM LINE 8300-F-2" SR
SHT. 3-M8201
8300-F-2" SR
SENSOR RUN
FROM V-8573
SHT. 4-M8201
8225-A-3" SR
OFF INLET SKID SKID
8301-A-4"
H.T. & INSULATE TO 3' BELOW GRADE
8905-A-SS(316L)-2"
FROM P-8818
SHT. 3-M8205
PLOT DATE: 05-30-91
DWG. FILE: 445\VV3M8203.DWG
T.H. RUSSELL CO. JOB NO. 445
PRINT DISTRIBUTION RECORD
REVISIONS
C GENERAL REVISION
0 GENERAL REVISION AND ISSUED AFC
1 ADD FUEL GAS TO H-8750 & UTIL. PUMP SKID BLDG.
2 GENERAL REVISION
MERIDIAN OIL
VAL VERDE PLANT
TRAIN 8
MECHANICAL FLOW SHEET
AMINE REGENERATION
FILE NO. VV-3-M8203
DRAFTED BY T.H. RUSSELL CO. TULSA, OK



PLOT DATE: 05-30-91
DWG. FILE: 445\VV3M8202.DWG

PRINT DISTRIBUTION RECORD

REV.	DATE	P	FA	A	SHOP	FIELD	CUST.	VDGS	FILE	PURCH	PE
C	2/5				3				1		
D	2/19						2				
0	4/1			✓	5	5	4		1		1
1	3/14			✓	5	8	1		1		1

T.H. RUSSELL CO. JOB NO. 445

REVISIONS

	REV.	DESCRIPTION
HP	C	GENERAL REVISION
HDA	D	GENERAL REVISION
HP	0	GENERAL REVISION, ISSUE AFC
HP	1	REV. ... VALVE TYPES & E-8251/2, REV. PSV-8251A/52A OUTLETS AND PSV-8413
	2	GENERAL REVISION

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 8

MECHANICAL FLOW SHEET
AMINE REGENERATION

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
		JJDI	10-24-90	W-3-M8202
		JJDI	2-18-91	
		JJDI	4-01-91	
		HDA	05-10-91	DRAFTED BY
	6-4-91	JJDI	05-30-91	T.H. RUSSELL CO. TULSA, OK.

BURLINGTON RESOURCES

SAN JUAN DIVISION

December 1, 1998

Certified Mail: P 160 090 737

New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, NM 87505

Attention: Roger Anderson

Re: Reuse of Amine at Val Verde Plant Facility

Dear Mr. Anderson:

Per our conversation November 30, 1998, the purpose of this correspondence is to provide your office with additional information regarding the proposed reuse of spent amine solution stored at Williams Field Service's Blanco Facility.

Burlington Resources is requesting OCD's determination for accepting spent amine solution from the Blanco Facility and reusing this solvent at the Val Verde Plant's CO_2 abatement system. The ~18,000 gallons of spent solvent is known as CS-Plus Solvent and is manufactured by Dow Chemical Corporation. The solvent was generated from a leak within a reboiler that impacted the CS-Plus solvent with TEG (triethylene glycol). It is estimated that the volume contained within closed-top Frac-Tanks is impacted with approximately 10% TEG. Furthermore, additional analysis of the solvent exhibits the spent solvent to be analogous to solvent regenerated at the Val Verde Plant.

Therefore, Burlington Resources is proposing to accept this material at the Val Verde Plant where it will be stored in 400-bbl steel storage tanks before being reclaimed in the amine reclaimer. The time frame for reclaiming the ~18,000 gallons of amine, would be approximately 10 days and is estimated that 9,000 gallons of useable product would be recovered for direct use at Val Verde. The residues generated from the reclaiming activities would be conventional still bottoms and concentrated TEG. **As a result, Burlington Resources is requesting OCD approval to manage these residues as an exempt waste that would be disposed at the Mc Grath Class I facility.** In the event OCD does not concur with the residue management plan, it is likely Burlington Resources would not accept the solvent for reuse.

In conclusion, I will await your reply regarding this recycling proposal, however, the Val Verde Plant currently has the tank capacity to store this material. Therefore, an expeditious reply would be greatly appreciated in order to ship and recycle the material within a reasonable time frame. I thank you for your time and consideration and should you have any questions regarding this correspondence please feel free to contact me at 505-326-9537.

Sincerely,

Jeffery T. Schoenbacher
Environmental Representative

CC: Bruce Gantner
Greg Kardos
Gaza Seabolt
Ed Hasely
Denny Foust, OCD District Office

ITS:

Williams

295 Chipeta Way
P O Box 58900
Salt Lake City, UT 84108
801/584-6543
801/584-7760

December 3, 1998

Mr. Jeff Schoenbacher
Burlington Resources
3535 East 30th Street
Farmington, New Mexico 87499

Dear Mr. Schoenbacher,

The purpose of this letter is to verify that amine wastes generated at the Williams Field Services Blanco Compressor Station are exempt from EPA consideration as 'hazardous waste' under the 40 CFR 261.4 exclusions for wastes associated with exploration, development or production of natural gas.

If you have any questions or would like to discuss this further, I can be reached at 801-584-6543.

Sincerely,

Ingrid Deklau
Environmental Specialist

BURLINGTON RESOURCES

ENVIRONMENTAL/SAFETY DEPARTMENT

3535 East 30th Street, Farmington NM 87401
P.O. Box 4289, Farmington, NM 87499
(505) 326-9700 Fax: (505) 326-9725

DATE: December 1, 1998

TO: Roger Anderson

COMPANY: OCD

FAX: 827-8177

FROM: Jeff Schoenbacher

NO. OF PAGES (including cover): 2

COMMENTS OR SPECIAL INSTRUCTIONS:

Roger, I am sending the hard copy in the mail today.

Should you have any questions, I can reach me at 505-326-9537.

Thanks,
Jeff Schoenbacher
BR Fax # 326-9725
Please call me at 326-9537 if you have any questions.

product for P.A.:

BURLINGTON RESOURCES

SAN JUAN DIVISION

December 1, 1998

Certified Mail: P 160 090 737

New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, NM 87505

Attention: Roger Anderson

Re: Reuse of Amine at Val Verde Plant Facility

Dear Mr. Anderson:

Per our conversation November 30, 1998, the purpose of this correspondence is to provide your office with additional information regarding the proposed reuse of spent amine solution stored at Williams Field Service's Blanco Facility.

Burlington Resources is requesting OCD's determination for accepting spent amine solution from the Blanco Facility and reusing this solvent at the Val Verde Plant's CO_2 abatement system. The ~18,000 gallons of spent solvent is known as CS-Plus Solvent and is manufactured by Dow Chemical Corporation. The solvent was generated from a leak within a reboiler that impacted the CS-Plus solvent with TEG (triethylene glycol). It is estimated that the volume contained within closed-top Frac-Tanks is impacted with approximately 10% TEG. Furthermore, additional analysis of the solvent exhibits the spent solvent to be analogous to solvent regenerated at the Val Verde Plant.

Therefore, Burlington Resources is proposing to accept this material at the Val Verde Plant where it will be stored in 400-bbl steel storage tanks before being reclaimed in the amine reclaimer. The time frame for reclaiming the ~18,000 gallons of amine, would be approximately 10 days and is estimated that 9,000 gallons of useable product would be recovered for direct use at Val Verde. The residues generated from the reclaiming activities would be conventional still bottoms and concentrated TEG. **As a result, Burlington Resources is requesting OCD approval to manage these residues as an exempt waste that would be disposed at the Mc Grath Class I facility.** In the event OCD does not concur with the residue management plan, it is likely Burlington Resources would not accept the solvent for reuse.

per OCD Class II SWD

In conclusion, I will await your reply regarding this recycling proposal, however, the Val Verde Plant currently has the tank capacity to store this material. Therefore, an expeditious reply would be greatly appreciated in order to ship and recycle the material within a reasonable time frame. I thank you for your time and consideration and should you have any questions regarding this correspondence please feel free to contact me at 505-326-9537.

Sincerely,

Jeffery T. Schoenbacher
Environmental Representative

CC: Bruce Gantner
Greg Kardos
Gaza Seabolt
Ed Hasely
Denny Foust, OCD District Office

ITS:

BURLINGTON RESOURCES

ENVIRONMENTAL/SAFETY DEPARTMENT

3535 East 30th Street, Farmington NM 87401
P.O. Box 4289, Farmington, NM 87499
(505) 326-9700 Fax: (505) 326-9725

DATE: December 3, 1998

TO: Wayne Price

COMPANY: OCD

FAX: 827-8177

FROM: Jeff Schoenbacher

NO. OF PAGES (including cover): 2

COMMENTS OR SPECIAL INSTRUCTIONS:

Wayne per our conversation regarding the spent amine, this is the letter from Williams.

Should you have any questions, I can reach me at 505-326-9537.

Thanks,
Jeff Schoenbacher
BR Fax # 326-9725

Please call me at 326-9537 if you have any questions.

BURLINGTON RESOURCES

Memorandum

Date: December 3, 1998

To: Wayne Price (OCD)

Cc:

From: Jeff Schoenbacher JTS

RE: Correction from Correspondence sent to OCD 12/1/98

The purpose of this correspondence is to correct an error that was documented in the correspondence dated 12/1/98 and was assigned Certified Mail # P 160 090 737. The correspondence stated that the residues would be disposed at the Mc Grath Class I facility. The Mc Grath facility is classified as a Class II facility and not a Class I. I apologize for the inconvenience this may have caused for approving the recycling amine proposal.

Should you have any questions feel free to contact me.

JTS

BURLINGTON RESOURCES

ENVIRONMENTAL/SAFETY DEPARTMENT

3535 East 30th Street, Farmington NM 87401
P.O. Box 4289, Farmington, NM 87499
(505) 326-9700 Fax: (505) 326-9725

DATE: December 3, 1998

TO: Wayne Price

COMPANY: OCD

FAX: 827-8177

FROM: Jeff Schoenbacher

NO. OF PAGES (including cover): 2

COMMENTS OR SPECIAL INSTRUCTIONS:

Wayne per our conversation .

Should you have any questions, I can reach me at 505-326-9537.

Thanks,
Jeff Schoenbacher
BR Fax # 326-9725

Please call me at 326-9537 if you have any questions.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☒ Personal	Time 4:00 PM	Date 5-22-98

Originating Party	Other Parties
MARK ASHLEY	ROGER ANDERSON - PERSONAL DENNY FONST - TELEPHONE

Subject: BURLINGTON, VAL VERDE GAS PLANT - GW-51

Discussion: BURLINGTON SUBMITTED A MODIFICATION FOR THEIR DISCHARGE PLAN ON MAY 11, 1998. THEY WANT TO ADD 1-4 COMPRESSORS FOR OFFSITE CO_2 INJECTION PROJECT. THEY ALSO WANT TO ADD THREE 400 BBL, + ONE 100 BBL STORAGE TANKS FOR MDEA STORAGE PRIOR TO RECLAMATION. I WANTED INPUT AS TO WHETHER THIS WOULD BE A MAJOR OR MINOR MODIFICATION.

Conclusions or Agreements: ROGER + DENNY SAID THIS WOULD BE A MINOR MODIFICATION SINCE THE DISCHARGE STREAMS WOULD NOT BE SIGNIFICANTLY ALTERED

Distribution

Signed: Mark Ashley

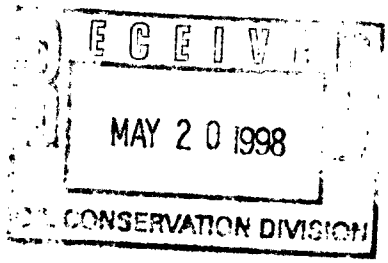
BURLINGTON RESOURCES

SAN JUAN DIVISION

May 11, 1998

Certified Mail: P 103 693 196

New Mexico Energy, Minerals
& Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, NM 87505



Attention: Mark Ashley

Re: Minor Revision to Val Verde Plant Discharge Plan

Dear Mr. Ashley:

The purpose of this correspondence is to provide your office with two copies of Val Verde's Discharge Plan that has been revised to reflect the disposal of exempt and non-exempt process filters.

Furthermore, revisions were made to Section 2.4 Proposed Site Changes, to refer to the CO_2 injection pilot program as a project that may be considered in the future. Regarding Section 3.0 Transfer/Storage of Process Fluids, this section was modified to include the installation of three 400 bbl and one 100 bbl steel storage tanks utilized to facilitate the storage of spent MDEA. Lastly, Figure 2 was updated to identify the location of these tanks on the "Plot Plan and Equipment Layout". Per our conversation addressing the submittal fee, enclosed please find a check endorsed for $50.00 to cover the minor revision fee.

I thank you for your time and consideration and should you have any questions regarding this correspondence please feel free to contact me at 505-326-9537.

Sincerely,

Jeffery T. Schoenbacher

Jeffery T. Schoenbacher
Environmental Representative

CC: Bruce Gantner
Ed Hasely
Gaza Seabolt – Discharge Plan
Denny Foust, OCD, Aztec – Discharge Plan
Val Verde Plant File – Discharge Plan

Enc. 2 Discharge Plans, Check $50.00

JTS:

3535 East 30th St., 87402-8801, P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-326-9700, Fax 505-326-9833

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

March 17, 1998

CERTIFIED MAIL
RETURN RECEIPT NO. P-288-259-047

Mr. Jeff Schoenbacher
Burlington Resources Oil and Gas Company
P.O. Box 4289
Farmington, NM 87499-4289

RE: Supplemental Information for Discharge Plans GW-51, 56, 57, 58, 59, 77, 93, 146, 148, 183, 193, 194, 239, 255, 258
Disposal of Process Filters at the San Juan County Landfill
San Juan County, New Mexico

Dear Mr. Schoenbacher:

The New Mexico Oil Conservation Division (OCD) has reviewed the Burlington Resources Oil and Gas Company (Burlington) requests dated February 26, 1998, March 9, 1998 and March 17, 1998 for disposal of process filters from the above mentioned facilities at the San Juan County Landfill. Based on the information provided, your disposal request is approved with the following conditions:

1. All wastes must tested for hazardous constituents according to EPA approved methods.

2. The wastes are not unique to the oil and gas industry and non-hazardous.

3. Disposal approval will be for the duration of each individual discharge plan approval period.

4. The waste will be accompanied by a "Certification of Waste Status" that states that the waste not otherwise exempted pursuant to 20 NMAC 3.1 Subpart 1403, has been surveyed for Naturally Occurring Radioactive Material (NORM) ant that the maximum radiation exposure reading and NORM concentrations do not exceed that listed in 20 NMAC 3.1 Subpart 1403.C and D. If the waste surveyed for NORM, the survey results must be included with the certification.

Please be advised that OCD approval does not relieve Burlington of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions, please contact me at (505) 827-7155.

Sincerely,

Mark Ashley
Geologist

xc: OCD Aztec Office

P 288 259 047

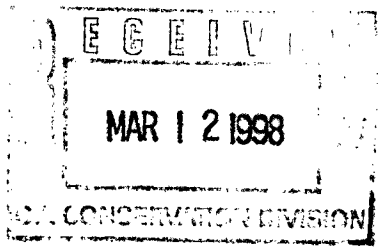
US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to	
Street & Number	
Post Office, State, & ZIP Code	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	

PS Form **3800**, April 1995

BURLINGTON RESOURCES

SAN JUAN DIVISION



February 26, 1998

New Mexico Energy, Minerals
& Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, NM 875050

Re: Supplementary Information for the Val Verde Discharge Plan

Dear Mr. Ashley:

The purpose of this correspondence is to provide additional information to Val Verde's Discharge Plan in order to document the disposal of exempt and non-exempt process filters.

Recently, the Val Verde facility is in the process of re-profiling filter cartridge waste streams that are generated from the production of natural gas. As a result, the following process filters were obtained and analyzed for TCLP metals, Benzene, and the OCD requirement for Naturally Occurring Radioactive Material (NORM):

Waste	Exempt	Non-Exempt	Disposal Location	Function at Val Verde Facility
Amine Mechanical Filter	x		Control Recovery Incorporated Hobbs, NM	Filters amine solvent as it enters the gas stream.
Horizontal Inlet Filter	x		Municipal Landfill	First stage of gas entry, filters particulate from gas stream before entering the plant
Coalescer Inlet Filter	x		Municipal Landfill	Second stage of filtering gas before entering the plant
Hot Oil Filter		x	Municipal Landfill	Heat transfer system, side stream filter for heating amine to regenerate amine solvent
Glycol Filter	x		Municipal Landfill	Filters particulate from the glycol after the leaving the gas stream.
Bag Filter	x		Control Recovery Incorporated Hobbs, NM	Downstream filter, that filters charcoal particulate from the amine system.

With the exception of the hot oil filter, the units that were analyzed all qualify for the hazardous waste exemption contained in 40 CFR 261.4 (b)(5). However, the Bag Filter and Amine Mechanical Filter will be disposed at Control Recovery Incorporated landfill located in Hobbs, New Mexico. Furthermore, as stated above, the remaining filters will be profiled with a municipal landfill and disposed of locally after being drained for 24 hours. Recently, these filters were profiled with Waste Management and are identified under the profile number WMI 266217. Regarding the parameters that were chosen for analyzing the filters, TCLP metals, benzene, and NORM were selected for characterizing the unit. These parameters were chosen through "generators knowledge" of the waste stream defined under 40 CFR 262.11 (c) (2).

3535 East 30th St., 87402-8801, P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-326-9700, Fax 505-326-9833

Again, I thank you for your time and consideration and I look forward to working with you in the future. Until that if you have any questions please feel free to contact me at my office number, which is 505-326-9537.

Sincerely,

Jeffery T. Schoenbacher
Environmental Representative

CC: Bruce Gantner
Ed Hasely
Gaza Seabolt
Denny Foust, OCD, Aztec

JTS:

Laboratory Cover Letter

Inter-Mountain Laboratories, Inc

2506 W. Main Street
Farmington, New Mexico 87401

Jeff Schoenbacher
Burlington Resources
3535 E. 30th St.
Farmington, NM 87402

20 February 1998

Mr. Schoenbacher:

Enclosed, please find the reports for the samples received by our laboratory for rush analysis on January 13, 1998.

If you have any questions about the results of the analyses, please don't hesitate to call me at your convenience.

We appreciate your business!

Sincerely,

Sharon Williams
Organics Lab Supervisor

Enclosure

xc: File

CC# 52331
Filters
Amine Mech Filter
Horizontal Filter
Coalescer Filter
Hot Oil Filter
Bag

Inter·Mountain Laboratories, Inc

2506 W. Main Street
Farmington, New Mexico 87401

Burlington Resources

Case Narrative

On February 13, 1998, five filters were submitted to Inter-Mountain Laboratories - Farmington for analysis. The samples were received intact. The samples were identified by project "Val Verde Plant", and were analyzed for the parameters indicated on the accompanying Chain of Custody document # 52331.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analyses of the samples reported herein are found in Test Methods For Evaluation of Solid Waste, SW-846, USEPA, 1986, and Methods For Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, 1983.

Quality control reports appear at the end of the analytical package and may be identified by title. If there are any questions regarding the information presented in this package, please feel free to call at your convenience.

Sincerely,

Sharon Williams
Organics Lab Supervisor

Amine Mechanical Filter

Inter-Mountain Laboratories, Inc

2506 W. Main Street
Farmington, New Mexico 87401

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TRACE METAL CONCENTRATION

Client:	**Burlington Resources**		
Project:	Val Verde Plant	Date Reported:	02/23/98
Sample ID:	Amine Mech Filter Case	Date Sampled:	02/13/98
Laboratory ID:	0398G00568	Date Received:	02/13/98
Sample Matrix:	Filter	Date Analyzed:	02/19/98

Parameter	Result	Detection Limit	Regulatory Level	Units
Arsenic.....	0.008	0.005	5	mg/L
Barium.....	0.80	0.01	100	mg/L
Cadmium.....	0.054	0.004	1	mg/L
Chromium.....	50.5	0.01	5	mg/L
Lead.....	0.05	0.05	5	mg/L
Mercury.....	<0.001	0.001	0.2	mg/L
Selenium.....	0.150	0.005	1	mg/L
Silver.....	<0.01	0.01	5	mg/L

ND- Analyte not detected at stated detection level.

References: Method 1311: Toxicity Characteristic Leaching Procedure, SW-846, Rev. 0, July 1992.

Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, Rev. 1, July 1992.

Comments:

Reported By: _____ Reviewed: _____

Inter-Mountain Laboratories, Inc.
1701 Phillips Circle
Gillette, Wyoming 82718

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
HSL VOLATILE COMPOUNDS

Client: **Burlington Resources**
Sample ID: Amine Meck Filter
Project ID: Valverde Plant
Lab ID: B980638 0398G00568
Matrix: Filter

Date Reported: 02/19/98
Date Sampled: 02/13/98
Date Received: 02/16/98
Date Extracted: 02/18/98
Date Analyzed: 02/19/98

Parameter	Result	PQL	Regulatory Level	Units
Benzene	ND	0.02	0.5	mg/L
QUALITY CONTROL - Surrogate Recovery	**%**		**QC Limits**	
1,2-Dichloroethane-d4	105		80 - 120	
Toluene-d8	106		88 - 110	
Bromofluorobenzene	93		86 - 115	

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260A Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, Final Update II, United States Environmental Protection Agency, September 1994.
Method 1311, Toxicity Characteristic Leaching Procedure, Test Methods for Evaluating Solid Wastes, SW-846, United States EPA, September 1994.

Analyst E.D.

Reviewed

AMERICAN RADIATION SERVICES, INC.

1726 Wooddale Court • Baton Rouge, Louisiana 70806
1 (800) 401-4277 • Fax (504) 927-6822

ARS Tracking Number:	ARS-98-0178	**P.O. Number:**	216528
Client I.D.:	G00568	**ARS Sample I.D.:**	ARS-98-0655
Date Sampled:	N/A	**Date Received:**	2/16/98
Time Sampled:	N/A	**Time Received**	1145
Type of Sample:	Solid	**Date of Report**	2/19/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Detection Limit	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<0.78	N/A	0.78	pCi/gm	EPA 901.1M	2/17/98 0910	ks
Ra-228	<0.10	N/A	0.10	pCi/gm	EPA 901.1M	2/17/98 0910	ks
Pb-210	<0.46	N/A	0.46	pCi/gm	EPA 901.1M	2/17/98 0910	ks
Total Activity	0.00	N/A	N/A	pCi/gm	EPA 901.1M	2/17/98 0910	ks

Quality Assurance Review

Notes: American Radiation Services, Inc assumes no liability for the use or interpretation of any analytical results provided other than the cost of the performed analysis itself. Reproduction of this report in less than full requires the written consent of the client.

Horizontal Inlet Filter

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TRACE METAL CONCENTRATION

Client:	**Burlington Resources**		
Project:	Val Verde Plant	Date Reported:	02/23/98
Sample ID:	Horizontal Inlet Filter	Date Sampled:	02/13/98
Laboratory ID:	0398G00569	Date Received:	02/13/98
Sample Matrix:	Filter	Date Analyzed:	02/19/98

Parameter	Result	Detection Limit	Regulatory Level	Units
Arsenic.....	0.009	0.005	5	mg/L
Barium.....	1.85	0.01	100	mg/L
Cadmium.....	<0.004	0.004	1	mg/L
Chromium.....	0.12	0.01	5	mg/L
Lead.....	<0.05	0.05	5	mg/L
Mercury.....	<0.001	0.001	0.2	mg/L
Selenium.....	<0.005	0.005	1	mg/L
Silver.....	<0.01	0.01	5	mg/L

ND- Analyte not detected at stated detection level.

References: Method 1311: Toxicity Characteristic Leaching Procedure, SW-846, Rev. 0, July 1992.

Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, Rev. 1, July 1992.

Comments:

Reported By: _____ Reviewed: _____

Inter·Mountain Laboratories, Inc.

1701 Phillips Circle
Gillette, Wyoming 82718

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
HSL VOLATILE COMPOUNDS

Client: **Burlington Resources**
Sample ID: Horizontal Inlet Filter
Project ID: Valverde Plant
Lab ID: B980639 0398G00569
Matrix: Filter

Date Reported: 02/19/98
Date Sampled: 02/13/98
Date Received: 02/16/98
Date Extracted: 02/18/98
Date Analyzed: 02/19/98

Parameter	Result	PQL	Regulatory Level	Units
Benzene	ND	0.02	0.5	mg/L
QUALITY CONTROL - Surrogate Recovery	**%**		**QC Limits**	
1,2-Dichloroethane-d4	104		80 - 120	
Toluene-d8	102		88 - 110	
Bromofluorobenzene	99		86 - 115	

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260A Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, Final Update II, United States Environmental Protection Agency, September 1994.
Method 1311, Toxicity Characteristic Leaching Procedure, Test Methods for Evaluating Solid Wastes, SW-846, United States EPA, September 1994.

Analyst E.D. **Reviewed**

AMERICAN RADIATION SERVICES, INC.

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ARS Tracking Number:	ARS-98-0178	**P.O. Number:**	216528
Client I.D.:	G00569	**ARS Sample I.D.:**	ARS-98-0656
Date Sampled:	N/A	**Date Received:**	2/16/98
Time Sampled:	N/A	**Time Received**	1145
Type of Sample:	Solid	**Date of Report**	2/19/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Detection Limit	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<0.60	N/A	0.60	pCi/gm	EPA 901.1M	2/17/98 1800	tf
Ra-228	<0.09	N/A	0.09	pCi/gm	EPA 901.1M	2/17/98 1800	tf
Pb-210	<0.51	N/A	0.51	pCi/gm	EPA 901.1M	2/17/98 1800	tf
Total Activity	4.41	N/A	N/A	pCi/gm	EPA 901.1M	2/17/98 1800	tf

Quality Assurance Review

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Coalescer Inlet Filter

Inter-Mountain Laboratories, Inc

2506 W. Main Street
Farmington, New Mexico 87401

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TRACE METAL CONCENTRATION

Client:	**Burlington Resources**		
Project:	Val Verde Plant	Date Reported:	02/23/98
Sample ID:	Coalescer Inlet Filter	Date Sampled:	02/13/98
Laboratory ID:	0398G00570	Date Received:	02/13/98
Sample Matrix:	Filter	Date Analyzed:	02/19/98

Parameter	Result	Detection Limit	Regulatory Level	Units
Arsenic.....	<0.005	0.005	5	mg/L
Barium.....	1.41	0.01	100	mg/L
Cadmium.....	<0.004	0.004	1	mg/L
Chromium.....	0.03	0.01	5	mg/L
Lead.....	<0.05	0.05	5	mg/L
Mercury.....	<0.001	0.001	0.2	mg/L
Selenium.....	<0.005	0.005	1	mg/L
Silver.....	<0.01	0.01	5	mg/L

ND- Analyte not detected at stated detection level.

References: Method 1311: Toxicity Characteristic Leaching Procedure, SW-846, Rev. 0, July 1992.

Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, Rev. 1, July 1992.

Comments:

Reported By: _____ Reviewed: _____

Inter·Mountain Laboratories, Inc.

1701 Phillips Circle
Gillette, Wyoming 82718

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
HSL VOLATILE COMPOUNDS

Client:	**Burlington Resources**			
Sample ID:	Coalescer Inlet Filter		Date Reported:	02/19/98
Project ID:	Valverde Plant		Date Sampled:	02/13/98
Lab ID:	B980640	0398G00570	Date Received:	02/16/98
Matrix:	Filter		Date Extracted:	02/18/98
			Date Analyzed:	02/19/98

Parameter	Result	PQL	Regulatory Level	Units
Benzene	ND	0.02	0.5	mg/L
QUALITY CONTROL - Surrogate Recovery	**%**		**QC Limits**	
1,2-Dichloroethane-d4	132 ##		80 - 120	
Toluene-d8	110		88 - 110	
Bromofluorobenzene	107		86 - 115	

ND - Not Detected at Practical Quantitation Level (PQL)
- Surrogate Recovery not within control limits due to matrix/dilution effect.

Reference: Method 8260A Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, Final Update II, United States Environmental Protection Agency, September 1994.
Method 1311, Toxicity Characteristic Leaching Procedure, Test Methods for Evaluating Solid Wastes, SW-846, United States EPA, September 1994.

Analyst E.D. **Reviewed**

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ARS Tracking Number:	ARS-98-0178	**P.O. Number:**	216528
Client I.D.:	G00570	**ARS Sample I.D.:**	ARS-98-0657
Date Sampled:	N/A	**Date Received:**	2/16/98
Time Sampled:	N/A	**Time Received**	1145
Type of Sample:	Solid	**Date of Report**	2/19/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Detection Limit	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<1.20	N/A	1.20	pCi/gm	EPA 901.1M	2/17/98 1441	dc
Ra-228	<0.18	N/A	0.18	pCi/gm	EPA 901.1M	2/17/98 1441	dc
Pb-210	1.91	1.79	0.74	pCi/gm	EPA 901.1M	2/17/98 1441	dc
Total Activity	1.91	N/A	N/A	pCi/gm	EPA 901.1M	2/17/98 1441	dc

Quality Assurance Review

Notes: American Radiation Services, Inc assumes no liability for the use or interpretation of any analytical results provided other than the cost of the performed analysis itself. Reproduction of this report in less than full requires the written consent of the client.

Hot Oil Filter

Inter·Mountain Laboratories, Inc

2506 W. Main Street
Farmington, New Mexico 87401

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TRACE METAL CONCENTRATION

Client:	**Burlington Resources**		
Project:	Val Verde Plant	Date Reported:	02/20/98
Sample ID:	Hot Oil Filter	Date Sampled:	02/13/98
Laboratory ID:	0398G00571	Date Received:	02/13/98
Sample Matrix:	Filter	Date Analyzed:	02/19/98

Parameter	Result	Detection Limit	Regulatory Level	Units
Arsenic.....	<0.005	0.005	5	mg/L
Barium.....	1.89	0.01	100	mg/L
Cadmium.....	<0.004	0.004	1	mg/L
Chromium.....	3.44	0.01	5	mg/L
Lead.....	<0.05	0.05	5	mg/L
Mercury.....	<0.001	0.001	0.2	mg/L
Selenium.....	<0.005	0.005	1	mg/L
Silver.....	<0.01	0.01	5	mg/L

ND- Analyte not detected at stated detection level.

References: Method 1311: Toxicity Characteristic Leaching Procedure, SW-846, Rev. 0, July 1992.

Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, Rev. 1, July 1992.

Comments:

Reported By: _____ Reviewed: _____

Inter·Mountain Laboratories, Inc.

1701 Phillips Circle
Gillette, Wyoming 82718

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
HSL VOLATILE COMPOUNDS

Client: **Burlington Resources**
Sample ID: Hot Oil Filter
Project ID: Valverde Plant
Lab ID: B980641 0398G00571
Matrix: Filter

Date Reported: 02/19/98
Date Sampled: 02/13/98
Date Received: 02/16/98
Date Extracted: 02/18/98
Date Analyzed: 02/19/98

Parameter	Result	PQL	Regulatory Level	Units
Benzene	ND	0.02	0.5	mg/L
QUALITY CONTROL - Surrogate Recovery	**%**		**QC Limits**	
1,2-Dichloroethane-d4	113		80 - 120	
Toluene-d8	107		88 - 110	
Bromofluorobenzene	107		86 - 115	

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260A Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, Final Update II, United States Environmental Protection Agency, September 1994.
Method 1311, Toxicity Characteristic Leaching Procedure, Test Methods for Evaluating Solid Wastes, SW-846, United States EPA, September 1994.

Analyst E.O. **Reviewed**

AMERICAN RADIATION SERVICES, INC.

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ARS Tracking Number:	ARS-98-0178	**P.O. Number:**	216528
Client I.D.:	G00571	**ARS Sample I.D.:**	ARS-98-0658
Date Sampled:	N/A	**Date Received:**	2/16/98
Time Sampled:	N/A	**Time Received**	1145
Type of Sample:	Solid	**Date of Report**	2/19/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Detection Limit	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<0.93	N/A	0.93	pCi/gm	EPA 901.1M	2/17/98 1914	tf
Ra-228	<0.13	N/A	0.13	pCi/gm	EPA 901.1M	2/17/98 1914	tf
Pb-210	<0.54	N/A	0.54	pCi/gm	EPA 901.1M	2/17/98 1914	tf
Total Activity	3.87	N/A	N/A	pCi/gm	EPA 901.1M	2/17/98 1914	tf

Quality Assurance Review

Glycol Filter

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TRACE METAL CONCENTRATION

Client:	**Burlington Resources**		
Project:	40 CFR 262.11	Date Reported:	03/05/98
Sample ID:	Glycol Filter	Date Sampled:	02/26/98
Laboratory ID:	0398G00794	Date Received:	02/26/98
Sample Matrix:	Filter	Date Analyzed:	03/05/98

Parameter	Result	Detection Limit	Regulatory Level	Units
Arsenic	0.013	0.005	5	mg/L
Barium	0.94	0.01	100	mg/L
Cadmium	<0.004	0.004	1	mg/L
Chromium	<0.01	0.01	5	mg/L
Lead	<0.05	0.05	5	mg/L
Mercury	<0.001	0.001	0.2	mg/L
Selenium	0.056	0.005	1	mg/L
Silver	<0.01	0.01	5	mg/L

ND- Analyte not detected at stated detection level.

References: Method 1311: Toxicity Characteristic Leaching Procedure, SW-846, Rev. 0, July 1992.

Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, Rev. 1, July 1992.

Comments:

Reported By: _____ Reviewed: _____

Inter-Mountain Laboratories, Inc.

1701 Phillips Circle
Gillette, Wyoming 82718

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
HSL VOLATILE COMPOUNDS

Client: **Burlington Resources**
Sample ID: Glycol Filter
Project ID: 40 CFR 262.11
Lab ID: B980856 03-0794
Matrix: Filter

Date Reported: 03/06/98
Date Sampled: 02/26/98
Date Received: 02/27/98
Date Extracted: 03/03/98
Date Analyzed: 03/05/98

Parameter	Result	PQL	Regulatory Level	Units
Benzene	ND	0.02	0.5	mg/L
QUALITY CONTROL - Surrogate Recovery	**%**		**QC Limits**	
1,2-Dichloroethane-d4	101		80 - 120	
Toluene-d8	98		88 - 110	
Bromofluorobenzene	106		86 - 115	

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260A Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, Final Update II, United States Environmental Protection Agency, September 1994.
Method 1311, Toxicity Characteristic Leaching Procedure, Test Methods for Evaluating Solid Wastes, SW-846, United States EPA, September 1994.

Analyst F.D.

Reviewed

ARS
AMERICAN RADIATION SERVICES, INC.

1726 Wooddale Court • Baton Rouge, Louisiana 70806
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ARS Tracking Number:	ARS-98-0207	**P.O. Number:**	216645
Client I.D.:	G00794	**ARS Sample I.D.:**	ARS-98-0738
Date Sampled:	N/A	**Date Received:**	2/27/98
Time Sampled:	N/A	**Time Received**	1040
Type of Sample:	Solid	**Date of Report**	3/5/98

Analysis Description	Analysis Result	Analysis Error $\pm 2\sigma$	Detection Limit	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	BDL	N/A	0.69	pCi/gm	EPA 901.1M	3/4/98 1556	KS
Ra-228	BDL	N/A	0.10	pCi/gm	EPA 901.1M	3/4/98 1556	KS
Pb-210	BDL	N/A	0.54	pCi/gm	EPA 901.1M	3/4/98 1556	KS
Total Activity	0.34	N/A	N/A	pCi/gm	EPA 901.1M	3/4/98 1556	KS

Bradley J. Langlois
Quality Assurance Review

Bag Filter

Inter-Mountain Laboratories, Inc

2506 W. Main Street
Farmington, New Mexico 87401

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
TRACE METAL CONCENTRATION

Client:	**Burlington Resources**		
Project:	Val Verde Plant	Date Reported:	02/23/98
Sample ID:	Bag Filter	Date Sampled:	02/13/98
Laboratory ID:	0398G00572	Date Received:	02/13/98
Sample Matrix:	Filter	Date Analyzed:	02/19/98

Parameter	Result	Detection Limit	Regulatory Level	Units
Arsenic	0.050	0.005	5	mg/L
Barium	0.77	0.01	100	mg/L
Cadmium	<0.004	0.004	1	mg/L
Chromium	6.71	0.01	5	mg/L
Lead	0.15	0.05	5	mg/L
Mercury	<0.001	0.001	0.2	mg/L
Selenium	<0.005	0.005	1	mg/L
Silver	<0.01	0.01	5	mg/L

ND- Analyte not detected at stated detection level.

References: Method 1311: Toxicity Characteristic Leaching Procedure, SW-846, Rev. 0, July 1992.

Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, Rev. 1, July 1992.

Comments:

Reported By: _____ Reviewed: _____

Inter·Mountain Laboratories, Inc.

1701 Phillips Circle
Gillette, Wyoming 82718

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
HSL VOLATILE COMPOUNDS

Client: **Burlington Resources**
Sample ID: Bag Filter
Project ID: Valverde Plant
Lab ID: B980642 0398G00572
Matrix: Filter

Date Reported: 02/19/98
Date Sampled: 02/13/98
Date Received: 02/16/98
Date Extracted: 02/18/98
Date Analyzed: 02/19/98

Parameter	Result	PQL	Regulatory Level	Units
Benzene	ND	0.02	0.5	mg/L
QUALITY CONTROL - Surrogate Recovery	**%**		**QC Limits**	
1,2-Dichloroethane-d4	112		80 - 120	
Toluene-d8	102		88 - 110	
Bromofluorobenzene	106		86 - 115	

ND - Not Detected at Practical Quantitation Level (PQL)

Reference: Method 8260A Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, Final Update II, United States Environmental Protection Agency, September 1994.
Method 1311, Toxicity Characteristic Leaching Procedure, Test Methods for Evaluating Solid Wastes, SW-846, United States EPA, September 1994.

Analyst E. D. **Reviewed**

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ARS Tracking Number:	ARS-98-0178	**P.O. Number:**	216528
Client I.D.:	G00572	**ARS Sample I.D.:**	ARS-98-0659
Date Sampled:	N/A	**Date Received:**	2/16/98
Time Sampled:	N/A	**Time Received**	1145
Type of Sample:	Solid	**Date of Report**	2/19/98

Analysis Description	Analysis Result	Analysis Error ±2σ	Detection Limit	Analysis Units	Analysis Test Method	Analysis Date & Time	Analysis Technician
Ra-226	<0.60	N/A	0.60	pCi/gm	EPA 901.1M	2/17/98 1650	dc
Ra-228	<0.10	N/A	0.10	pCi/gm	EPA 901.1M	2/17/98 1650	dc
Pb-210	2.15	1.14	0.46	pCi/gm	EPA 901.1M	2/17/98 1650	dc
Total Activity	2.23	N/A	N/A	pCi/gm	EPA 901.1M	2/17/98 1650	dc

Quality Assurance Review

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Q/A and Q/C Data

Inter·Mountain Laboratories, Inc

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control / Quality Assurance

Spike Analysis / Blank Analysis

TOXICITY CHARACTERISTIC LEACHING PROCEDURE

Client:	**Burlington Resources**	Date Reported:	02/20/98
Project:	Val Verde Plant	Date Analyzed:	02/19/98
Sample Matrix:	Filter	Date Received:	02/13/98

Spike Analysis

Parameter	Spike Result (mg/L)	Sample Result (mg/L)	Spike Added (mg/L)	Percent Recovery
Arsenic	N/A	N/A	N/A	**N/A**
Barium	2.89	1.85	1.00	**104%**
Cadmium	1.100	<0.004	1.000	**110%**
Chromium	1.30	0.11	1.00	**119%***
Lead	0.91	<0.05	1.00	**91%**
Mercury	0.005	<0.001	0.005	**100%**
Selenium	N/A	N/A	N/A	**N/A**
Silver	N/A	N/A	N/A	**N/A**

Method Blank Analysis

Parameter	Result	Detection Limit	Units
Arsenic	**ND**	0.005	mg/L
Barium	**ND**	0.01	mg/L
Cadmium	**ND**	0.004	mg/L
Chromium	**ND**	0.01	mg/L
Lead	**ND**	0.05	mg/L
Mercury	**ND**	0.001	mg/L
Selenium	**ND**	0.005	mg/L
Silver	**ND**	0.01	mg/L

References: Method 1311: Toxicity Characteristic Leaching Procedure, SW-846, Rev. 0, July 1992.

Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, Rev. 1, July 1992.

Comments: *Spike recovery failed to meet established QC limits due to matrix interferences.
NA=Data not available.

Reported by _____ Reviewed by _____

Inter·Mountain Laboratories, Inc

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control / Quality Assurance

Known Analysis

TOXICITY CHARACTERISTIC LEACHING PROCEDURE

Client:	**Burlington Resources**	Date Reported:	02/20/98
Project:	Val Verde Plant	Date Analyzed:	02/19/98
Sample Matrix:	Filter	Date Received:	02/13/98

Known Analysis

Parameter	Found Result	Known Result	Percent Recovery	Units
Arsenic	0.010	0.010	**100%**	mg/L
Barium	0.94	1.00	**94%**	mg/L
Cadmium	1.050	1.000	**105%**	mg/L
Chromium	1.05	1.00	**105%**	mg/L
Lead	1.01	1.00	**101%**	mg/L
Mercury	0.004	0.004	**100%**	mg/L
Selenium	0.009	0.010	**90%**	mg/L
Silver	1.07	1.00	**107%**	mg/L

References:

Method 1311: Toxicity Characteristic Leaching Procedure, SW-846, Rev. 0, July 1992.

Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals, SW-846, Rev. 1, July 1992.

Comments:

Reported by _____

Reviewed by _____

Inter·Mountain Laboratories, Inc.

1701 Phillips Circle
Gillette, Wyoming 82718

LAB QA/QC
TOXICITY CHARACTERISTIC LEACHING PROCEDURE
MATRIX SPIKE SUMMARY

Date Analyzed: **02/19/98**
Laboratory ID: G98-0642
Sample Matrix: Filter
Date Extracted: 2/18/98

Parameter	Spike Added mg/L	Sample Concentration mg/L	Matrix Spike Concentration mg/L	Matrix Spike Recovery (%)
Benzene	0.05	0	0.051	102

QUALITY CONTROL:

Surrogate Recovery	%
1,2-Dichloroethane-d4	116
Toluene-d8	104
Bromofluorobenzene	107

References:

Method 8260, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Wastes, SW-846, Final Update II,United States Environmental Protection Agency, September 1994.

Method 1311, Toxicity Characteristic Leaching Procedure, Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1994.

E.D.
Analyst

Reviewed

Inter·Mountain Laboratories, Inc.

1701 Phillips Circle
Gillette, Wyoming 82718

LAB QA/QC
TOXICITY CHARACTERISTIC LEACHING PROCEDURE
METHOD BLANK

Date Analyzed: **02/19/98**
Lab ID: MBW98049
Matrix: Water
Date Extracted 02/18/98

Parameter	Result	PQL	Units
Benzene	ND	0.02	mg/L
QUALITY CONTROL - Surrogate Recovery	**%**		
1,2-Dichloroethane-d4	92		
Bromofluorobenzene	101		
Toluene-d8	105		

ND - Not Detected at Practical Quantitation Level (PQL)

Analyst E.D.

Reviewed

Chain of Custody

inl
Inter- Mountain Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES / PARAMETERS
Burlington / Val Verde. 40 CFR 262.11	Val Verde Plant	
Sampler: (Signature)	**Chain of Custody Tape No.**	

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	TCLP Metals	TCLP Benzene	Normal	Remarks
Amine Mech Filter Cake	2/12/98	8:30		Filter	1	✓	✓	✓	Dried 2-20-98
Horizontal Inlet Filter					1	✓	✓	✓	
Coalescer Inlet Filter					1	✓	✓	✓	
Hot Oil Filter					1	✓	✓	✓	
Bag Filter					1	✓	✓	✓	
				CR					intact, hand delivered

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	2/13/98	8:53			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by laboratory: (Signature)	Date	Time
			Chris Rayner	2-13-98	0853

Inter-Mountain Laboratories, Inc.

1633 Terra Avenue
Sheridan, Wyoming 82801
Telephone (307) 672-8945

1701 Phillips Circle
Gillette, Wyoming 82718
Telephone (307) 682-8945

2506 West Main Street
Farmington, NM 87401
Telephone (505) 326-4737

1160 Research Drive
Bozeman, Montana 59718
Telephone (406) 586-8450

11183 State Hwy. 30
College Station, TX 77845
Telephone (409) 776-8945

52331

inl
Inter-Mountain Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES / PARAMETERS
Burlington / Val Verde. 10 gal 262.11	Val Verde Plant	
Sampler: (Signature)	**Chain of Custody Tape No.**	

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	TCLP Metals	TCLP Benzene	Benzene	Remarks
									1
Amine Mech Filter Cake	2/12/98	8:30		Filter	1	✓	✓	✓	Hold 2-20-98
Horizontal Inlet Filter					1	✓	✓	✓	
Coalescer Inlet Filter					1	✓	✓	✓	
Hot Oil Filter					1	✓	✓	✓	
Rag Filter	✓	✓		✓	1	✓	✓	✓	
				CR					intact, cool delivered

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	2/13/98	8:53			
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**
Relinquished by: (Signature)	**Date**	**Time**	**Received by laboratory: (Signature)**	**Date**	**Time**
			Chris Rayner	2-13-98	0853

Inter-Mountain Laboratories, Inc.

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1160 Research Drive
Bozeman, Montana 59718
Telephone (406) 586-8450

11183 State Hwy. 30
College Station, TX 77845
Telephone (409) 776-8945

52331

District I - (505) 393-6161
P. O. Box 1980
Hobbs, NM 88241-1980
District II - (505) 748-1283
811 S. First
Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Road
Aztec, NM 87410
District IV - (505) 827-7131

New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

Form C-138
Originated 8/8/95

Submit Original
Plus 1 Copy
to appropriate
District Office

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

1. RCRA Exempt: ☐ Non-Exempt: ☑ Verbal Approval Received: Yes ☐ No ☑	4. Generator BURLINGTON RES.
	5. Originating Site VAL VERDE PLANT
2. Management Facility Destination SUNCO DISPOSAL	6. Transporter SUNCO
3. Address of Facility Operator #345 CR 3500, AZTEC NM	8. State NM
7. Location of Material (Street Address or ULSTR) Bloomfield, NM	

9. Circle One:

A. All requests for approval to accept oilfield exempt wastes will be accompanied by a certification of waste from the Generator; one certificate per job.

(B.) All requests for approval to accept non-exempt wastes must be accompanied by necessary chemical analysis to PROVE the material is not-hazardous and the Generator's certification of origin. No waste classified hazardous by listing or testing will be approved.

All transporters must certify the wastes delivered are only those consigned for transport.

BRIEF DESCRIPTION OF MATERIAL:

WASH WATER FROM CLEANING PLANT EQUIPMENT

RECEIVED
MAR 26 1997
OIL CON. DIV.
DIST. 3

RECEIVED
MAR 27 1997
Environmental Bureau
Oil Conservation Division

Estimated Volume 1400 GALS cy Known Volume (to be entered by the operator at the end of the haul) _____ cy

SIGNATURE: Michael Talovich (Waste Management Facility Authorized Agent) TITLE: DISPOSAL MGR DATE: 3-26-97

TYPE OR PRINT NAME: MICHAEL TALOVICH TELEPHONE NO. 505-334-6186

(This space for State Use)

Sample Note (preserved on ICE)

APPROVED BY: Denny G. Foust TITLE: Geologist DATE: 3/26/97

DENIED

APPROVED BY: _____ TITLE: Petroleum Engineer DATE: 3/27/97

Chain of Custody Record

ASSAIGAI ANALYTICAL LABORATORIES
SERVICES, INC

Lab job no.: [illegible] Date 3/5/97

Page 1 of 1

7300 JEFFERSON, N.E.
ALBUQUERQUE, NEW MEXICO 8.
(505) 345-8964

3332 WEDGEWOOD
EL PASO, TEXAS 79925
(915) 593-6000

1910 N. BIG SPRIN.
MIDLAND, TEXAS 7970.
(915) 570-1116

MELQUIADES ALANIS
6411 LOCAL UNO
CIUDAD JUAREZ, CHIHUAHUA MEXICO 32320

Client CONTRACT ENVIRONMENTAL
Address P. Box 3376
City / State / Zip Farmington NM 87499
Project Name / Number MOI VAL VERDE
Contract / Purchase Order / Quote CONTRACT ENV

Project Manager / Contact SHAWN ADAMS
Telephone No. (505) 325-1198
Fax No. same (call)
Samplers: (Signature) Shawn Adams

NV, Temp. INDICATI

AAL FRACTION NUMBER	Field Sample Number / Location	Date	Time	Sample Type	Type / Size of Container	Preservation Temp.	Preservation Chemical	No. of Containers	Analysis Required: FLASH REACT	PACE	TCLP SVOA	TCLP SVOA SIM	TCLP VOA	Remarks
1A	VALV-100	2/6/97	12:00	Liq	8 oz glass		no	1	X					Composite Trunk Sample
1F	VALV-101	"	"	"	2½ x 7" Plastic		no	1		+				"
1C	VALV-102	"	"	"	4 x 6" Amber		no	1			X			"
	VALV-103	"	"	"	4 x 6" Amber		no	1				X		"
1D	VALV-104	"	"	"	2 x 5¼" Plastic		no	1					X	"
1E	VALV-105	"	"	"	3½ x 6" Plastic		no	1						"
1F	VALV-106 A/B	"	"	"	VOAS		no	2					X	"
	VALV-107 A/B	"	"	"	VOAS		no	2					X	"

Relinquished by:	Date	Received by:	Relinquished by:	Date	Received by:
Signature [illegible]	3/5/97	Signature	Signature	3/6/97	Signature
Printed SHAWN ADAMS	Time	Printed	Printed	Time	Printed
Company CONTRACT ENV SVCS.	2 00	Company Fed-Ex	Company Fed-Ex	1417	Company
Reason Final Svcs		Reason	Reason		Reason

Method of Shipment: COURIER
Shipment No.
Special Instructions:

Comments: "RUSH" 5-DAY
RESULTS DUE BY 3/12/97
Blend w/
State Ana analyse liquid phase only
for Semi Phase only

After analysis, samples are to be:
- ☐ Disposed of (additional fee)
- ☒ Stored (30 days max)
- ☐ Stored over 30 days (additional fee)
- ☐ Returned to customer

MERIDIAN OIL

March 2, 1995 *Certified - P 895 114 325*

Chris E. Eustice
Environmental Geologist
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87502

Re: Segregation and Handling of Maintenance Sump Wastes
Ground Water Discharge Plan
Val Verde Plant

Dear Mr. Eustice:

Meridian Oil Inc. (MOI) is providing your department with a statement regarding the handling and disposal of fluids from the maintenance sump at the Val Verde Plant.

The maintenance sump provides rinsate collection to the wash down area near the maintenance shop. The sump has no drains and is not connected to any other systems within the plant area. Fluids in the maintenance sump at the Val Verde Plant were evaluated for hazardous waste potential by sampling and analysis for TCLP constituents. The TCLP analysis demonstrated that the maintenance sump fluid was not a hazardous waste. The analysis is attached for your review. MOI believes that the analysis is representative of the process and materials involved with the maintenance sump.

In the future if MOI believes the material is consistent with that described in the attached TCLP analysis, sampling or analysis will not be performed. MOI will apply generators knowledge to make this determination each time the maintenance sump is emptied. If the process and material are consistent as described above the contaminated media will be managed as a non-hazardous waste. At a minimum, one TCLP analysis will be performed annually to verify our management strategy. MOI will supply your office with the updated analysis.

Non-hazardous fluids from the maintenance sump will typically be co-mingled with other process wastewater fluids from Val Verde Plant and disposed of in MOI's Class II injection well at the McGrath SWD #4. As an alternative, MOI may dispose of the fluid at one of the other permitted Class II injection wells in the area.

MOI believes this waste management strategy addresses NMOCD concerns stated during past phone conversations and listed in the conditions of approval for the Val Verde Ground Water Discharge Plan. Please find attached, a flat fee of $1,667.50 for the renewal of the Val Verde Ground Water Discharge Plan. If you have any questions or wish to discuss this strategy further, please call me at 326-9537.

Sincerely,

Craig A. Bock
Associate Environmental Representative

Attachment: TCLP Analysis
Fee ($1,667.50)

cc: Gaza Seabolt - MOI
Greg Kardos - MOI
New Mexico Oil Conservation Division - Aztec Office
File: Val Verde Plant\Ground Water Discharge Plan\Correspondence

s:\craig\projman\formltr\notices\vvsump.doc

.Farmington, NM 87401
USA

Copy: 1 of 4

Attn: Mr. Craig Bock
Project: Val Verde SUMP

Received: 13-Jan-95 12:30
PO #:

Job: 9510006

Status: Final

Liquid samples

Sample Id	pH EPA 9040A pH Units	Flash Point SW 1010 deg. C
S-1	9.95	>100
Blank	5.53	---
QC Standard (actual)	4.48	---
QC Standard (expected)	4.45	---
Repeat	9.95	---

Abbreviations:

Parameters:

pH : pH (pH units)

Methods:

EPA 9040A : Method 9040A from US EPA SW-846
SW 1010 : Method 1010 from US EPA SW-846

Units:

deg. C : degrees Centigrad

Quality codes:

> : Value greater than

Job approved by:

Signed:

.....

Mike Muneswar
Manager, Environmental Inorganic Services

Post-it Fax Note 7671
To Mr. Craig Bock
From Mike M
Co./Dept.
Phone #
Fax #
Co.
Phone #
Fax #
Date
# of pages ▶

Burlington Environmental Inc.
5735 McAdam Road • Mississauga, Ontario • L4Z 1N9
(800) 838-7905 • Fax: (905) 890-8575

FAX TO: CRAIG BOCK
326-9725

BURLINGTON ENVIRONMENTAL
A Philip Environmental Company

27-Jan-95

BURLINGTON ENVIRONMENTAL
4000 Monroe Road
Farmington, NM 87401
USA

Attn: Mr. Craig Bock
Project: Val Verde SUMP
PO #:

Received: 13-Jan-95 12:30

Job: 9510006
Status: Final

Liquid samples

Sample Id	pH EPA 9040A pH Units	Flash Point SW 1010 deg. C
S-1	9.95	>100
Blank	5.53	---
QC Standard (actual)	4.48	---
QC Standard (expected)	4.45	---
Repeat	9.95	---

Post-it® Fax Note 7671
To Mr. Craig Bock
Co./Dept.
Phone #
Fax #
Date
From Mike M
Co.
Phone #
Fax #
# of pages ▶

Abbreviations:

Parameters:

pH : pH (pH units)

Methods:

EPA 9040A : Method 9040A from US EPA SW-846
SW 1010 : Method 1010 from US EPA SW-846

Units:

deg. C : degrees Centigrad

Quality codes:

> : Value greater than

Job approved by:

Signed: .....
Mike Muneswar
Manager, Environmental Inorganic Services

BURLINGTON ENVIRONMENTAL
A Philip Environmental Company

27-Jan-95

BURLINGTON ENVIRONMENTAL
4000 Monroe Road
Farmington, NM 87401
USA

Page: 2
Copy: 1 of 2

Attn: Mr. Craig Bock **Received: 13-Jan-95 12:30**
Project: Val Verde SUMP **PO #:**

Job: 9510006 **Status: Final**

QUALITY CONTROL DATA SHEET

Received by: chris **Via: Craig Bock**

Sample Type: Water
Preservative When Received: None
Additional Lab Preparation: None

Parameter	Method		Analyst	Date(s) of Analysis
pH	EPA 9040A	0.01 pH Units		1/13
Flash Point	SW 1010	1 deg. C		1/25

BURLINGTON ENVIRONMENTAL
A Philip Environmental Company

CLIENT: BURLINGTON ENVIRONMENTAL
PROJECT REFERENCE: VAL VERDE SUMP
W.O. #9510006V
MATRIX: WATER

VOLATILE ORGANIC COMPOUNDS (TCLP)

DATE: 24-Jan-95

UNITS: MICROGRAMS/LITER (UG/L)

COMPOUND	LOQ UG/L	REAGENT BLANK	S-1	S-1 DUP.
BENZENE	1.0	ND	ND	ND
CARBON TETRACHLORIDE	2.0	ND	ND	ND
CHLOROBENZENE	2.0	ND	ND	ND
CHLOROFORM	2.0	ND	ND	ND
1,4-DICHLOROBENZENE	2.0	ND	ND	ND
1,2-DICHLOROETHANE	2.0	ND	ND	ND
1,1-DICHLOROETHYLENE	5.0	ND	ND	ND
METHYL ETHYL KETONE	50.0	ND	ND	ND
TETRACHLOROETHYLENE	2.0	ND	ND	ND
TRICHLOROETHYLENE	2.0	ND	ND	ND
VINYL CHLORIDE	10.0	ND	ND	ND
SURROGATE STANDARD RECOVERIES:	AMOUNT	CONTROL LIMITS 70-130%		
DIBROMOFLUOROMETHANE	160	110%	113%	114%
TOLUENE-D8	40	98%	99%	98%
4-BROMOFLUOROBENZENE	160	96%	96%	96%

QUALITY CONTROL SPIKE RECOVERIES

COMPOUND	AMOUNT UG/L	S-1 SPIKE	REAGENT SPIKE
BENZENE	20	123%	97%
CARBON TETRACHLORIDE	50	124%	96%
CHLOROBENZENE	50	124%	96%
CHLOROFORM	50	96%	81%
1,4-DICHLOROBENZENE	50	121%	97%
1,2-DICHLOROETHANE	50	126%	99%
1,1-DICHLOROETHYLENE	50	121%	98%
METHYL ETHYL KETONE	200	144%	101%
TETRACHLOROETHYLENE	50	121%	95%
TRICHLOROETHYLENE	50	123%	96%
VINYL CHLORIDE	100	120%	98%
SURROGATE STANDARD RECOVERIES:		CONTROL LIMITS 70-130%	
DIBROMOFLUOROMETHANE	160	87%	90%
TOLUENE-D8	40	100%	100%
4-BROMOFLUOROBENZENE	160	99%	99%

BURLINGTON ENVIRONMENTAL
A Philip Environmental Company

CLIENT: BURLINGTON ENVIRONMENTAL
PROJECT REFERENCE: VAL VERDE SUMP
W.O. #9510006V
MATRIX: TCLP LEACHATE

VOLATILE ORGANIC COMPOUNDS (TCLP)

DATE: 24-Jan-95

LEGEND: LOQ = LIMIT OF QUANTITATION
ND = NOT DETECTED ABOVE LOQ
DUP. = DUPLICATE

Date of sample receipt: January 13, 1995
Date of sample analysis: January 21, 1995

ANALYTICAL METHOD:

The water sample was analysed in duplicate by purge & trap gas chromatography/mass spectrometry using US EPA Method 8260A.

JOB APPROVED BY:

SIGNED: Ron Corkum

RONALD CORKUM, M.Sc., C.Chem.
MANAGER, MASS SPECTROMETRY SECTION

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Ronald J. Corkum
CHEMIST

BURLINGTON ENVIRONMENTAL
A Philip Environmental Company

CLIENT: BURLINGTON ENVIRONMENTAL
PROJECT REFERENCE: Val Verde Sump
W.O. #95100068
MATRIX: WATER

TCLP SEMIVOLATILE EXTRACTABLES

DATE: 26-Jan-95

COMPOUND	LOQ UG/L	REAGENT BLANK	S-1	S-1 DUP.
O-CRESOL	150	ND	ND	ND
M-CRESOL & P-CRESOL	150	ND	ND	ND
1,4-DICHLOROBENZENE	100	ND	ND	ND
2,4-DINITROTOLUENE	100	ND	ND	ND
HEXACHLOROBENZENE	100	ND	ND	ND
HEXACHLOROBUTADIENE	150	ND	ND	ND
HEXACHLOROETHANE	150	ND	ND	ND
NITROBENZENE	100	ND	ND	ND
PENTACHLOROPHENOL	150	ND	ND	ND
PYRIDINE	800	ND	ND	ND
2,4,5-TRICHLOROPHENOL	150	ND	ND	ND
2,4,6-TRICHLOROPHENOL	150	ND	ND	ND
SURROGATE STANDARD RECOVERIES:		CONTROL LIMITS: 30 - 140%		
NITROBENZENE-D5		54%	81%	95%
2-FLUOROBIPHENYL		61%	89%	95%
TERPHENYL-D14		84%	94%	100%
2-FLUOROPHENOL		40%	44%	44%
PHENOL-D5		30%	13%	10%
2,4,6-TRIBROMOPHENOL		65%	81%	83%

QUALITY CONTROL SPIKE RECOVERIES

COMPOUND	AMOUNT UG/L	REAGENT SPIKE
O-CRESOL	800	72%
M-CRESOL & P-CRESOL	800	71%
1,4-DICHLOROBENZENE	400	69%
2,4-DINITROTOLUENE	400	82%
HEXACHLOROBENZENE	400	84%
HEXACHLOROBUTADIENE	600	73%
HEXACHLOROETHANE	400	66%
NITROBENZENE	400	72%
PENTACHLOROPHENOL	800	85%
PYRIDINE	1530	0%
2,4,5-TRICHLOROPHENOL	800	81%
2,4,6-TRICHLOROPHENOL	800	79%
SURROGATE STANDARD RECOVERIES:		CONTROL LIMITS: 30 - 140%
NITROBENZENE-D5	400	66%
2-FLUOROBIPHENYL	400	72%
TERPHENYL-D14	400	78%
2-FLUOROPHENOL	800	51%
PHENOL-D5	800	41%
2,4,6-TRIBROMOPHENOL	800	77%

BURLINGTON ENVIRONMENTAL
A Philip Environmental Company

CLIENT: BURLINGTON ENVIRONMENTAL
PROJECT REFERENCE: Val Verde Sump
W.O. #95100068
MATRIX: WATER

TCLP SEMIVOLATILE EXTRACTABLES

DATE: 26-Jan-95

LEGEND: UNITS: MICROGRAMS PER LITER (UG/L)
LOQ = LIMIT OF QUANTITATION
ND = NOT DETECTED ABOVE LOQ
DUP. = DUPLICATE

Date of sample receipt: January 13, 1995
Date of extraction: January 17, 1995
Date of analysis: January 25, 1995

ANALYTICAL METHOD:

The samples were prepared by liquid-liquid extraction and analysed by gas chromatography/mass spectrometry using US EPA Method 8270B.

JOB APPROVED BY:

SIGNED:

RONALD CORKUM, M.Sc., C.Chem.
MANAGER, MASS SPECTROMETRY SECTION

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Ronald J. Corkum
CHEMIST

Chris Hunter

MERIDIAN OIL

'94 SEP -8 AM 8 50

September 2, 1994

Certified - P 863 187 931

RECEIVED
SEP - 8 1994
OIL CON. DIV.
DIST. 3

Mr. Denny Foust
New Mexico Oil Conservation Division
1000 Rio Brazos
Aztec, NM 87401

Re: Discharge Plan Renewal (GW-51) Amendments

Dear Mr. Foust:

As per the New Mexico Oil Conservation Division's request, Meridian Oil Inc (MOI) is submitting the attached amendments to the Val Verde Groundwater Discharge Plan Renewal (GW-51). The amendments explain the use and disposal of the charcoal filtering media used in each process train at the Val Verde Plant

Only those pages and sections affected by the amendments are attached to this document. Bold italicized text indicate the amendments to the original text submitted on August 1, 1994.

Thank you for your time in reviewing this discharge plan. If I can be of further assistance, please contact me at (505) 326-9537.

Sincerely,

Craig A. Bock
Associate Environmental Representative

Attachments

cc: Val Verde Plant/Discharge Plan/Correspondence
Greg Kardos - MOI

2.0 PLANT PROCESS

2.1 Process Description

Dehydrated coal seam natural gas enters Val Verde Plant via pipeline from individual gas production facilities located throughout northwest New Mexico and southwest Colorado. The natural gas entering the plant is essentially methane and carbon dioxide (CO_2). The CO_2 laden natural gas stream is sent to one of eight process trains for CO_2 removal.

Chemicals used in each process train include a Methyldiethanoloamine based solvent (MDEA) to remove CO_2 and Triethylene Glycol (TEG) to remove water entrained in the natural gas stream during CO_2 stripping.

The natural gas stream in each process train is contacted in a vertical trayed countercurent absorber vessel with a 65% water and a 35% MDEA solution.

The rich MDEA solvent leaving the absorber vessels is regenerated in a typical MDEA regeneration system consisting of the following equipment (Figure 3a) for trains 1 and 2:

- Rich MDEA Flash Tank
- Lean/Rich Cross Exchanger
- Hot Oil Heated Reboiler (Gas Fired Hot Oil Heater)
- Lean MDEA Surge Tank
- Hot Oil Surge Tank
- Stripping Column
- Stripper Reflux Condenser (Fan Cooled)
- Lean MDEA Cooler (Fan Cooled)
- Reflux Condenser Cooler
- ***Charcoal Filter Case***

The MDEA regeneration process for Train 3 is identical to Trains 1 and 2 except for the addition of a Final Lean/Rich Amine Exchanger (Figure 3b).

The typical amine regeneration system for trains 4, 5, and 6 (Figure 3c) is the same, except the amine heated reboiler is a direct fired reboiler, in place of a hot oil heated reboiler. Trains 4, 5, and 6 also have two flash tanks (high pressure and low pressure) as opposed to only one in trains 1, 2, and 3.

Train 7 and 8 MDEA regeneration system utilizes the same equipment as trains 4, 5 and 6 with the addition of a Hot Water Surge Tank, and Still Side Reboilers to accommodate an indirect fired heater rather that a direct fired reboiler.

Included in the MDEA regeneration process trains 1 through 8 are each equipped with individual charcoal filtering systems. The charcoal filter removes any hydrocarbon based impurities in the MDEA before regeneration is complete.

Spent charcoal filter media is removed from the filter case and placed in a concrete charcoal drainage pad located south of the plant. The charcoal is allowed to dry while awaiting off-site disposal (see Section 4.0, Effluent Disposal).

CO_2 removed from the MDEA solution from trains 1, 2, and 3 is piped to a common 16-inch vent line, through an 8-foot diameter by 32-foot seam-to-seam, carbon steel, horizontal, vent scrubber and then discharged to the atmosphere via a vertical vent stack. Trains 4, 5 and 6 use a common 20-inch vent

line, through a 10-foot by 25-foot seam-to-seam, carbon steel, horizontal, vent scrubber. Condensed water vapor collected in the vent scrubber is pumped back into the regeneration units.

Trains 1, 2, and 3 have a combined gas treating capacity of 135 MMSCF/d. Trains 4 through 8 each have a gas treating capacity of 117 MMSCF/d per train.

The dehydration process for the Val Verde Plant includes a common contactor (countercurrent absorber) for trains 1 and 2 and individual contactors for each of trains 3 through 8. Trains 1 through 3 share a common TEG regeneration system (Figure 4a) and train groups 4 through 8 (Figures 4b) each has its own TEG regeneration system.

A TEG regeneration system includes the following equipment:

- TEG flash tank
- Lean/Rich TEG cross exchangers
- Direct fired TEG reboiler with packed stripping column
- Lean TEG surge tank
- Lean TEG cooler (Fan cooled)
- ***Charcoal Filter Case***

Spent charcoal filter media for TEG regeneration is removed from the filter case and placed on a concrete charcoal drainage pad located south of the plant. The spent charcoal is allowed to dry while awaiting off-site disposal (see Section 4.0, Effluent Disposal).

2.2 Water System

Process water is supplied to the Val Verde Plant by a set of raw water storage tanks to the east of the plant location. The water is passed through an ion exchange softening system prior to distribution throughout the plant.

Make-up water for the regeneration units for trains 1, 2, and 3 amounts to approximately 9400 gpd. A hot oil heated water vaporizer is utilized to provide part of this make-up. The remainder of the make-up water is purchased.

Make-up water for trains 4 through 8 for regeneration units amounts to approximately 36,000 gpd. A two bed (anion/cation) water demineralizer provides this make-up.

Reject water for trains 1, 2 and 3 is approximately 1 gpm (TDS 747 ppm). Reject water for trains 4 through 8 is estimated at 7.0 gpm. Reject water is collected in an above-ground welded steel storage tank.

Wastewater from the process water system is drained into the wastewater drain system (WWD) to a sump. Trains 4 through 6 share a common sump and trains 7 and 8 share a common sump. From the sump the wastewater is transferred to an above ground tank. Water treatment system backwash wastewater is also drained into the WWD and transferred into the same above ground tank. Trains 1, 2 and 3 do not have a wastewater system. Trains 1 through 3 utilize a hot oil heat transfer media.

soil will either be left in place, transferred to other existing waste-management areas, or transported off-site for proper disposal.

3.1.2 Spill/Leak Containment

To reduce the risk of spilled process fluids from contacting the ground surface, Val Verde Plant has constructed curbed concrete containment basins under process areas with a higher probability of a spill/leak (described in Section 2.3). Each of the containment basins either has a small open top sump or a drain to the general sump for that particular train. The small open top sumps are periodically cleaned and vacuumed out. Concrete curbing around process equipment is illustrated on the Facility Site Diagram, Figure 2.

Process pumps without concrete containment basins are equipped with seal pans for collecting seal or packing leakage. Drum storage and general storage of any equipment which may leak are placed inside a 20' x 20' curbed concrete area. Some equipment cleaning is also performed inside this area.

All above ground tanks are located within bermed areas with a capacity of at least 1.5 times the largest tank within each bermed area. A gravel pad is placed under each tank to assist in leak detection efforts.

3.1.3 Reporting

Should a release of materials occur, MOI will comply in accordance with provisions described in NMOCD Rule and Regulation #116.

4.0 EFFLUENT DISPOSAL

On-Site Disposal:

The Val Verde Plant does not conduct any on-site waste disposal, except for sewage, which is processed through an approved septic system. All other waste streams are taken off-site for recycling or disposal.

Off-Site Disposal:

The following table provides information about off-site disposal:

Waste Stream	Collection Method	Shipment Method	Final Disposition	Receiving Facility
Waste water	Aboveground Steel Tank with Containment	Truck See Note 1	Class II Injection Well	See Note 2
Unrecyclable process fluids	Aboveground Steel Tank with Containment	Truck See Note 1	Class II Injection Well	See Note 2
Caustic wash rinsate	Aboveground Steel Tank with Containment	Truck See Note 1	Class II Injection Well	See Note 2
Heat transfer oil	Aboveground Steel Tank with Containment	Truck See Note 1	Fuels Blending or Recycling	Safety-Kleen Corp. 1722 Cooper Creek Rd. Denton, TX 76208
Charcoal filter media	***Concrete Charcoal Drainage Pad***	***Truck See Note 1***	***Soil Remediation Landfarm***	***Envirotech or Tierra Landfarm***

Note 1. The trucking agent contracted to ship effluents off-site will be one of the following:

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-51) - Meridian Oil Inc., Craig Brock, Associate Environmental Representative, P.O. Box 4289, Farmington, New Mexico 87499-4289, has submitted a discharge application for renewal for their Val Verde Gas Plant located in the SE/4 SE/4 of Section 11, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. Approximately 1440 gallons per day of waste water is stored in above ground, closed-top steel tanks prior to transport to an OCD approved Class II injection well for disposal. Ground water most likely to be affectd in the event of an accidental discharge is at a depth ranging from 10 to 50 feet with a total dissolved solids concentration ranging from 1000 mg/1 to 6000 mg/1. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-171) - BHP Petroleum (Americas), Inc., Jesse Roberts, Environmental Coordinator, 1360 Post Oak Boulevard, Suite 500, Houston, Texas, 77056-3020, has submitted a discharge plan application for their Gallegos Canyon Unit 3-C Compressor Station located in the SE/4 of Section 29, Township 29 North, Range 12 West, San Juan County, New Mexico. Approximately 214 gallons per day of waste water is stored in above ground, closed-top steel tanks prior to transport to an OCD aproved Class II injection well. Ground water most likely to be affected in the event of an accidental discharge is at a depth ranging from 200 to 250 feet with a total dissolved solids concentration of approximately 1000 mg/1. The discharge plan addresses how spills, leaks, and other accidental discharges will be managed.

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If no hearing is held, the Director will approve or disapprove the plan based on the information available. If a public hearing is held, the Director will approve the plan based on the information in the plan and information presented at the hearing.

GIVEN under the Seal of New Mex-Conservation Commisaion at Santa FE, New Mexico, on this 15th day of August, 1994.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/William J. Lemay,
Director

Journal: August 23, 1994

Oil Conservation Commission at Santa Fe, New Mexico, on this 25th day of July, 1994.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/William J. LeMay, Director

Journal: August 2, 1994.

STATE OF NEW MEXICO
County of Bernalillo ss

OIL CONSERVATION DIVISION
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Bill Tafoya being duly sworn declares and says that he is Classified Advertising Manager of **The Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, copy of which is hereto attached, was published in said paper in the regular daily edition, for 1 times, the first publication being on the 23rd day of August, 1994 and the subsequent consecutive publications on ,1994

Bill Tafoya

Sworn and subscribed to before me, a notary Public in and for the County of Bernalillo and State of New Mexico, this 23rd day of August 1994.

OFFICIAL SEAL
[illegible] Page
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission expires: May 20, 1998

PRICE $39.62

Statement to come at end of month.

CLA-22-A (R-1/93) ACCOUNT NUMBER C80432

NEW TAXES THIS PERIOD:	$	4.50
CASH THIS PERIOD:	$	124.95
IT ADJUSTMENTS THIS PERIOD:	$	0.00
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No.

STATE OF NEW MEXICO,
County of San Juan:

ROBERT LOVETT being du
sworn, says: "That he is the
CLASSIFIED ADVERTISING MANAGER
The Farmington Daily Times, a da
newspaper of general circulation
published in English in Farmingt
said county and state, and that
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was published in a regular and e
issue of the said Farmington Dai
Times, a daily newspaper duly qu
fied for the purpose within the
meaning of Chapter 167 of the 19
Session Laws of the State of New
Mexico for one publication(s
the following day(s):

First Publication Tuesday, Aug 23 '94

Second Publication

Third Publication

Fourth Publication

and the cost of publication was

On 8/24/94 ROBERT L
appeared before me, whom I kno
the person who signed the abov

Notary Public, San Juan County,
New Mexico

My Comm expires: APRIL 22, 1997

LEGALS

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

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GIVEN under the Seal of New Mexico Conservation Commission at Santa Fe, New Mexico, on this 15th day of August, 1994.

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY,
Director

Legal No. 33700 published in The Daily Times, Farmington, New Mexico on Tuesday, August 23, 1994.

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

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GIVEN under the Seal of New Mexico Conservation Commission at Santa Fe, New Mexico, on this 15th day of August, 1994.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

SEAL

WILLIAM J. LEMAY,
Director

MERIDIAN OIL

August 1, 1994

Certified Mail - P 049 501 178

Chris E. Eustice
Environmental Geologist
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87502

Re: Val Verde Gas Plant Discharge Plan GW-51
Renewal/Modification

Dear Mr. Anderson:

Meridian Oil Inc. is providing your department with a proposed discharge plan for the referenced facility. A domestic discharge to an approved septic system is the only onsite disposal of fluids or solids that will occur at this facility. All above ground storage tanks are bermed and certain process equipment has been equipped with concrete containment skids to catch unintentional discharges of process fluids.

Please note that Figure 2, Plot Plan and Equipment Layout, does not include a fence line. A diagram of the Val Verde Plant that included the fence line would require a larger scale map. A large scale map would render all the process equipment unreadable.

If you have any questions concerning this proposed discharge plan please call me at 326-9537.

Sincerely,

Craig A. Bock
Associate Environmental Representative

Attachment: (1) Discharge Plan (2 Copies)
(1) $50 Filing Fee

cc: Val Verde Plant: GW Discharge: Permit/Application
New Mexico Oil Conservation Division - Aztec Office

VAL VERDE GAS PROCESSING PLANT
MODIFICATION TO
DISCHARGE PLAN NO. GW-51

July 28, 1994

Prepared for:

Meridian Oil Gathering, Inc.

Prepared by:

Craig A. Bock

RECEIVED

AUG 15 1994

OIL CONSERVATION DIV.
SANTA FE

TABLE OF CONTENTS

LIST OF FIGURES

MODIFICATION TO DISCHARGE PLAN NO. GW-51

VAL VERDE GAS PROCESSING PLANT

1.0 GENERAL INFORMATION

1.1 Val Verde Gas Processing Plant (Val Verde Plant) is owned and operated by

Meridian Oil Gathering, Inc.
3535 East 30th Street
P.O. Box 4289
Farmington, NM 87499-4289
(505) 326-9700

1.2 Name of Legally Responsible Party

Randy Limbacher
Vice President, Regional Operations
Meridian Oil Inc.
P.O. Box 4289
Farmington, New Mexico 87499-4289
(505) 326-9700

1.3 Name of Contact Person or Representative

MOI requests that all correspondence regarding this plan be sent to:

Craig A. Bock
Associate Environmental Representative
Meridian Oil, Inc.
P.O. Box 4289
Farmington, New Mexico 87499-4289
(505) 326-9537

MOI requests that copies of correspondence also be sent to:

Greg Kardos
Senior Plant Supervisor
Meridian Oil, Inc.
P.O. Box 4289
Farmington, New Mexico 87499-4289
(505) 326 9508

1.4 Plant location

SE/4 of the SE/4 of Section 11,
T29N, R11W, NMPM
San Juan County, NM (Figure 1)

1.5 Purpose of Plant

Val Verde Plant is a facility which removes CO_2 from a coal seam gas stream by contacting the gas with an amine based solvent that has a high affinity for CO_2. CO_2 stripped from the coal seam gas stream is vented to the atmosphere. The residue gas is contacted with Triethylene Glycol (TEG) to provide a set dew point.

Val Verde Plant produces a natural gas stream that is stripped of CO_2 After the natural gas stream is treated within the facility it is sold and transported to El Paso Natural Gas or Trans-Western Pipeline.

1.6 Copies

Three copies of this modification to Discharge Plan No. GW-51 have been provided to the Santa Fe office of the OCD. The OCD will make available copies for District offices and public review.

1.7 Affirmation

"I hereby certify that I am familiar with the information contained in and submitted with this discharge plan, and that such information is true, accurate, and complete to the best of my knowledge and belief."

Randy L. Limbacher — 7-29-94

Signature — Date

Mr. R. L. Limbacher
Regional Vice President

2.0 PLANT PROCESS

2.1 Process Description

Dehydrated coal seam natural gas enters Val Verde Plant via pipeline from individual gas production facilities located throughout northwest New Mexico and southwest Colorado. The natural gas entering the plant is essentially methane and carbon dioxide (CO_2). The CO_2 laden natural gas stream is sent to one of eight process trains for CO_2 removal.

Chemicals used in each process train include a Methyldiethanoloamine based solvent (MDEA) to remove CO_2 and Triethylene Glycol (TEG) to remove water entrained in the natural gas stream during CO_2 stripping.

The natural gas stream in each process train is contacted in a vertical trayed countercurent absorber vessel with a 65% water and a 35% MDEA solution.

The rich MDEA solvent leaving the absorber vessels is regenerated in a typical MDEA regeneration system consisting of the following equipment (Figure 3a) for trains 1 and 2:

- Rich MDEA Flash Tank
- Lean/Rich Cross Exchanger
- Hot Oil Heated Reboiler (Gas Fired Hot Oil Heater)
- Lean MDEA Surge Tank
- Hot Oil Surge Tank
- Stripping Column
- Stripper Reflux Condenser (Fan Cooled)
- Lean MDEA Cooler (Fan Cooled)
- Reflux Condenser Cooler

The MDEA regeneration process for Train 3 is identical to Trains 1 and 2 except for the addition of a Final Lean/Rich Amine Exchanger (Figure 3b).

The typical amine regeneration system for trains 4, 5, and 6 (Figure 3c) is the same, except the amine heated reboiler is a direct fired reboiler, in place of a hot oil heated reboiler. Trains 4, 5, and 6 also have two flash tanks (high pressure and low pressure) as opposed to only one in trains 1, 2, and 3.

Train 7 and 8 MDEA regeneration system utilizes the same equipment as trains 4, 5 and 6 with the addition of a Hot Water Surge Tank, and Still Side Reboilers to accommodate an indirect fired heater rather that a direct fired reboiler.

CO_2 removed from the MDEA solution from trains 1, 2, and 3 is piped to a common 16-inch vent line, through an 8-foot diameter by 32-foot seam-to-seam, carbon steel, horizontal, vent scrubber and then discharged to the atmosphere via a vertical vent stack. Trains 4, 5 and 6 use a common 20-inch vent line, through a 10-foot by 25-foot seam-to-seam, carbon steel, horizontal, vent scrubber. Condensed water vapor collected in the vent scrubber is pumped back into the regeneration units.

Trains 1, 2, and 3 have a combined gas treating capacity of 135 MMSCF/d. Trains 4 through 8 each have a gas treating capacity of 117 MMSCF/d per train.

The dehydration process for the Val Verde Plant includes a common contactor (countercurrent absorber) for trains 1 and 2 and individual contactors for each of trains 3 through 8. Trains 1 through 3 share a

common TEG regeneration system (Figure 4a) and train groups 4 through 8 (Figures 4b) each has its own TEG regeneration system.

A TEG regeneration system includes the following equipment:

- TEG flash tank
- Lean/Rich TEG cross exchangers
- Direct fired TEG reboiler with packed stripping column
- Lean TEG surge tank
- Lean TEG cooler (Fan cooled)

2.2 Water System

Process water is supplied to the Val Verde Plant by a set of raw water storage tanks to the east of the plant location. The water is passed through an ion exchange softening system prior to distribution throughout the plant.

Make-up water for the regeneration units for trains 1, 2, and 3 amounts to approximately 9400 gpd. A hot oil heated water vaporizer is utilized to provide part of this make-up. The remainder of the make-up water is purchased.

Make-up water for trains 4 through 8 for regeneration units amounts to approximately 36,000 gpd. A two bed (anion/cation) water demineralizer provides this make-up.

Reject water for trains 1, 2 and 3 is approximately 1 gpm (TDS 747 ppm). Reject water for trains 4 through 8 is estimated at 7.0 gpm. Reject water is collected in an above-ground welded steel storage tank.

Wastewater from the process water system is drained into the wastewater drain system (WWD) to a sump. Trains 4 through 6 share a common sump and trains 7 and 8 share a common sump. From the sump the wastewater is transferred to an above ground tank. Water treatment system backwash wastewater is also drained into the WWD and transferred into the same above ground tank. Trains 1, 2 and 3 do not have a wastewater system. Trains 1 through 3 utilize a hot oil heat transfer media.

Figure 5 and Figure 6 contain the Process and Instrumentation Diagrams (P&ID) for train 5 and train 8 respectively. The P&ID for train 5 are representative of the process fluids and wastewater systems in trains 4 through 6. Train 8 P&ID are representative of the process fluids and wastewater systems of trains 7 and 8.

2.3 Effluent Sources

Domestic discharges are made through one septic tank system shown on the facility diagram (Figure 2). The warehouse building, control rooms, shop building, and the new office building will discharge into the septic tank.

Liquid streams that have the potential to be unintentionally discharged above or below the ground surface are classified as leaks and spills. Leaks and spills may consist of one or more of the following process fluids:

- Neutralized demineralized wastewater (wastewater)
- Unrecyclable process fluids
- MDEA test samples
- MDEA
- TEG
- Heat Transfer Oil

Spills or leaks are more likely to occur around fluid pumps, gas contactors, flash tanks and heaters.

Neutralized demineralized wastewater originates from the regeneration process of the ion exchange water treatment system. A caustic and an acid solution is used to regenerate the ion exchange beds. After regeneration, the beds are rinsed with fresh water.

MDEA test samples are collected once every day to determine MDEA strength and lean loading. Total sample volume collected per day is 1750 ml. Included in this sample volume are small amounts of the following test reagents:

- Distilled H_2O
- Methyl Red Indicator
- N Sulfuric Acid
- Methyl Alcohol
- Thymolphthalen Indicator 0.05%
- Normal Potassium Hydroxide

This sample is poured into the laboratory sink which drains to the wastewater sump and is then transferred to an aboveground wastewater tank.

Spent MDEA and TEG that cannot undergo a recycling process are characterized as unrecyclable process fluids.

2.4 Proposed Site Changes

Val Verde Plant will be the site of a CO_2 injection pilot program in late 1994. The pilot program will involve setting a single compressor unit to the west of train 7 (refer to Figure 2, Plot Plan and Equipment Layout). The compressor unit is rated at 2050 hp. CO_2 will be compressed and sent via pipeline for off-site injection to enhance gas production.

MOI plans to expand the pilot program to full scale in 1996. At that time, four more compressor units will be set next to the pilot compressor unit. Any possible discharges from the compressor units will be addressed to reduce the risk of groundwater contamination.

3.0 TRANSFER/STORAGE OF PROCESS FLUIDS

The WWD system for trains 4, through 6 is independent of Trains 7 and 8. Each WWD system includes a general sump that is transferred to an above ground steel tank. Fluids stored in the waste water tank are periodically hauled off site to an OCD approved Class II disposal well.

Makeup TEG and MDEA in trains 1-3 are stored in aboveground 500 gallon steel storage tanks. A small portable centrifugal pump is used to transfer from the storage tank into the system. In trains 4 through 8 makeup TEG and MDEA are stored in separate aboveground 90 bbl steel storage tanks.

The hot oil systems for trains 1, 2 and 3 are closed-loop systems, utilizing an elevated surge drum. Hot oil makeup requires a bulk truck delivery.

All high pressure process vessels and piping are installed above grade with the exception of a small amount of 2-inch glycol piping. This 2-inch line is externally coated and is welded utilizing schedule 80 pipe and weld fittings. Design pressure for this line is 1000 psig and it was hydrotested at 1500 psig. The line was doped and wrapped for external corrosion protection.

All pressure vessels in this plant are ASME Coded. All process piping was designed and fabricated per ASME/ANSI B31.3. All pressure piping welds 2-inch and larger were 100 percent x-rayed.

Critical areas in the high pressure gas piping have been inspected by ultrasonic thickness examination for corrosion. This will be repeated as needed. Mobile Inspection Services, Inc., 2104 River Road, Farmington, NM 87401, has been contracted to inspect the critical areas in the liquid process piping for corrosion.

3.1 Spill/Leak Prevention and Reporting

3.1.1 Operating Procedures

The Val Verde Plant is operated in a manner to prevent and mitigate any unplanned releases to the environment. The plant is manned 24 hours per day and 365 days per year including holidays. Plant process and storage units are regularly observed by a number of personnel during normal operation, and any evidence or sign of spill/leaks are routinely reported to supervisory personnel so that repairs or cleanup can be promptly performed. Routine maintenance procedures conducted at the Val Verde Plant also help to assure that equipment remains functional and that the possibility of spills/leaks is minimized.

If a spill/leak occurs, general cleanup procedures may involve minor earthwork to prevent migration, and recovery of as much free liquid as possible. Recovered fluids would then be transported off-site for recycling or disposal. Based on existing literature, analysis and regulatory guidelines, any contaminated soil will either be left in place, transferred to other existing waste-management areas, or transported off-site for proper disposal.

3.1.2 Spill/Leak Containment

To reduce the risk of spilled process fluids from contacting the ground surface, Val Verde Plant has constructed curbed concrete containment basins under process areas with a higher probability of a spill/leak (described in Section 2.3). Each of the containment basins either has a small open top sump or a drain to the general sump for that particular train. The small open top sumps are periodically cleaned and vacuumed out. Concrete curbing around process equipment is illustrated on the Facility Site Diagram, Figure 2.

Process pumps without concrete containment basins are equipped with seal pans for collecting seal or packing leakage. Drum storage and general storage of any equipment which may leak are placed inside a 20' x 20' curbed concrete area. Some equipment cleaning is also performed inside this area.

All above ground tanks are located within bermed areas with a capacity of at least 1.5 times the largest tank within each bermed area. A gravel pad is placed under each tank to assist in leak detection efforts.

3.1.3 Reporting

Should a release of materials occur, MOI will comply in accordance with provisions described in NMOCD Rule and Regulation #116.

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On-Site Disposal:

The Val Verde Plant does not conduct any on-site waste disposal, except for sewage, which is processed through an approved septic system. All other waste streams are taken off-site for recycling or disposal.

Off-Site Disposal:

The following table provides information about off-site disposal:

Waste Stream	Collection Method	Shipment Method	Final Disposition	Receiving Facility
Waste water	Aboveground Steel Tank with Containment	Truck See Note 1	Class II Injection Well	See Note 2
Unrecyclable process fluids	Aboveground Steel Tank with Containment	Truck See Note 1	Class II Injection Well	See Note 2
Caustic wash rinsate	Aboveground Steel Tank with Containment	Truck See Note 1	Class II Injection Well	See Note 2
Heat transfer oil	Aboveground Steel Tank with Containment	Truck See Note 1	Fuels Blending or Recycling	Safety-Kleen Corp. 1722 Cooper Creek Rd. Denton, TX 76208

Note 1. The trucking agent contracted to ship effluents off-site will be one of the following:

Dawn Trucking Co.	Chief Transport	Three Rivers Trucking	Sunco Trucking
318 Hwy. 64	604 W. Pinon	603 Murray Drive	708 S. Tucker Ave.
Farmington, New Mexico.	Farmington, New Mexico	Farmington, New Mexico	Farmington, New Mexico

Note 2. The off-site Disposal facility will be one of the following:

McGrath SWD #4	Basin Disposal	Sunco Disposal
Sec. 34, T-30-N, R-12-W	Sec. 3, T-29-N, R-11-W	Sec. 2, T-29-N, R-12-W
San Juan County	6 County Rd 5046	323 County Rd. 3500
New Mexico	Bloomfield, New Mexico	Farmington, New Mexico

5.0 SITE CHARACTERISTICS

Much of the information for the site characteristics of the Val Verde Plant was taken from two reports prepared by Buys and Associates, Inc. One report, dated September 11, 1990 (1990 Report), was written during the initial assessment of the Val Verde Plant before MOI purchased the property from South-Tex Treaters Inc. The second report, dated April 24, 1991 (1991 Report), is a groundwater monitoring and sampling report. The two Buys and Associates, Inc. reports are not attached to this discharge plan.

5.1 Surface water

Surface water near the Val Verde Plant consists of the San Juan river and a nearby irrigation canal named Citizens Ditch. Citizens Ditch runs from east to west and is approximately ½ mile south of the plant site. The San Juan river is approximately 1.5 miles south of the plant site.

5.2 Soils

The 1990 Report characterized the subsurface at the Val Verde Plant as clayey sand and silt, and silty clay and sand resting on top of the sandstone and mudstone units of the Naciemento Formation.

The sandstone and mudstone units only appear in the northern half of the plant site. It is thought that these units in the southern half of the plant were eroded away by what is now the San Juan River, and subsequently replaced with sediments eroded from the north and east.

Underling the plant site is an erosionally-resistant sandstone that was encountered during the drilling of monitoring wells in the area. This sandstone layer is thought to be the bedrock feature underling the Val Verde Plant site.

5.3 Groundwater

Groundwater levels were measured on March 11 and 12, 1991 by Buys and Associates, Inc. Depth to groundwater in the plant area was measured to range from 55.5 feet to 26.5 feet within the southern half of the plant site. No groundwater was encountered in the northern half of the plant site. No total dissolved solids (TDS) measurements were taken during the May 11 and 12, 1991 monitoring program at the Val Verde Plant (1991 Report).

Groundwater monitoring efforts at the El Paso Natural Gas (EPNG) Blanco Plant show the TDS in the groundwater to range from 5330 mg/l to 7620 mg/l. The EPNG Blanco Plant is directly adjacent to MOI's Val Verde Plant (See Figure 2).

6.0 FLOOD POTENTIAL

Flood hazard data for Val Verde Plant is limited to Flood Insurance Rating Maps (FIRM) from the Federal Emergency Management Association (FEMA). Val Verde Plant lies approximately 160 feet above the San Juan River. According to the FIRM maps for San Juan County, Val Verde Plant would not be threatened by flood from a 100 year storm event. Flood protection is not necessary.

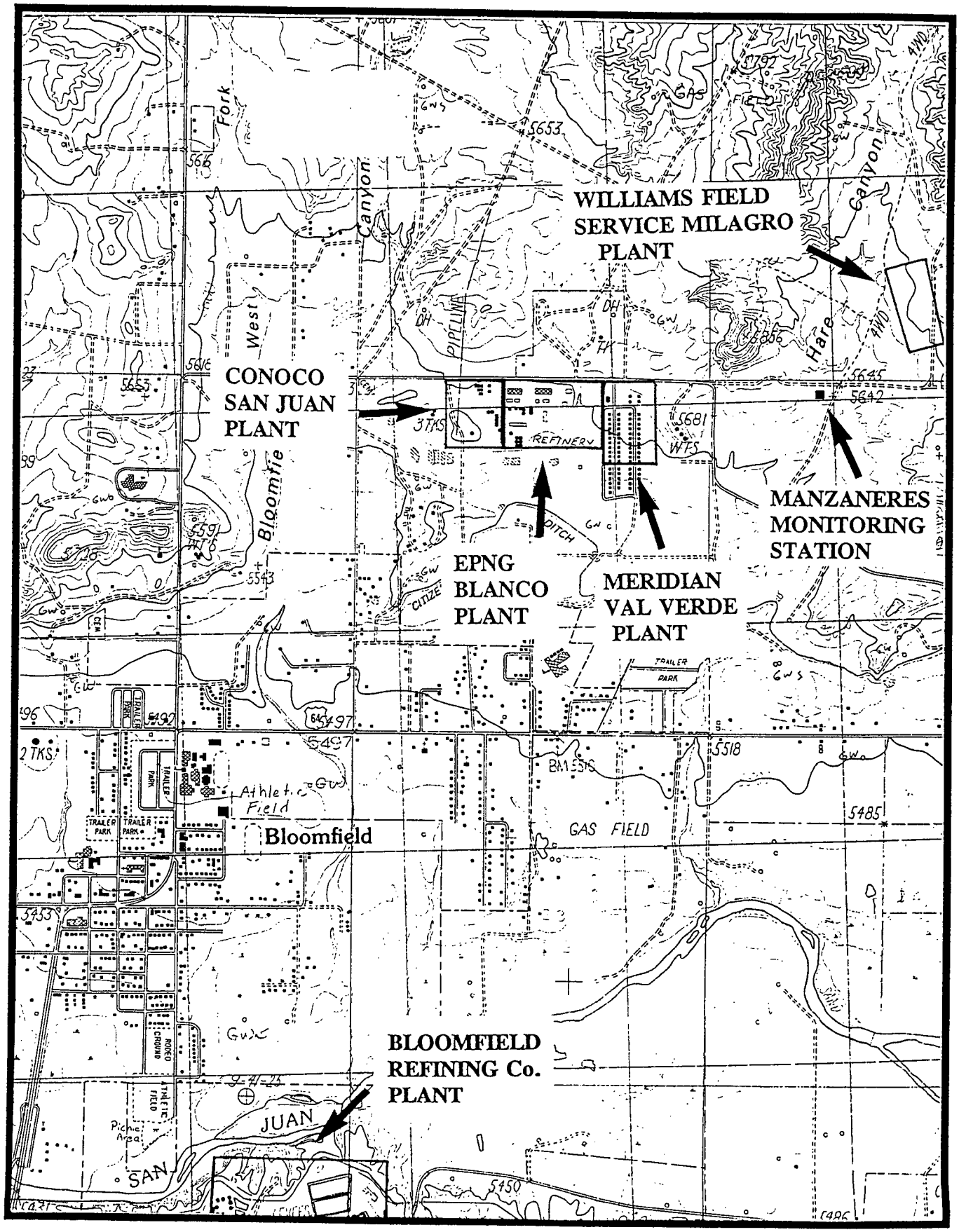


FIGURE 1: VAL VERDE SITE MAP

CONTOUR INTERVAL 20 FEET
SCALE 1:24 000

- EQUIPMENT HAS CONCRETE OR STEEL CONTAINMENT

GRID SQUARES = 100'-0"
DWG. SCALE: 1"=50'
T.H. RUSSELL CO. JOB NO. 427

PRINT DISTRIBUTION RECORD

REV.	DATE	P	F.A.	A	SHOP	FIELD	CUST.	VEND.	FILE	PURCH.	BID	PE	
4	1/17			✓		1	3	3	1				HP
6	10/15		✓*				3		1			1	HP
7	4/2			✓		5	4		1			1	[illegible]

* FOR TRAIN #8

PLOT DATE: 04-02-91
DWG. FILE: 427\VV1M0100.DWG

REVISIONS

REV.	DESCRIPTION
4	AFC
5	CHG'D LOC. OF CTL BLDG & PULL VAULT; ADD TRAIN 6; ADD V-4/5/6415, & V-5412 ADD TRAIN 1,2, & 3 FOR REFERENCE
6	ADDED TRAIN 7/8/9; CHG.D. DWG SCALE ISSUED FOR APPROVAL FOR TRAIN #8
7	REVISED TRAIN #8, ISSUED FOR TRAIN #8, A.F.C.

MERIDIAN OIL

VAL VERDE PLANT
TRAINS 4-8

PLOT PLAN
EQUIPMENT LAYOUT

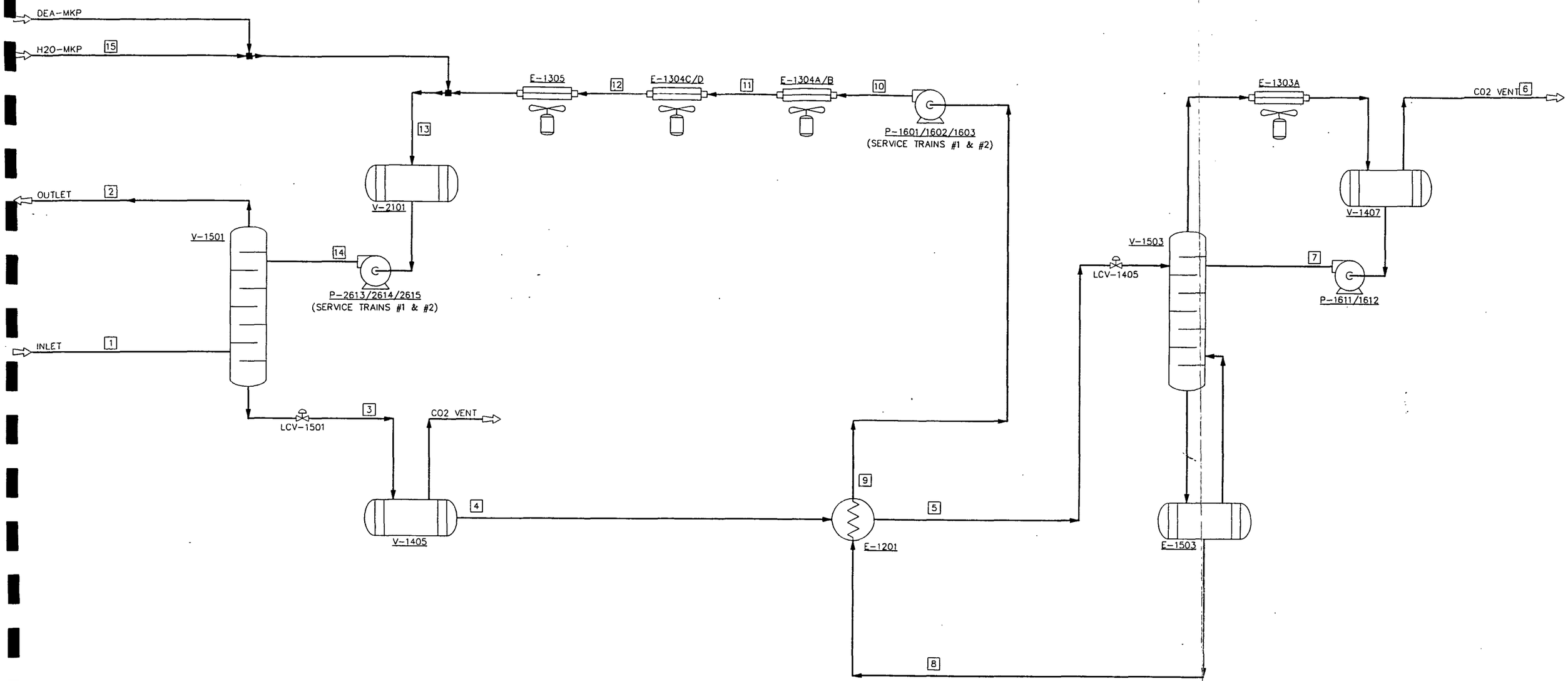
7

ENGINEERS	DATE	REVISED BY	DATE
[illegible]	10/17/89	ASHMORE	07-03-90
		JUDI	06-15-90
[illegible]		HDA	09-26-90
[illegible]	4/2/91	JUDI	03-06-91

FILE NO. VV-1-M0100

DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK.

V-1501 AMINE CONTACTORS	V-2101 AMINE SURGE TANK	P-2613/2614/2615 AMINE HI. PRESS. PUMPS (SERVICE TRAINS #1 & #2)	V-1405 AMINE FLASH TANK	E-1305 AMINE FINAL COOLER 5,600 MBTU/HR	E-1304C/D AMINE SOLUTION COOLER 7,500 MBTU/HR	E-1304A/B AMINE PRE-COOLER 8,300 MBTU/HR	P-1601/1602/1603 AMINE BOOSTER PUMPS (SERVICE TRAINS #1 & #2)	E-1201 LEAN/RICH AMINE EXCHANGER 6,800 MBTU/HR	V-1503 AMINE REGEN	E-1503 AMINE REGEN REBOILER 22,600 MBTU/HR	E-1303A AMINE REFLUX CONDENSER 3,900 MBTU/HR	V-1407 AMINE REFLUX ACCUMULATOR	P-1611/1612 AMINE REFLUX PUMPS



TRAIN #1

STREAM ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
TOTAL FLOW															
GPM	–	–	–	–	–	–	6.4	425	425	425	425	425	425	425	1.46
MMCF/D	35.0	31.2	–	–	–	4.1	–	–	–	–	–	–	–	–	–
LBMOL/HR	3843	3429	7480	7480	7480	454	177	7066	7066	7066	7066	7066	7066	7066	40
PRESSURE, PSIG	655	650	85	85	60	18	30	20	16	65	60	55	35	800	800
TEMPERATURE, DEG.F	75	120	178	178	211	120	120	255	222	222	183	147	120	120	120
COMPONENT FLOW, LBMOL/HR															
GAS SPEC CS+	–	–	1061.84	1061.84	1061.84	–	–	1061.84	1061.84	1061.84	1061.84	1061.84	1061.84	1061.84	–
WATER	1.85	10.48	5964.2	5964.2	5964.2	31.78	177.000	5972.84	5972.84	5972.84	5972.84	5972.84	5972.84	5972.84	40.5
CARBON DIOXIDE	434.16	17.14	448.87	448.87	448.87	417.01	0.001	31.86	31.86	31.86	31.86	31.86	31.86	31.86	–
METHANE	3407.79	3402.02	5.77	5.77	5.77	5.77	–	–	–	–	–	–	–	–	–

FIGURE 3a:

NOTE:

STREAM DATA IS FOR OPERATING CONDITIONS AFTER 93/94 ADDITIONS.

APP'D	MARK	REVISION	BY	DATE
	2	ISSUED FOR AS-BUILT	K.J.S.	9/24/93

REVIEWED BY: DESIGN ENGR. / PROJ. ENGR. / DIV ENGR. / PROD SUPT / CONST. SUPT / SAFETY REP.

RELEASED ONLY FOR:

	PROJ. ENGR.	DIV. ENGR.	DESIGN ENGR.	DATE
CHECKING				
PRELIMINARY				
BIDDING				
FABRICATION				
ERECTION				

MERIDIAN OIL

VAL VERDE GAS PLANT

TRAIN #1

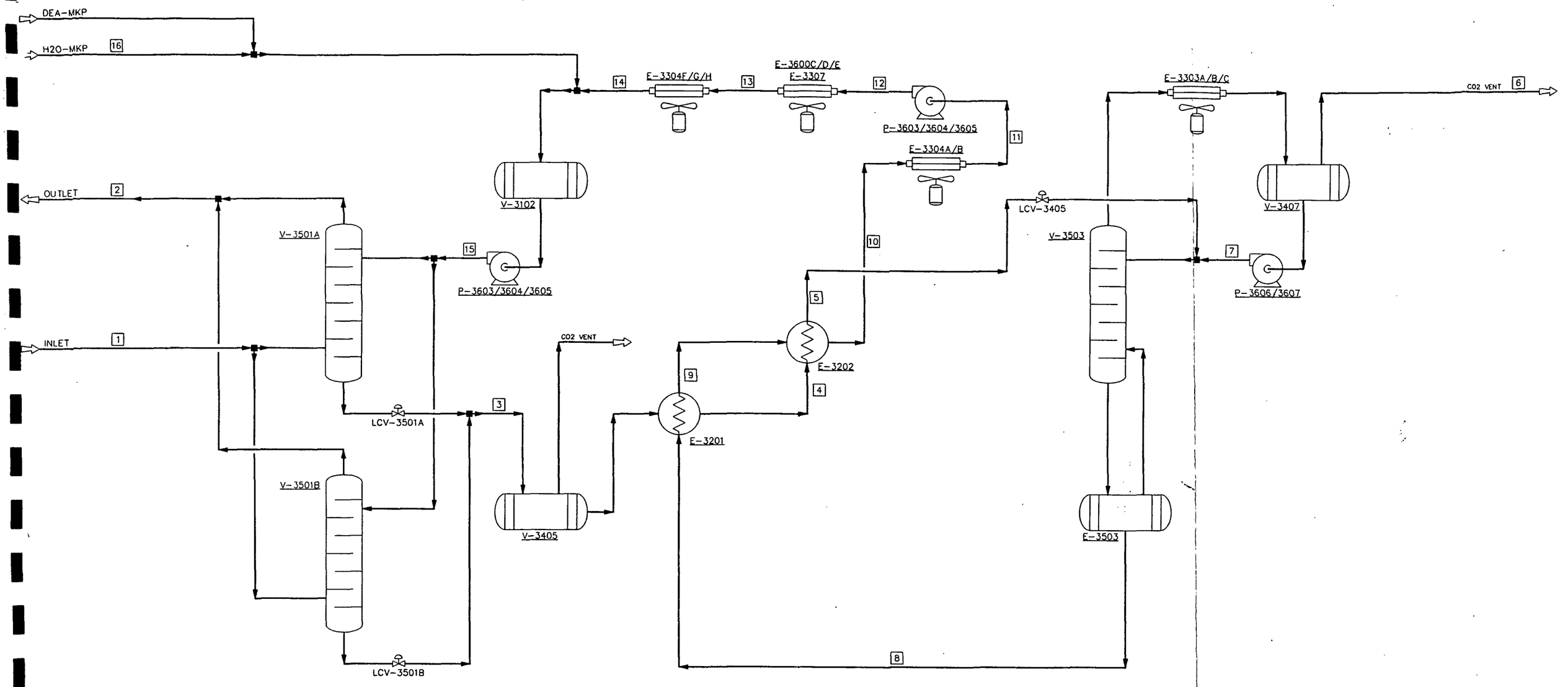
PROCESS FLOW DIAGRAM

DRAWN: Karen S | DATE: 08/24/90 | CHK'D: | DIV:

BCCK ENGINEERING, INC. MIDLAND, TEXAS

DWG. NO. VV-1-M1301 2

V-3501A/B	V-3102	P-3603/3604/3605	V-3405	E-3304C/D/E/F/G/H & E-3307	P-3600A/B/C	E-3304A/B	E-3202	E-3201	V-3503	E-3503	E-3303A/B/C	V-3407	P-3606/3607
AMINE CONTACTORS	AMINE SURGE TANK	AMINE HI. PRESS. PUMPS	FLASH TANK	AMINE SOLUTION COOLERS 36,300 MBTU/HR	AMINE BOOSTER PUMPS	AMINE PRE-COOLERS 5,000 MBTU/HR	FINAL L/R AMINE EXCHANGER 3,900 MBTU/HR	LEAN/RICH AMINE EXCHANGER 11,900 MBTU/HR	AMINE REGEN	AMINE REGEN REBOILER 48,600 MBTU/HR	AMINE REFLUX CONDENSER 8,900 MBTU/HR	AMINE REFLUX ACCUMULATOR	AMINE REFLUX PUMPS



TRAIN #3

STREAM ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TOTAL FLOW																
GPM	–	–	–	–	–	–	14.7	900	900	900	900	900	900	900	900	3.3
MMCF/D	80.0	71.3	–	–	–	9.4	–	–	–	–	–	–	–	–	–	–
LBMOL/HR	8785	7847	15995	15995	15995	1031	408	14964	14964	14964	14964	14964	14964	14964	14964	92
PRESSURE, PSIG	655	650	85	75	65	14	30	19	19	17	15	50	45	35	800	35
TEMPERATURE, DEG.F	75	120	175	202	211	120	120	255	228	219	207	207	140	120	120	120
COMPONENT FLOW, LBMOL/HR																
GAS SPEC CS+	–	–	2248.61	2248.61	2248.61	–	–	2248.61	2248.61	2248.61	2248.61	2248.61	2248.61	2248.61	2248.61	–
WATER	4.22	23.98	12720.99	12720.99	12720.99	72.63	408.000	12648.36	12648.36	12648.36	12648.36	12648.36	12648.36	12648.36	12648.36	91.63
CARBON DIOXIDE	992.36	39.19	1020.63	1020.63	1020.63	953.17	0.003	67.46	67.46	67.46	67.46	67.46	67.46	67.46	67.46	–
METHANE	7789.23	7783.88	5.35	5.35	5.35	5.35	–	–	–	–	–	–	–	–	–	–

FIGURE 3b:

NOTE:

STREAM DATA IS FOR OPERATING CONDITIONS AFTER 93/94 ADDITIONS.

APP'D	MARK	REVISION	BY	DATE
	2	ISSUED FOR AS-BUILT	K.J.S	9/24/93

REVIEWED BY: DESIGN ENGR. / PROJ. ENGR. / DIV. ENGR. / PROD. SUPT. / CONST. SUPT. / SAFETY REP.

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FABRICATION				
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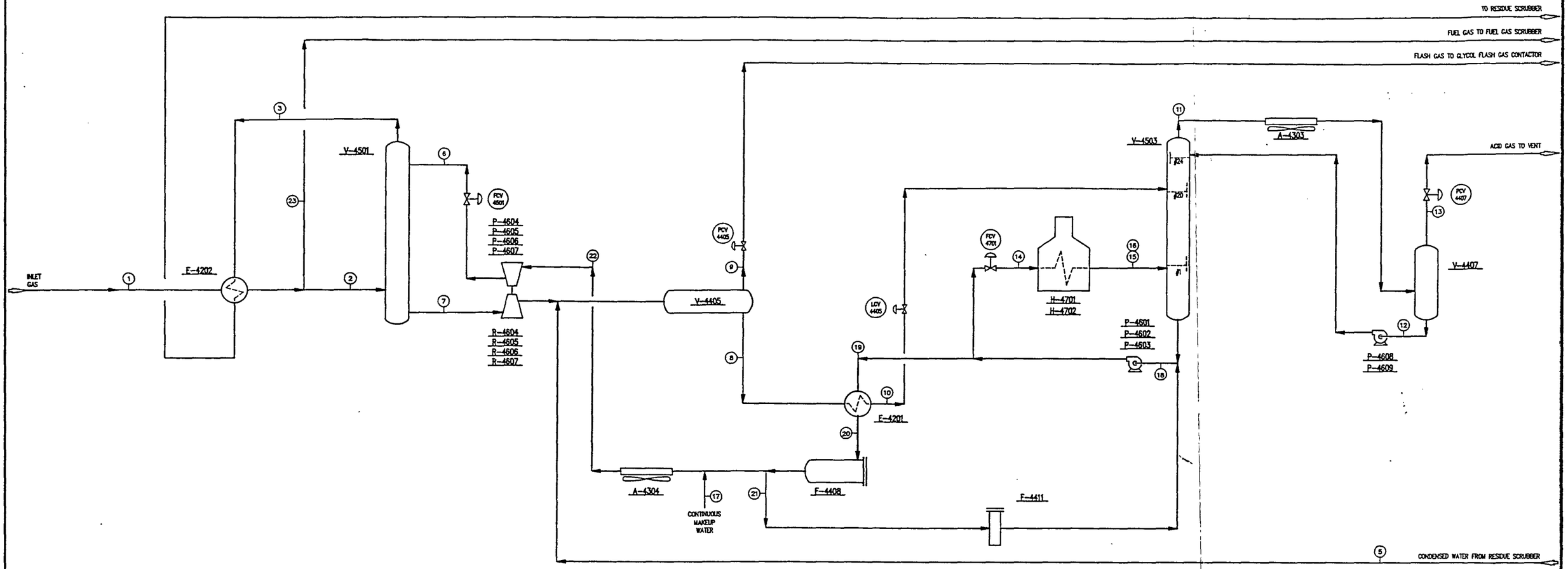
MERIDIAN OIL
VAL VERDE GAS PLANT
PROCESS FLOW DIAGRAM

DRAWN: Karen S | DATE: 08/24/90 | CHK'D: | DIV:

BCCK ENGINEERING, INC. MIDLAND, TEXAS

DWG. NO. VV-1-M3301 2

F-4202 UNTREATED/TREATED GAS EXCHANGER 3400 MBTU/HR
V-4501 GAS CONTACTOR
R-4604/5/6/7 POWER RECOVERY TURBINES
P-4604/5/6/7 AMINE CIRCULATION PUMPS 431 GPM EACH
A-4304 AMINE COOLER 43957 MBTU/HR
V-4405 AMINE FLASH TANK
F-4408 AMINE FILTER
F-4201 AMINE/AMINE EXCHANGER 34074 MBTU/HR
F-4411 AMINE CHARCOAL FILTER
P-4601/2/3 AMINE BOOSTER PUMPS 1466 GPM EACH
V-4503 AMINE STILL/SURGE
A-4303 STILL REFLUX COND. 29297 MBTU/HR
H-4701/2 AMINE REBOILER 78974 MBTU/HR
P-4604/5 REFLUX PUMPS 56 GPM EACH
V-4407 AMINE STILL REFLUX ACCUMULATOR



STREAM NUMBER	1	2	3	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	STREAM NUMBER
DESCRIPTION	INLET GAS	GAS TO AMINE CONTACTOR	AMINE CONTACTOR OHD	LEAN AMINE TO CONTACTOR	RICH AMINE FROM CONTACTOR	RICH AMINE FROM FLASH TANK	FLASH TANK VAPORS	RICH AMINE FROM AMINE EXCHANGER	AMINE STILL OHD VAPOR	AMINE STILL REFLUX LIQUID	ACID GAS TO VENT	AMINE TO REBOILER	AMINE VAPOR FROM REBOILER	LIQUID FROM REBOILER	MAKE-UP WATER	LEAN AMINE FROM SURGE	LEAN AMINE TO AMINE EXCHANGER	LEAN AMINE FROM AMINE EXCHANGER	LEAN AMINE TO CHARCOAL FILTER	LEAN AMINE TO COOLER	FUEL GAS	DESCRIPTION
TEMPERATURE (F.)	80.00	108.6	130.00	115.00	170.12	168.71	168.71	213.00	206.07	120.00	120.00	239.83	241.95	241.95		239.83	239.83	189.23	189.23	189.23	108.6	TEMPERATURE (F.)
PRESSURE (PSIA)	700.00	695	695.00	700.00	695.00	75.00	75.00	70.00	21.80	16.80	18.80	53.80	23.80	23.80		53.80	53.80	43.80	43.80	43.80	695	PRESSURE (PSIA)
MASS FLOW (LB/HR)	244809	239380	185789.44	666714	720229	718257	1972.76	718257	79756	25434	54323	750072	82741	667331		1510900	760836	760836	94122	666714	5429	MASS FLOW (LB/HR)
MMCFD (14.7 PSIA & 60F.)	117.59	114.98	103.96				0.528		24.69		11.86		41.50								2.607	MMCFD (14.7 PSIA & 60F.)
LIQ. VOL. FLOW (GPM, 60F.)				1294	1425	1419				50.9		1456		1290	4.82	2932	1476	1476	182.6	1294		LIQ. VOL. FLOW (GPM, 60F.)
DENSITY (LB/CF)	2.29	2.16	1.79	65.23	68.59	68.59	0.38	15.49 ◆	0.09	65.72	0.13	65.23	0.06	65.53		65.23	65.23	65.23	65.23	65.23	2.16	DENSITY (LB/CF)
MOL WT.	18.94	18.94	16.26	25.41	26.24	26.22	33.98	26.22	29.38	18.03	41.66	25.41	18.13	26.74		25.41	25.41	25.41	25.41	25.41	18.94	MOL WT.
CO2 (MOLS/HR)	1318.23	1288.98	65.10	45.85	1266.16	1229.25	36.91	1229.25	1186.64	0.60	1106.04	51.58	18.61	32.97	0	103.90	52.32	52.32	6.47	45.85	29.25	CO2 (MOLS/HR)
DEA (MOLS/HR)	0.00	0.00	0.00	2212.71	2212.65	2212.65	0.00	2212.65	0.07	0.07	0.00	2489.36	0.53	2488.83	0	5014.44	2525.08	2525.08	312.37	2212.71	0.00	DEA (MOLS/HR)
TEG (MOLS/HR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	TEG (MOLS/HR)
H20 (MOLS/HR)	3.46	3.39	42.00	23978.91	23953.01	23948.79	4.22	23948.79	1527.08	1409.70	117.38	26976.96	4543.57	22433.39	133.87	54341.05	27364.09	27364.09	3385.18	23978.91	.07	H20 (MOLS/HR)
C1 (MOLS/HR)	11566.79	11310.31	11284.06	0.00	17.51	0.62	16.89	0.62	0.62	0.00	0.62	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	256.48	C1 (MOLS/HR)
C2 (MOLS/HR)	38.77	37.92	37.82	0.00	0.06	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0.00	0.00	0.00	.85	C2 (MOLS/HR)
TOTAL	12927.24	12640.59	11429.00	26237.47	27448.38	27391.31	58.06	27391.31	2714.41	1410.37	1304.04	29.517.89	4562.71	24955.18	133.87	59458.38	29941.49	29941.49	3704.02	26237.47	286.65	TOTAL

◆ = TWO PHASE

FIGURE 3c:

PRINT DISTRIBUTION RECORD

REV.	DATE	P	F.A.	A	SHOP	FIELD	CUST.	VOGT	FILE	PURCH.

REVISIONS

REV.	DESCRIPTION

PLOT DATE: 03-20-90
DWG. FILE: 427\W1M4221.DWG

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 4

PROCESS FLOW DIAGRAM
AMINE - SUMMER CONDITIONS

A

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
		ASHMORE	03-03-90	W-1-M4221

DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK

V-2572/3572 GLYCOL CONTACTORS

P-1614/1615/1616 GLYCOL HI. PRESS. PUMPS 5 BHP EACH

V-1573 GLYCOL FLASH TANK

E-1371A/B GLYCOL COOLERS 579 MBTU/HR

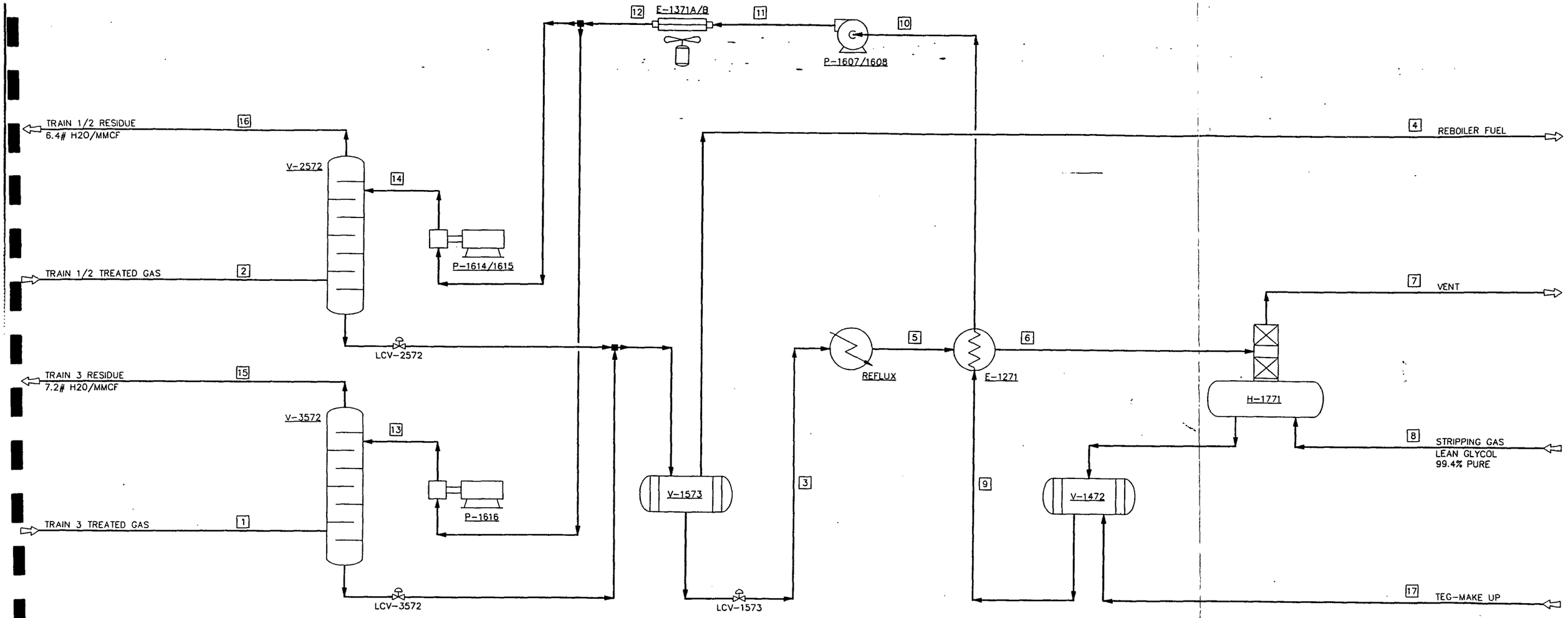
P-1607/1608 GLYCOL PUMPS 0.5 BHP EACH

E-1271 LEAN/RICH GLYCOL EXCHANGER 816 MBTU/HR

REFLUX CONDENSER 275 MBTU/hR

V-1472 SECONDARY SURGE TANK

H-1771 GLYCOL REBOILER 1,360 MBTU/HR



GLYCOL UNIT

STREAM ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
TOTAL FLOW																	
GPM	–	–	18	–	18	–	–	–	16.5	16.5	16.5	16.5	8.3	8.3	–	–	0.007
MMCF/D	71.2	62.6	–	0.014	–	–	0.478	0.100	–	–	–	–	–	–	71	62.4	–
LBMOL/HR	7820	6873	106	1.6	106	106	53	10.8	64.7	64.7	64.7	64.7	32.4	32.4	7796	6852	–
PRESSURE, PSIG	650	650	38	38	33	28	5	8	5	5	18	16	738	738	633	633	5
TEMPERATURE, DEG.F	120	120	125	125	171	300	208	95	367	228	228	120	120	120	124	124	100
COMPONENT FLOW, LBMOL/HR																	
GAS SPEC CS+	–	–	61.60	–	61.60	61.60	–	–	61.60	61.60	61.60	61.60	30.80	30.80	0.01	0.01	0.03
WATER	23.30	20.70	44.60	0.02	44.60	44.60	41.60	–	3.00	3.00	3.00	3.00	1.50	1.50	1.18	0.92	–
CARBON DIOXIDE	19.50	17.10	0.04	0.04	0.04	0.04	0.09	0.05	–	–	–	–	–	–	38.94	34.22	–
METHANE	7777.20	6835.20	0.13	1.49	0.13	0.13	10.90	10.80	0.04	0.04	0.04	0.04	0.02	0.02	7755.87	6816.85	–

FIGURE 4a:

NOTE:
STREAM DATA IS FOR OPERATING CONDITIONS AFTER 93/94 ADDITIONS.

APP'D	MARK	REVISION	BY	DATE
	2	ISSUED FOR AS-BUILT	K.J.S.	9/24/93

REVIEWED BY: DESIGN ENGR. / PROJ. ENGR. / DIV. ENGR. / PROD. SUPT. / CONST. SUPT. / SAFETY REV.

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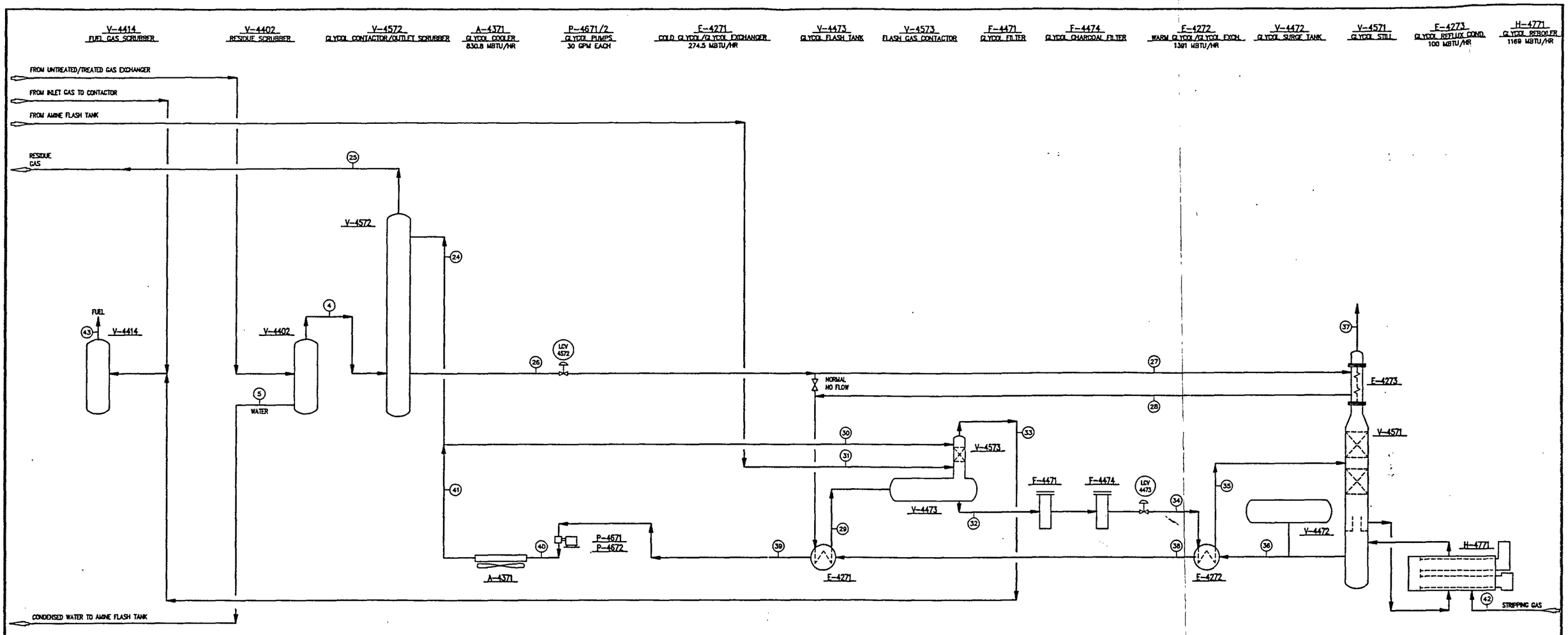
PRELIMINARY				
BIDDING				
FABRICATION				
ERECTION				

MERIDIAN OIL
VAL VERDE GAS PLANT
TRAIN #1, #2 & #3
GLYCOL PROCESS FLOW DIAGRAM

DRAWN: Karen S | DATE: 08/24/90 | CHK'D: | DIV:

BCCK ENGINEERING, INC. MIDLAND, TEXAS

DWG. NO. VV-1-M1310 2



STREAM NUMBER	4	5	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	STREAM NUMBER
DESCRIPTION	TEG CONTACTOR INLET	CONDENSED WATER	LEAN TEG TO CONTACTOR	CONTACTOR OHD	RICH TEG FROM CONTACTOR	RICH TEG TO REFLUX CONDENSER	RICH TEG FROM REFLUX CONDENSER	RICH TEG FROM COLD GLYCOL EXCH.	LEAN TEG TO FLASH CONTACTOR	AMINE FLASH VAPOR	RICH TEG FROM FLASH TANK	FLASH CONTACTOR OHD	RICH TEG TO WARM GLYCOL EXCH.	RICH TEG FROM WARM GLYCOL EXCH.	LEAN TEG FROM REBOILER	TEG STILL OHD	LEAN TEG FROM WARM GLYCOL EXCH.	LEAN TEG FROM COLD GLYCOL EXCH.	LEAN TEG TO COOLER	LEAN TEG FROM COOLER	GLYCOL REBOILER STRIPPING GAS	TOTAL FUEL GAS	DESCRIPTION
TEMPERATURE (F.)	102.02	102.02	115	105.55	104.82	112.12	127.2	167	115	168.71	173.27	150.02	171.97	310	400	204.15	255.16	222.89	203.6	115	105	115	TEMPERATURE (F.)
PRESSURE (PSIA)	690	690	685	685	690	75	70	65	685	70	66	65	20	15	14.8	14.7	14.8	14.55	690	685	15.3	65	PRESSURE (PSIA)
MASS FLOW (LB/HR)	185392	398	15115	185016	15467	15467	15467	15467	2011	1973	17658	1791	17658	17658	17125	533	17125	17125	17125	17125		6366	MASS FLOW (LB/HR)
MMCFD (14.7 PSIA & 60F.)	103.76			103.57						0.528		0.482				0.223						3.072	MMCFD (14.7 PSIA & 60F.)
LIQ. VOL. FLOW (GPM, 60F.)		0.8	26.8		27.7				3.56		31.5				30.3		30.3	30.3	30.3	30.3			LIQ. VOL. FLOW (GPM, 60F.)
DENSITY (LB/CF)	1.86	62.22	69.25	1.99	69.05	40.38 *	38.36 *	35.16 *	69.25	0.35	67	0.34	17.2 *	2.49 *	59.67	0.04	64.73	65.69	66.86	69.25	.022	2.24	DENSITY (LB/CF)
MOL WT.	16.25	18.02	141.09	16.25	121.07	122.15	122.15	122.15	141.10	33.97	121	33.8	121	121	141.09	21.69	141.09	141.09	142.87	141.09	16.24	20.2	MOL WT.
CO2 (MOLS/HR)	65.09	0	0	64.93	0.16	0.16	0.16	0.16	0	36.91	3.48	33.59	3.48	3.48	0	3.48	0	0	0	0	64.92	62.84	CO2 (MOLS/HR)
DEA (MOLS/HR)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	DEA (MOLS/HR)
TEG (MOLS/HR)	0	0	99.77	0.01	99.77	99.77	99.77	99.77	0.98	0	113.04	0	113.04	113.04	113.04	0	113.04	113.04	113.04	113.04	0	0	TEG (MOLS/HR)
H20 (MOLS/HR)	19.95	22.05	7.36	1.48	24.50	24.50	24.50	24.50	13.27	4.22	29.3	0.38	29.3	29.3	8.33	20.97	8.33	8.33	8.33	8.33	1.48	.45	H20 (MOLS/HR)
C1 (MOLS/HR)	11284.05	0.02	0	11281.89	2.16	2.16	2.16	2.16	0	16.89	0.09	18.95	0.09	0.09	0	0.09	0	0	0	0	11281.89	275.43	C1 (MOLS/HR)
C2 (MOLS/HR)	37.82	0	0	37.80	0.02	0.02	0.02	0.02	0	0.05	0.01	0.06	0.01	0.01	0	0.01	0	0	0	0	37.8	.91	C2 (MOLS/HR)
TOTAL	11406.92	22.07	107.13	11386.11	126.62	126.62	126.62	126.62	14.25	56.06	145.93	52.98	145.93	145.93	121.37	24.56	121.37	121.37	121.37	121.37	11386.1	339.64	TOTAL

* = TWO PHASE

FIGURE 4b:

PRINT DISTRIBUTION RECORD

REV.	DATE	P	FA	A	SHOP	FIELD	CUST.	VOGT	FILE	PUNCH

REVISIONS

REV.	DESCRIPTION

PLOT DATE: 03-20-90
DWG. FILE: 427\VV1M4221.DWG

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 4

PROCESS FLOW DIAGRAM
GLYCOL - SUMMER CONDITIONS

A

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
		ASHMORE	03-03-90	VV-1-M4222

DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK.

E-5202	V-5402	V-5501	V-5422	P-5616	P-5604	P-5605	P-5606	P-5607	V-5405
UNTREATED/TREATED GAS EXCHANGER 3152.8 MBTU/HR 30-168 - API 950 PSI D.P. @ 150°F - SHELL 950 PSI D.P. @ 175°F - TUBE	RESIDUE SCRUBBER 66" ID x 12'-0" S/S 950 PSI D.P. @ 250 °F	GAS CONTACTOR 90" ID x 56'-0" S/S 950 PSI D.P. @ 250 °F	ANTI-FOAM TANK 12 3/4" O.D. x 4'-0" S/S 14 PSIG @ 150°F	CHEMICAL INJECTION PUMP 1.5 GPH @ 1000 PSID 1/8 HP MOTOR	AMINE CIRCULATION PUMP 448 GPM @ 1632 FT. TDH 350 H.P. MOTOR W/ PELTON TURBINE 181 R HP	AMINE CIRCULATION PUMP 448 GPM @ 1632 FT. TDH 350 H.P. MOTOR	AMINE CIRCULATION PUMP 448 GPM @ 1632 FT. TDH 350 H.P. MOTOR	AMINE CIRCULATION PUMP 448 GPM @ 1632 FT. TDH 350 H.P. MOTOR	AMINE FLASH TANK 90" ID x 24'-0" S/S 150 PSI D.P. @ 200 °F

TYPICAL ALL SHEETS

- (AD) AMINE DRAIN (SEE SHT. 8-M5201)
- (WW) WASTE WATER DRAIN (SEE SHT. 8-M5201)
- (V) VENT HEADER (SEE DWG. W-3-M4804)
- (GD) GLYCOL DRAIN (SEE SHT. 8-M5201)
- (LO) LOCK OPEN
- DISTRIBUTIVE CONTROL SYSTEM
- (P) PRESSURE POINT, 3/4"VII W/ PLUG
- (S) SAMPLE POINT, 1"VII W/ PLUG
- (C) CORROSION COUPON, 2" NPT W/VALVE

* ITEMS PROVIDED AND INSTALLED BY MERIDIAN OIL CO.

** ITEMS PROVIDED AND INSTALLED BY MERIDIAN OIL CO., SPECIFIED BY T.H.R. CO.

PLOT DATE: 03-15-90
DWG. FILE: 433\W3M5201.DWG

PRINT DISTRIBUTION RECORD

REV.	SHT.	P	F.A.	A	B-SEP	FIELD	CUST.	VESSEL	PILE	FUSION	PE	
0	1/28					1	3	2				AL
1	2/5			✓	5	2	5	3			1	GL

REVISIONS

REV.	DESCRIPTION
0	AFC
1	ADDED 3"HL NOTES TO AMINE CIRC. PUMP LINES
2	GENERAL REVISION

T.H. RUSSELL CO. JOB NO. 433

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 5

MECHANICAL FLOW SHEET
AMINE CONTACTOR

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
ABA	11-14-89	ASHAKOR	10-31-89	W-3-M5201
		JDS	01-31-90	
		JDS	03-15-90	
				DRAFTED BY
				T.H. RUSSELL CO. TULSA, OK.

A-5304A/B/C/D
AMINE COOLER
46,999.0 MBTU/HR
100 PSI D.P. @ 225°F
8/(4) 30 HP MOTORS AND
(4) 30 / 7.5 HP 2 SPEED MOTORS

F-5408
AMINE FILTER
54"OD x 8'-2" S/S
100 PSI D.P. @ 225 °F

F-5411
AMINE CHARCOAL FILTER
66" ID x 12'-0" S/S
100 PSI D.P. @ 225 °F
8' BED

V-5503
AMINE STILL/SURGE TANK
108" ID x 84'-0" S/S
50 PSI D.P. @ 350 °F

A-5303A/B
STILL REFLUX CONDENSER
2,969.0 MBTU/HR
50 PSI D.P. @ 275°F
8/(2) 30 HP MOTORS
AND (2) 30/7.5 HP 2 SPEED MOTORS

V-5407
STILL REFLUX ACCUMULATOR
48" ID x 12'-0" S/S
50 PSI D.P. @ 350 °F

P-5608
STILL REFLUX PUMP
85 GPM @ 110 FT. TDH
10 H.P. MOTOR

P-5609
STILL REFLUX PUMP
85 GPM @ 110 FT. TDH
10 H.P. MOTOR

F-5201A/B/C
AMINE/AMINE EXCHANGER
37,331 MBTU/HR
(2) 37 x 240 - AES
150 PSI D.P. @ 275°F - SHELL
150 PSI D.P. @ 275°F - TUBE
TEMA C

P-5601
AMINE BOOSTER PUMP
1524 GPM @ 63 FT. TDH
50 H.P. MOTOR

P-5602
AMINE BOOSTER PUMP
1524 GPM @ 63 FT. TDH
50 H.P. MOTOR

P-5603
AMINE BOOSTER PUMP
1524 GPM @ 63 FT. TDH
50 H.P. MOTOR

T.H. RUSSELL CO. JOB NO. 433

PRINT DISTRIBUTION RECORD

REV.	DATE	P	P.A.	A	SHOP	FIELD	CUST.	VENDR	FILE	PURCH.	RE	
0	1/28											AL
1	2/5			✓	5	5	5	5	1		1	QA

REVISIONS

REV.	DESCRIPTION
0	APC
1	GENERAL REVISION
2	GENERAL REVISION

PLOT DATE: 03-15-90
DWG. FILE: 433\VW3M5202.DWG

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 5
MECHANICAL FLOW SHEET
AMINE REGENERATION

2

ENGINEER	DATE	REVISED BY	DATE	FILE NO.
APC	11-14-89	ASHMORE	11-6-89	VW-3-M5202
		JRD	01-18-90	
		JRD	03-15-90	

DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK.

V-5414
FUEL GAS SCRUBBER
16" OD x 8'-0" S/S
250 PSI D.P. @ 150°F

H-5701
AMINE REBOILER
40.8 MMBTU/HR
50 PSI D.P. @ 400°F

H-5702
AMINE REBOILER
40.8 MMBTU/HR
50 PSI D.P. @ 400°F

NOTE:
RETURN LINE FROM H-5701 AND H-5702 TO V-5503 TO BE LEVEL (NO ELEV. CHANGES) AND MINIMUM DISTANCE.

TO V-5503 SHT. 3-M5202 — 5138-A-24" SR
FROM P-5801/2/3 SHT. 3-M5202 — 5134-A-8"SR
FROM P-5801/2/3 SHT. 3-M5202 — 5133-A-8"SR

TO CAL-5902 (AGA FLOW CALCULATED) SHT. 3-M5201

OFF INLET EXCH. SKID SKID

TO V-5405 SHT. 3-M5201 — 5312-F-1" SR

FROM LINE 5003-F-2" SR — 5300-F-2" SR — SENSOR RUN

FROM V-5573 SHT. 5-M5201 — 5225-A-3" SR

OFF INLET SKID SKID

AMINE UNIT S.D.

TO PCV-5503 SHT. 3-M5202 — 5314-A-2"

2" FUEL TO GENERATOR TO SHT. 3-M4204

FROM PLANT S.D.

H-5701 LOCAL CONTROL PANEL

H-5702 LOCAL CONTROL PANEL

FROM FIC-5604 SHT. 3-M5201

TO BURNERS #2 - #8

H-5701 FIRING CONTROL

H-5702 FIRING CONTROL

VENT TO ATMOSPHERE

BURNER #1

5135-A-16"SR — 18" V11-347

5136-A-16"SR — 18" V11-350

5305-A-3" — 5306-A-1" — 5304-A-3" — 5308-A-4" — 5309-A-3" — 5310-A-1" — 5311-A-2" — 5303-A-4" — 5302-A-4" — 5301-A-4"

TO H-5771 SHT. 4-M5201

T.H. RUSSELL CO. JOB NO. 433

PRINT DISTRIBUTION RECORD

REV.	DATE	P	P/A	A	SHOP	FIELD	ELEC.	VEND.	FILE	PURCH.	PE	AL	GL
0	1/26					1	3	3					
1	2/5			✓	5	2	5	3	1		1		

REVISIONS

REV.	DESCRIPTION
0	AFC
1	GENERAL REVISION
2	GENERAL REVISION

PLOT DATE: 03-15-90
DWG. FILE: 433\W3M5203.DWG

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 5
MECHANICAL FLOW SHEET
AMINE REBOILERS

2

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
APPR.	11-14-89	ASHORE	11-01-89	W-3-M5203
		JDD	01-31-90	
		JDD	03-12-90	
				DRAFTED BY
				T.H. RUSSELL CO. TULSA, OK.

V-5572	V-5473	V-5573	F-5471	F-5474	F-5273	V-5571	H-5771	A-5371
GLYCOL CONTACTOR/OUTLET SCRUBBER	FLASH TANK	FLASH GAS CONTACTOR	RICH TEG FILTER	GLYCOL CHARCOAL ABSORBER	GLYCOL REFLUX-CONDENSER	GLYCOL STILL COLUMN	GLYCOL REBOILER	GLYCOL COOLER
72" ID x 36'-6" S/S	24" OD x 10'-0" S/S	10.75" OD x 12'-0" S/S	14" OD x 60" OAH	36" OD x 8'-0" S/S	122.3 MBTU/HR	20" OD x 16'-8" S/S	2083.0 MBTU/HR	1,109.2 MBTU/HR
950 PSI D.P. @ 150 °F	150 PSI D.P. @ 200 °F	150 PSI D.P. @ 200 °F	150 PSI D.P. @ 200 °F	150 PSI D.P. @ 200 °F	10-60 - BC-	14 PSI D.P. @ 450 °F	14 PSI D.P. @ 450°F	850 PSI D.P. @ 250°F
				30 GPM	150 PSI D.P. @ 400 °F - SHELL		3 HP BLOWER MOTOR	W/ (2) 10 / 2.5 HP 2 SPEED MOTORS
					14 PSI D.P. @ 400 °F - TUBE			

FUEL GAS TO V-5414 SHT. 3-M5203 — 5225-A-3" SR

FROM V-5405 SHT. 3-M5201 — 5140-A-2" SR

TO RESIDUE HEADER SHT. 3-M5201 — 5007-F-10"

TREATED GAS FROM V-5402 SHT. 3-M5201 — 5008-F-10" SR

5220-F-2" · 5219-F-2" · 5218-F-2" · 5223-F-1" · 5225-A-3"SR · 5204-A-2" · 5203-A-2" · 5211-A-2" · 5213-A-3" · 5214-A-8" DO NOT POCKET LINE · 5212-A-3" STEAM OUTLET · 5222-A-1" · 5227-F-1" · 5311-A-3" · 5201-F-2" SR · 5202-A-2" · 5205-A-2" · 5206-A-3" · 5207-A-2" · 5208-A-2" · 5209-A-3" · 5216-A-4" · 5217-A-3" · 5218-F-2" · 5221-A-4" · 5226-A-2" EQUALIZING LINE · 5433-A-1.5" GLYCOL MAKE-UP SEE SHT. 8-M5201

V-5572 · V-5573 · V-5473 · F-5471 · F-5474 · F-5273 · V-5571 · H-5771 · A-5371 · V-5472 · F-5272 · F-5271 · P-5671 · P-5672

WITH WARM AIR RECIRCULATION · LOW PT. DRAIN · HEATER ALARM · LOCAL CONTROL PANEL · 3' OF .625"ø PALL RINGS · 6' OF 1.5" PALL RINGS · GLYCOL REGEN. OFF SKID · GLYCOL OFF FLASH TNK SKID · GLYCOL REGEN OFF SKID · GLYCOL FLASH TNK OFF SKID · FUTURE SPARGER · THERMAL 1" x 1" SET @ 50 PSIG · 3/4" x 1" SET @ 150 PSIG · 1" SET @ 100 PSIG · 0.75" x 1" SET @ 850 PSIG · 5/8"ø PACKING · N2 PURGE · VENT · 2" V33-452 · 1" V11-482 · N2 PURGE TO DRAIN TEG PURGE · 1" V11-483 · 1" V11-463 · 1" V11-403 · 1" V11-404 · 1" V11-460 · 1" V11-459 · 1" V11-458 · 1" V11-448 · 1" V11-446 · 1" V11-445 · 1" V11-439 · 1" V11-438 · 1" V11-437 · 1" V11-435 · 1" V11-434 · 1" V11-433 · 1" V11-432 · 1" V11-431 · 1" V11-430 · 1" V11-429 · 1" V11-428 · 1" V11-427 · 1" V11-423 · 1" V11-422 · 1" V11-421 · 1" V11-420 · 1" V11-419 · 1" V11-418 · 1" V11-417 · 1" V11-416 · 1" V11-415 · 1" V11-414 · 1" V11-413 · 1" V11-412 · 1" V11-411 · 1" V11-410 · 1" V11-409 · 1" V11-408 · 1" V11-407 · 1" V11-406 · 1" V11-405 · 1" V11-404 · 1" V11-403 · 1" V11-402 · 1" V11-401

* = BY BURNER MFG.

30 GPM GLYCOL DEHY.

V-5472	P-5671	P-5672
GLYCOL SURGE TANK	GLYCOL PUMP	GLYCOL PUMP
48" OD x 20'-0" S/S	33 GPM @ 900PSID	33 GPM @ 900PSID
14PSI D.P. @ 450 °F	30 H.P. MOTOR	30 H.P. MOTOR

F-5271	F-5272
COLD GLYCOL/GLYCOL EXCHANGER	WARM GLYCOL / GLYCOL EXCHANGER
61.1 MBTU/HR	1784.6 MBTU/HR
8-192 BDM - - -	17 x 218 - ACS
50 PSI D.P. @ 250°F - SHELL	50 PSI D.P. @ 450°F - SHELL
150 PSI D.P. @ 200°F - TUBE	150 PSI D.P. @ 350°F - TUBE

T.H. RUSSELL CO. JOB NO. 433

PRINT DISTRIBUTION RECORD

REV.	DATE	P	P.A.	A	BMP	PBLD	BMC	VDAS	PLC	PURCH	PL	
0	1/28					1	3	3	1			AL
1	2/5			✓	5	2	5	3	1		1	Q

REVISIONS

REV.	DESCRIPTION
0	AFC
1	GENERAL REVISION
2	ADDED PCV-5771C AND GENERAL REVISION

PLOT DATE: 03-16-90
DWG. FILE: 433/W4M5201.DWG

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 5
MECHANICAL FLOW SHEET
GLYCOL UNIT

2

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
JOB	11-6-89	ASHMORE	11-06-89	W-4-M5201
		JCH	01-31-90	
		JCH	03-16-90	DRAFTED BY

T.H. RUSSELL CO.
TULSA, OK.

P-5613A
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 78 FT. TDH
2 H.P. MOTOR

P-5613B
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 78 FT. TDH
2 H.P. MOTOR

P-5613C
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 78 FT. TDH
2 H.P. MOTOR

P-5614
AMINE/WATER MAKEUP/FILL PUMP
108 GPM @ 78 FT. TDH
7.5 H.P. MOTOR

P-5617
AMINE RECHARGE PUMP
108 GPM @ 78 FT. TDH
7.5 H.P. MOTOR

T-5415
WATER MAKE-UP TANK
210 BBL
10' DIA. x 15' HIGH

T-5416
AMINE MAKE-UP TANK
90 BBL
7'-11" DIA. x 10' WIDE

T-5417
AMINE RUN DOWN TANK
210 BBL
10' DIA. x 15' HIGH

M-5901
WATER TREATER
17,000 GPD CAPACITY

T-5418
WASTE WATER TANK
500 BBL
15'-8" DIA. x 16' HIGH

T-5423
HCl STORAGE
500 GAL

T-5424
NaOH STORAGE
500 GAL

T-5475
GLYCOL STORAGE TANK
90 BBL
7'-11" DIA. x 10' HIGH

P-5615A
WASTEWATER TRANSFER PUMP
40 GPM @ 40 FT. TDH
1 H.P. MOTOR

P-5615B
WASTEWATER TRANSFER PUMP
40 GPM @ 40 FT. TDH
1 H.P. MOTOR

P-5673
GLYCOL MAKEUP/DRAIN PUMP
115 GPM @ 44 FT. TDH
5 H.P. MOTOR

T-5419
WASTE WATER SUMP TANK
150 GAL

INST. AIR FR. M-4602
150 SCFM @ 100 PSIG

2" INSTR. AIR TO PLANT

CONT. WATER M.U.
DWG. W-3-M4202

CONTINUOUS WATER MAKE-UP
TO 5125-A-10"
5141-A-PVC-1"
SHT. 3-M5202

CONTINUOUS WATER MAKE-UP
TO 6125-A-10"
SHT. 3-M6202

5142-A-PVC-2"
AMINE/WATER MAKEUP FROM P-5614
AMINE RECHARGE FROM P-5617
TO V-5503
SHT. 3-M5202

WATER OFF PUMP SKID SKID

P-5613A
P-5613B
P-5613C
P-5614
P-5617

5402-A-PVC-1.5"
5401-A-PVC-3"
5403-A-PVC-3"
5404-A-PVC-3"

WATER PUMP OFF SKID SKID

T-5415
T-5416
T-5417

AMINE FILL

PVC C.S.
2"PVC
PUMP OFF SKID SKID
5434-A-3"

NOTE:
T-5417 ELEVATION TO ALLOW
FREE DRAINING OF AMINE TO TANK

TO LINE 4143-A-PVC-12"
DWG. W-3-M4202
5144-A-PVC-2"

AMINE/WATER MAKEUP TO V-4503 FROM P-5614 & T-5415/5416
AMINE RUNDOWN TRANSFER FROM P-4617 & T-4417 TO V-4503

BY OTHERS
UNTREATED WATER SUPPLY

M-5901

T-5423
T-5424

FILL
DRAIN

T-5475
FILL
DRAIN
OFF PUMP SKID SKID
5423-A-1.5"
5422-A-1.5"
5421-A-3"
5424-A-2"
H.T. AND INSULATE ABOVE GRADE AND TO 3' BELOW GRADE.
TO V-5472
SHT. 4-M5201

NOTE:
H.T. AND INSULATE TO
MIN. 3' BELOW GRADE

V-5673 FLASH GAS COMP.
F-5671 GLYCOL FILTER
F-5674 GLY. CHARCOAL FILT.
V-5671 GLYCOL STILL
E-5671 COLD GLYCOL/GLYCOL EXCHANGER
V-5672 GLYCOL REBOILER
V-5472 GLYCOL SURGE 43 BBL

VENT
T-5418
4905-A-2"
5420-A-2"
DRAIN

P-5615B
P-5615A
T-5419
CONCRETE VAULT
GRADE
4415-A-3"
4415-A-2"
5415-A-2"
8415-A-2"
4435-A-2"

FROM P-4618
DWG. W-3-M4804
FR. W.W. DRAIN SYSTEM
DWG. W-8-M4301
FR. FUTURE TRAIN 6 W.W. DRAIN SYSTEM
FR. CO2 VENT
SHT. W-3-M4804

V-5601 NEUTRALIZED WATER DRUM
V-5572 GLYCOL CONTACTOR OUTLET SCRUBBER
V-5414 FUEL GAS SCRUBBER
V-5403 REBOILER SCRUBBER
E-5601 GLYCOL/TREATED GAS EXCHANGER
V-5407 STILL REFLUX ACCUMULATOR

V-5603 AMINE STILL/SURGE 142 BBL
H-5701 AMINE REBOILER
H-5702 AMINE REBOILER
AMINE FILTER SKID
F-5408 AMINE FILTER
F-5411 AMINE CHARC. FILTER
E-5201B AG/AG EXCH. (TUBE)
E-5201B AG/AG EXCH. (SHELL)
V-5403 AMI. FLASH TNK 171 BBL
V-5501 CONTACTOR 75 BBL
5405-A-3"

H.T. & INSUL TO 3' MIN. BELOW GRADE

PRINT DISTRIBUTION RECORD

REV.	DATE	P	P.A.	A	SHOP	FIELD	SUBV.	VENDR.	FILE	RUNSEL	PE	
0	1/28											
1	3/8			✓	3	2	3	3	1		1	

REVISIONS

REV.	DESCRIPTION
0	AFC
1	ADDED H.T. AND INSULATION
2	GENERAL REVISION

PLOT DATE: 03-16-90
DWG. FILE: 433\W8M5201.DWG

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 5
MECHANICAL FLOW SHEET
UTILITIES

2

ENGINEERS	DATE	REVISED BY	DATE
ARM	11-14-89	ARMORE	11-01-89
		JUDI	01-31-90
		JUDI	03-16-90

FILE NO.
W-8-M5201

DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK.

E-8202	V-8402	V-8501	V-8422	P-8616	P-8604	P-8605	P-8606	P-8607	V-8405
UNTREATED/TREATED GAS EXCHANGER	RESIDUE SCRUBBER	GAS CONTACTOR	ANTI-FOAM TANK	CHEMICAL INJECTION PUMP	AMINE CIRCULATION PUMP	AMINE CIRCULATION PUMP	AMINE CIRCULATION PUMP	AMINE CIRCULATION PUMP	AMINE FLASH TANK
3152.9 MBTU/HR	66" ID x 12'-0" S/S	90" ID x 59'-0" S/S	12 3/4" O.D. x 4'-0" S/S	1.5 GPH @ 1000 PSIG	448 GPM @ 1832 FT. TDH	448 GPM @ 1832 FT. TDH	448 GPM @ 1832 FT. TDH	448 GPM @ 1832 FT. TDH	90" ID x 24'-0" S/S
30-198 - AGU	950PSI D.P. @ 250 °F	950PSI D.P. @ 250 °F	14 PSIG @ 150°F	1/4 HP MOTOR	350 H.P. MOTOR	350 H.P. MOTOR	350 H.P. MOTOR	350 H.P. MOTOR	150PSI D.P. @ 200 °F
950 PSI D.P. @ 150°F - SHELL									
950 PSI D.P. @ 150°F - TUBE									

NOTE:
ITEMS SHOWN DASHED IN ARE FUTURE ITEMS.
VALVES AND INSTRUMENTS PROVIDED BY T.H.R. CO.

SYMBOL LEGEND: TYP. ALL FLOW SHEETS

- (AD) AMINE DRAIN (SEE SHT. 8-M4201)
- (WD) WASTE WATER DRAIN (SEE SHT. 8-M4202)
- (V) VENT HEADER (SEE SHT. 3-M4204)
- (GD) GLYCOL DRAIN (SEE SHT. 8-M4202)
- (WHD) WATER HEATER RELIEF HEADER (SEE SHT. 8-M4201)
- (WD) WATER HEATER BLOWDOWN (SEE SHT. 8-M4201)
- DISTRIBUTIVE CONTROL SYSTEM
- (PP) PRESSURE POINT, 3/4"V11 W/ PLUG
- (CC) CORROSION COUPON, 2" NPT W/VALVE
- (SP) SAMPLE POINT, 1"V11 W/ PLUG
- (LD) LOCK OPEN

* ITEMS PROVIDED AND INSTALLED BY MERIDIAN OIL CO.

** ITEMS PROVIDED AND INSTALLED BY MERIDIAN OIL CO., SPECIFIED BY T.H.R. CO.

PRINT DISTRIBUTION RECORD

REV	DATE	P	FA	A	SHOP	FIELD	CUST	VENDR	FILE	PLOTTER	M
C	7-9				3						
1	5/15			✓	3	5	1		1	1	HP

REVISIONS

REV	DESCRIPTION
C	GENERAL REVISION
B	GENERAL REVISION, ISSUE AFC
1	ADD SD-8803 TO SOV-8803, MOVE PI-8604B - 8607B, REV HT @ LCV-8405A & PSV-8404
2	GENERAL REVISION

PLOT DATE: 05-30-91
DWG FILE: 445\VV3M8201.DWG

T.H. RUSSELL CO. JOB NO. 445

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 8
MECHANICAL FLOW SHEET
AMINE CONTACTOR

2

ENGINEERS	DATE	REVISED BY	DATE
	4-3-91	JAH	10-23-90
		JAH	04-01-91
		MDA	05-10-91
	A-4, 5	JAH	05-30-91

FILE NO. VV-3-M8201

DRAFTED BY

T.H. RUSSELL CO.
TULSA, OK.

M-8902	T-8418	P-8615A	P-8615B	T-8426	T-8475	V-8412	P-8673
INSTRUMENT AIR COMPRESSOR PACKAGE 150 SCFM @ 100 PSIG (1) 30 HP MOTORS	WASTE WATER TANK 300 BBL 15'-6" DIA. x 16' HIGH	WASTEWATER TRANSFER PUMP 40 GPM @ 40 FT. TDH 1 H.P. MOTOR	WASTEWATER TRANSFER PUMP 40 GPM @ 40 FT. TDH 1 H.P. MOTOR	WASTE WATER SUMP TANK 150 GAL	GLYCOL STORAGE TANK 80 BBL 7'-11" DIA. x 10' HIGH	CLOSED DRAIN K.O. 48" OD x 8'-0" S/S 50 PSI D.P. @ 150 °F	GLYCOL MAKEUP/DRAIN PUMP 15 GPM @ 44 FT. TDH 5 H.P. MOTOR

FUTURE INSTR. AIR TO TRAIN 7

2" INSTRUMENT AIR TO TRAIN 8

EXISTING NEW (TRAIN 8)

INSTRUMENT AIR TO/FROM TRAIN 5

TO TRAIN 8 DWG. W-8-M8201

2 AIR RECEIVERS 60" O.D. x 15'-6" S/S

M-8902

T-8475

H.T. AND INSULATE TO 3' BELOW GRADE

DRAIN

8423-A-1.5"

8421-A-3"

8422-A-2"

8433-A-2"

TO V-8472 SHT. 4-M8201

UTILITY PUMP OFF SKID

P-8673

8424-A-2"

V-8571 GLYCOL STILL 15#

H-8771 GLYCOL REBOILER 150#

E-8271 COLD GLYCOL/ HOT GLYCOL EXCHANGER 150#

V-8472 GLYCOL SURGE 43 BBL

P-8671 / P-8672 SUCTION & DISCHARGE

LOW POINT DRAIN

E-8271 COLD GLYCOL/ HOT GLYCOL EXCHANGER 150#

V-8478 PUMP DRAIN TANK

A-8371 GLYCOL COOLER 600#

V-8572 (IN LINE 8201) GLYCOL CONTACTOR 600#

LOW POINT DRAIN SEE 8223-P-1

F-8471 GLYCOL FILTER 150#

F-8474 GLY. CHARCOAL FILT. 150#

V-8473 GLYCOL FLASH TANK 150#

V-8573 FLASH GAS CONT. 150#

FROM P-8818 SHT. 3-M8205

T-8418

VENT

DRAIN

H.T. AND INSULATE TO 3' BELOW GRADE

8905-A-SS(316L)-2"

CO2 VENT STACK AND V-8420

FUTURE FROM TRAIN 7 SHT. W-8-M7201

7437-A-SS(316L)-2"

8435-A-SS(316L)-2"

8440-A-SS(316L)-3"

8439-A-SS(316L)-3"

8438-A-SS(316L)-3"

FUTURE FROM TRAIN 9 SHT. W-8-M8201

8437-A-SS(316L)-2"

DRAIN FROM LINE 8419-A-SS(316L)-3"

A-8303 A/B ANINE STILL REFLUX CONDENSER

M-8801 WATER HEATER BLDG. DRAINS

UTILITY PUMP SKID DRAIN

8441-A-PVC-3"

8442-A-PVC-3"

8420-A-2"

P-8615A

P-8615B

T-8426

C.O.

TRAP

GRADE

CONCRETE VAULT

* = FOOT VALVE SUPPLIED WITH PUMPS

V-8412

25' ABOVE GRADE

8415-A-3"

8415-A-2"

7415-A-2"

FR. FUTURE TRAIN 7 W.W. DRAIN SYSTEM

FR. FUTURE TRAIN 9 W.W. DRAIN SYSTEM

V-8407 STILL REFLUX ACCUMULATOR 150#

V-8425 RELIEF HEADER K.O. DRUM

WATER PUMP SKID (P-8651/8652/8653)

V-8450 WATER HEATER SURGE

V-8472 REGEN'R SCRUBBER 600#

V-8572 GLYCOL CONTACTOR OUTLET SCRUBBER 600#

E-8202 CONDENSER/REHEATER GAS EXCHANGER 600#

V-8414 T.E. SCRUBBER 150#

FUTURE LINE 7418

V-8421 DRAIN POT K.O. DRUM 150#

8418-A-2"

8448-A-2"

1 1/2" TO WATER HEATER BUILDING

EMERGENCY EYE-WASH (LOCATED IN TANK AREA)

POTABLE WATER

2" PVC

V13-880

T.H. RUSSELL CO. JOB NO. 445

PRINT DISTRIBUTION RECORD

REV.	DATE	P	P.A.	A	SHOP	FIELD	CUST.	VEND.	FILE	PURCH.	PE	
0	4/1			✓	5	5	4		1		1	HP
1	5/14			✓	5	6	1		1		1	HP

REVISIONS

REV.	DESCRIPTION	BY	DATE
0	THIS DRAWING CREATED FROM PORTIONS OF W-8-M8201, ISSUED A/F.C.	JDD	03-08-91
1	ADD P-8615, REVISED MAIN HEADERS	MDA	05-10-91
2	GENERAL REVISION	JDD	05-31-91

MERIDIAN OIL

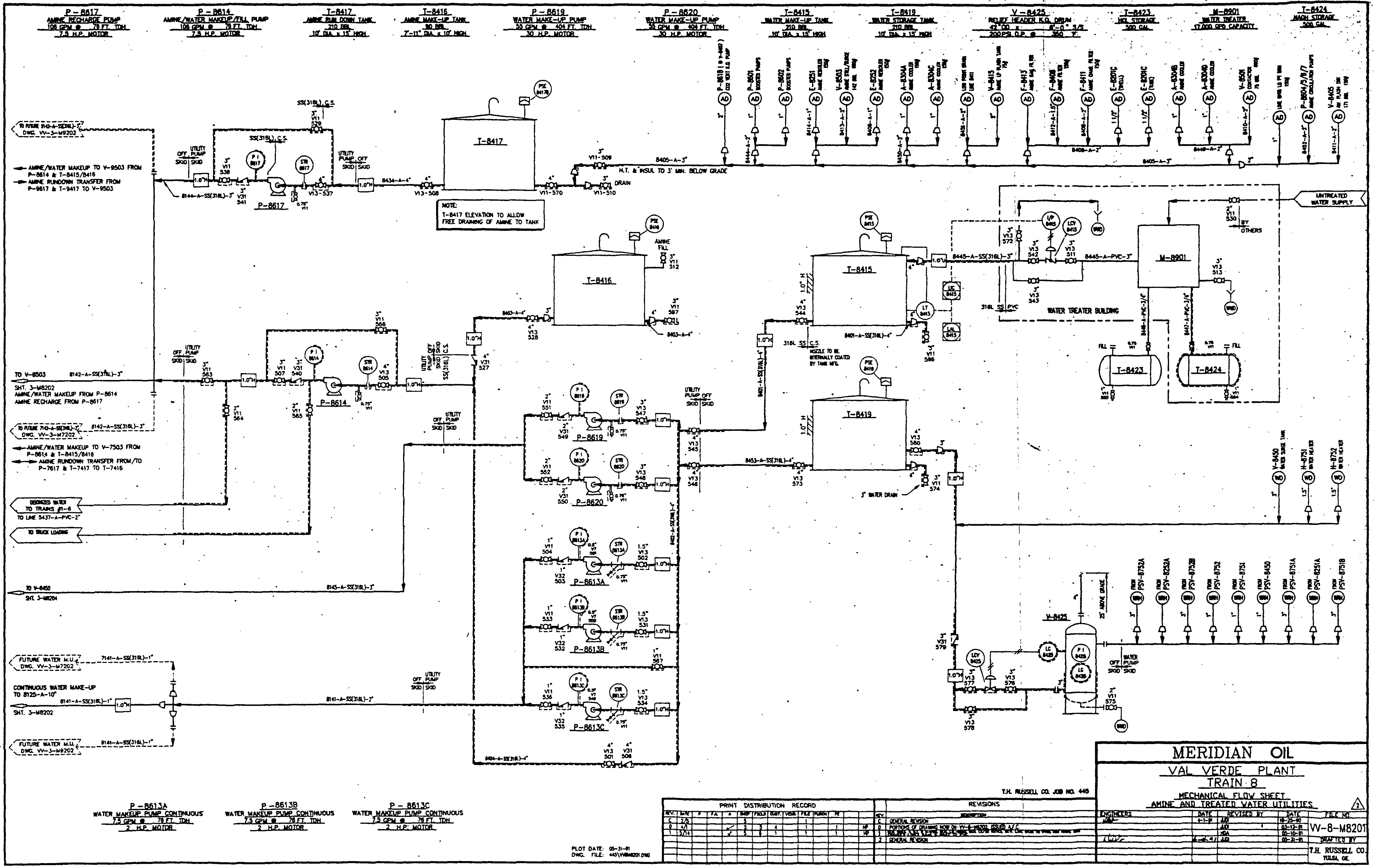
VAL VERDE PLANT
TRAIN 8
MECHANICAL FLOW SHEET
INSTRUMENT AIR, GLYCOL, AND WASTEWATER UTILITIES

2

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
ARM	4-1-91	JDD	03-08-91	W-8-M8202
		MDA	05-10-91	
		JDD	05-31-91	

DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK.

PLOT DATE: 05-31-91
DWG. FILE: 445\W8M8202.DWG


P - 8617
AMINE RECHARGE PUMP
108 GPM @ 78 FT. TDH
7.5 H.P. MOTOR
P - 8614
AMINE/WATER MAKEUP/FILL PUMP
108 GPM @ 78 FT. TDH
7.5 H.P. MOTOR
T-8417
AMINE RUN DOWN TANK
210 BBL
10' DIA. x 15' HIGH
T-8416
AMINE MAKE-UP TANK
90 BBL
7'-11" DIA. x 10' HIGH
P - 8619
WATER MAKE-UP PUMP
55 GPM @ 404 FT. TDH
30 H.P. MOTOR
P - 8620
WATER MAKE-UP PUMP
55 GPM @ 404 FT. TDH
30 H.P. MOTOR
T-8415
WATER MAKE-UP TANK
210 BBL
10' DIA. x 15' HIGH
T-8419
WATER STORAGE TANK
210 BBL
10' DIA. x 15' HIGH
V - 8425
RELIEF HEADER K.O. DRUM
42" OD x 8'-0" S/S
200PSI D.P. @ 350 °F
T-8423
HCL STORAGE
500 GAL
M-8901
WATER TREATER
17,000 GPD CAPACITY
T-8424
NAOH STORAGE
500 GAL
NOTE:
T-8417 ELEVATION TO ALLOW FREE DRAINING OF AMINE TO TANK
H.T. & INSUL TO 3' MIN. BELOW GRADE
8405-A-3"
TO FUTURE 8142-A-SS(316L)-3" DWG. VV-3-M9202
AMINE/WATER MAKEUP TO V-9503 FROM P-8614 & T-8415/8416
AMINE RUNDOWN TRANSFER FROM P-9617 & T-9417 TO V-9503
TO V-8503 8142-A-SS(316L)-3"
SHT. 3-M8202
AMINE/WATER MAKEUP FROM P-8614
AMINE RECHARGE FROM P-8617
TO FUTURE 7142-A-SS(316L)-3" DWG. VV-3-M7202
AMINE/WATER MAKEUP TO V-7503 FROM P-8614 & T-8415/8416
AMINE RUNDOWN TRANSFER FROM/TO P-7617 & T-7417 TO T-7416
DEIONIZED WATER TO TRAINS #1-6
TO LINE 5437-A-PVC-2"
TO TRUCK LOADING
TO V-8450 SHT. 3-M8204
8145-A-SS(316L)-3"
FUTURE WATER M.U. DWG. VV-3-M7202
CONTINUOUS WATER MAKE-UP TO 8125-A-10"
SHT. 3-M8202
FUTURE WATER M.U. DWG. VV-3-M9202
UNTREATED WATER SUPPLY
WATER TREATER BUILDING
P-8617
P-8614
P-8619
P-8620
P-8613A
P-8613B
P-8613C
P - 8613A
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 76 FT. TDH
2 H.P. MOTOR
P - 8613B
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 76 FT. TDH
2 H.P. MOTOR
P - 8613C
WATER MAKEUP PUMP CONTINUOUS
7.5 GPM @ 76 FT. TDH
2 H.P. MOTOR
PLOT DATE: 05-31-91
DWG. FILE: 445\VVM8201.DWG
T.H. RUSSELL CO. JOB NO. 445
PRINT DISTRIBUTION RECORD
REVISIONS
C GENERAL REVISION
0 PORTIONS OF DRAWING NOW ON VV-8-M8202, ISSUED A.F.C.
2 GENERAL REVISION
MERIDIAN OIL
VAL VERDE PLANT
TRAIN 8
MECHANICAL FLOW SHEET
AMINE AND TREATED WATER UTILITIES
FILE NO.
VV-8-M8201
DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK

V-8572	V-8473	V-8573	F-8471	F-8474	F-8273	V-8571	H-8771	A-8371
GLYCOL CONTACTOR/OUTLET SCRUBBER	FLASH TANK	FLASH GAS CONTACTOR	RICH TEG FILTER	GLYCOL CHARCOAL ABSORBER	GLYCOL REFLUX CONDENSER	GLYCOL STILL COLUMN	GLYCOL REBOILER	GLYCOL COOLER
72"ID x 36'-6" S/S	24"OD x 10'-0" S/S	10.75"OD x 12'-0" S/S	14"OD x 60" OAH	36"OD x 8'-0" S/S	122.4 MBTU/HR	20"OD x 16'-6" S/S	2085.0 MBTU/HR	1.109.2 MBTU/HR
@50PSI D.P. @ 150 °F	150PSI D.P. @ 200 °F	150PSI D.P. @ 200 °F	150PSI D.P. @ 200 °F	150PSI D.P. @ 200 °F	10-90 - 90 - 10	14 PSI D.P. @ 450 °F	14 PSI D.P. @ 450°F	@50 PSI D.P. @ 250°F
				30 GPM	150 PSI D.P. @ 400°F - SHELL		3 HP BLOWER MOTOR	W/ (2) 10 / 2.5 HP 2 SPEED MOTORS
					14 PSI D.P. @ 400°F - TUBE			

V-8472	P-8671	P-8672	V-8476
GLYCOL SURGE TANK	GLYCOL PUMP	GLYCOL PUMP	GLYCOL PUMP DRAIN TANK
48"OD x 20'-0" S/S	33 GPM @ 900PSID	33 GPM @ 900PSID	12.75"OD x 2'-6" S/S
14PSI D.P. @ 450 °F	30 H.P. MOTOR	30 H.P. MOTOR	14PSI D.P. @ 250 °F

F-8271	F-8272
COLD GLYCOL/GLYCOL EXCHANGER	WARM GLYCOL / GLYCOL EXCHANGER
61.1 MBTU/HR	1784.6 MBTU/HR
8-192 BDM - -	17 x 216 - AES
50 PSI D.P. @ 250 °F - SHELL	50 PSI D.P. @ 450 °F - SHELL
150 PSI D.P. @ 200 °F - TUBE	150 PSI D.P. @ 350 °F - TUBE

PRINT DISTRIBUTION RECORD

REV.	DATE	P	P.A.	A	SHOP	FIELD	CUST.	VENDOR	FILE	FUSION	M
C	2/5			✓	5			1			
D	4/1			✓	5	3	4		1		HP
E	5/14			✓	5	6	1		1		HP

REVISIONS

REV.	DESCRIPTION
0	GENERAL REVISION
0	GEN. REV. ISSUE A/C
1	GEN. REV. AS NOTED
2	GENERAL REVISION

PLOT DATE: 05-31-91
DWG. FILE: 445/VV4M8201.DWG

T.R. RUSSELL CO. JOB NO. 445

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 8
MECHANICAL FLOW SHEET
GLYCOL UNIT

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
	6-1-91	JJG	10-24-90	VV-4-M8201
		ABB	03-06-91	
		HDA	05-10-91	
	6-14-91	ABB	05-31-91	DRAFTED BY

T.R. RUSSELL CO.
TULSA, OK

V-8421
HEADER DRAIN KNOCKOUT DRUM
36" O.D. x 8'-0" S/S
14 PSI D.P. @ 150T
NON - CODE

P-8618
VENT KNOCKOUT PUMP
50 GPM @ 60 FT. TDH
2 H.P. MOTOR

V-8420
VENT KNOCKOUT DRUM
120" ID x 24'-0" S/S
14 PSI D.P. @ 150 T
NON - CODE

FR. FUTURE XV-9903 SHT. VV-3-9201
8018-A-10"
FROM XV-8803 SHT. VV-3-M8201
8018-A-10"
FLG. W/BLIND
FR. FUTURE XV-7903 SHT. VV-3-M7201
7018-A-10"
FLG. W/BLIND
8905-A-20"
8905-A-20"
8905-A-20"
8020-A-2"
TRAIN #8
FROM PCV-9407 STILL REFLUX SHT. VV-3-M9202
FROM PCV-9407 STILL REFLUX SHT. VV-3-M9202
FROM TRAIN 8
FROM TRAIN 8
TRAIN #8
FROM PSV-8405 AMINE FLASH TANK SHT. VV-3-M8201
FROM PCV-8407 STILL REFLUX SHT. VV-3-M8202
FROM PCV-8405C
FROM XV-8751/8752 BAD
8019-A-18"
8115-A-14"
TRAIN #7
FROM PSV-7405 AMINE FLASH TANK SHT. VV-3-M7201
FROM PCV-7407 STILL REFLUX SHT. VV-3-M7202
7019-A-18"
7115-A-14"
8901-A-20"
8901-A-20"
8901-A-20"
FLG. W/BLIND
SLOPE DOWN
TO CO2 COMPRESSION (FUTURE)
P-8618 START/STOP
C.S. 316L SS
LAL 8420
LAH 8420
ACTUATORS PROVIDED BY M.O.I. AT FUTURE DATE
8903-A-24"
BLIND
24" V62 605
LO
24" V62 606
40' ABOVE GRADE
24"ø CO2 VENT STACK
15' ABOVE GRADE
24"ø BLOWDOWN STACK
FROM RESIDUE HEADER 8018-A-2"
FROM INLET HEADER 8017-A-2" SHT. 3-M8201
8018-A-2"
V-8421
LG 8421
1.0"U
1.5" V11 604
8448-A-2"
1.5" V32 611
2"
VENT
V-8420
LG 8420A
LG 8420B
LG 8420C
LT 8420
LG 8420D
LG 8420E
C.S. 316L SS
1" V11 608
1" V11 615
SS(316L)
2" V32 610
2x3
TO FUTURE V-7407 SHT. VV-3-M7202
TO V-8407/WHD/AMINE DRAIN SHT. 3-M8203
8905-A-SS(316L)-2"
TO T-8418 SHT. 4-M8202
TO FUTURE V-8407 SHT. VV-3-M8202
FLG. W/BLIND
M.T. & INSULATE TO 3' BELOW GRADE
2" V11 603
2" V31 602
P.I. 8618
STR 8618
2" V13 601
8804-A-SS(316L)-3"
316L SS
C.S.
1" V11 607
1" V11 614
1" V11 613
CO2 VENT K.O. PUMP OFF SKID
P-8618
CO2 VENT K.O. PUMP OFF SKID
8435-A-SS(316L)-2"
WHD
FR. FUTURE 7314-A-2" SHT. VV-3-M7203
FLG. W/BLIND
FROM LINE 8314-A-2" SHT. 3-M8203
2" V11 612
2x1
PCV 801
PCV 801A
P.I. 801
FUEL GAS TO GENERATOR
FR. FUTURE 8314-A-2" SHT. VV-3-M9203
FLG. W/BLIND

PLOT DATE: 05-31-90
DWG FILE: 445\VV3M8205.DWG

T.H. RUSSELL CO. JOB NO. 445

PRINT DISTRIBUTION RECORD

REV.	DATE	P	P.A.	A	SHOP	FIELD	CUST	VENDR	FILE	PURCH	PC		
C	7/8				3				1				
B	6/1			✓	3	5	1		1		1	HP	
1	5/14			✓	3	8	1		1		1	HP	

REVISIONS

REV.	DESCRIPTION
C	GENERAL REVISION
B	GEN. REV. ISSUE A.F.C.
1	REV. 8X8-A-20" VENT STACK DRAIN, REMOVED V11-606, REV. LINE #445 DESCRIPTION
2	GENERAL REVISION

MERIDIAN OIL

VAL VERDE PLANT

TRAIN 8

VENT SYSTEM
CO2 VENT SYSTEM

2

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
		JDS	10-24-90	
		JBP	03-08-91	VV-3-M8205
		MDA	05-10-91	
	6-6-91	JBP	05-31-91	DRAFTED BY

T.H. RUSSELL CO.
TULSA, OK

V-8451	P-8650	V-8450	P-8651	P-8652	P-8653	H-8751	H-8752
CHEMICAL INJECTION TANK 12.75" OD x 4'-0" S/S 14 PSI D.P. @ 150°F NON-CODE	CHEMICAL INJECTION PUMP 1 GPH @ 200 PSIG 1/4 HP MOTOR	WATER SURGE TANK 72" ID x 24'-0" S/S 175 PSI D.P. @ 350°F	WATER PUMP 3200 GPH @ 125 FT TDH 150 H.P. MOTOR	WATER PUMP 3200 GPH @ 125 FT TDH 150 H.P. MOTOR	WATER PUMP 3200 GPH @ 125 FT TDH 150 H.P. MOTOR	WATER HEATER 43.87 MMBTU/HR 175 PSI D.P. @ 350°F	WATER HEATER 43.87 MMBTU/HR 175 PSI D.P. @ 350°F

FROM E-8252 SHT. 3-M8202 — 8720-A-16" — 2.5"H

FROM E-8251 SHT. 3-M8202 — 8717-A-16" — 2.5"H

8716-A-20" — 8723-A-16" — 8707-A-16" — 8709-A-8" — 8708-A-8" — 8710-A-8" — 8711-A-8"

NITROGEN — WATER MAKE-UP 3" SHT. 8-M8202

V-8450 — H-8750 — LOCAL PANEL — SAMPLE COOLER

2" FUEL GAS FR. LINE 8314-A-2" SHT. 3-M8203 — PILOT — H-8750 FIRING CNTL. RACK — OFF SKID

8722-A-20" — 8721-A-16" — 8704-A-10" — 8705-A-10" — 8706-A-10"

TO E-8251 8719-A-16" SHT. 3-M8202 — TO E-8252 8718-A-16" SHT. 3-M8202

P-8651 — P-8652 — P-8653 — V-8451 — P-8656

8702-A-12" — 8703-A-12" — 8701-A-12"

H-8751 — NORTH STACK — SOUTH STACK — TEST CONN'S

H-8751 LOCAL CONTROL PANEL — HEATER ALARM

H-8752 — NORTH STACK — SOUTH STACK — TEST CONN'S

H-8752 LOCAL CONTROL PANEL — HEATER ALARM

FR. FIC-8604 SHT. 3-M8201 — R/S

TO BURNERS #2 THRU #12 — VENT TO ATMOSPHERE

8305-A-3" — 8306-A-1" — 8304-A-3" — 8304-A-4" — 8306-A-3"

8309-A-3" — 8310-A-1" — 8308-A-3"

H-8751 FIRING CONTROL OFF SKID | SKID

H-8752 FIRING CONTROL OFF SKID | SKID

FROM V-8414 SHT. 3-M8203

T.H. RUSSELL CO. JOB NO. 445

PRINT DISTRIBUTION RECORD

REV.	DATE	P	F.A.	A	AMP	FIELD	DUPT.	VENDR.	FILE	PURCH.	PC	HP
C	7/5				5				1			HP
D	2/18					2						HDA
0	4/2			2	5	5	4		1		1	HP
1	5/14			2	5	6	4		1		1	HP

REVISIONS

REV.	DESCRIPTION
C	GEN. REV.
D	GENERAL REVISION
0	GENERAL REVISION AMD ISSUED AFC
1	GEN. REV. AS INDICATED ABOVE
2	GENERAL REVISION

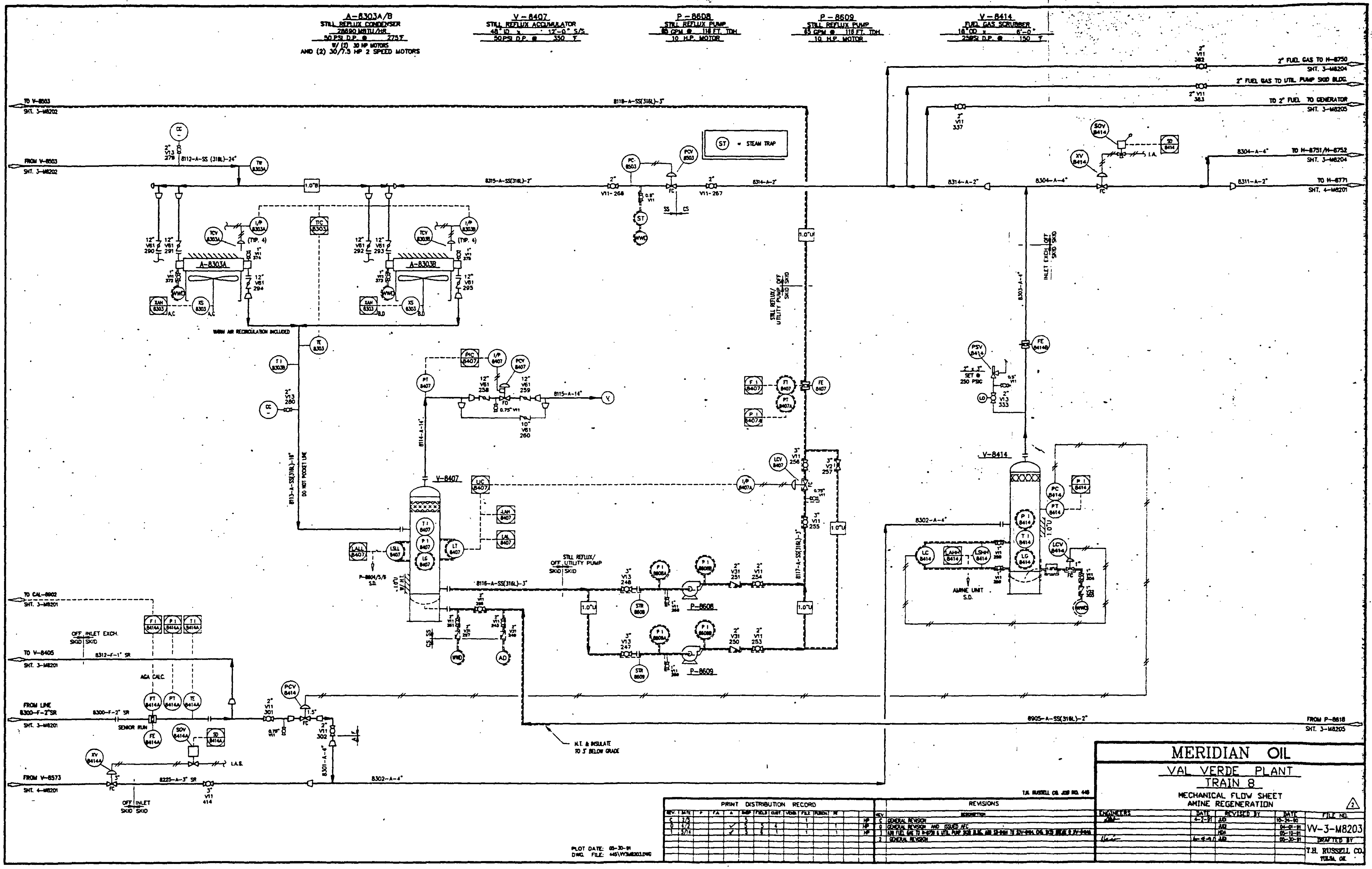
PLOT DATE: 05-31-91
DWG. FILE: 445\W3M8204.DWG

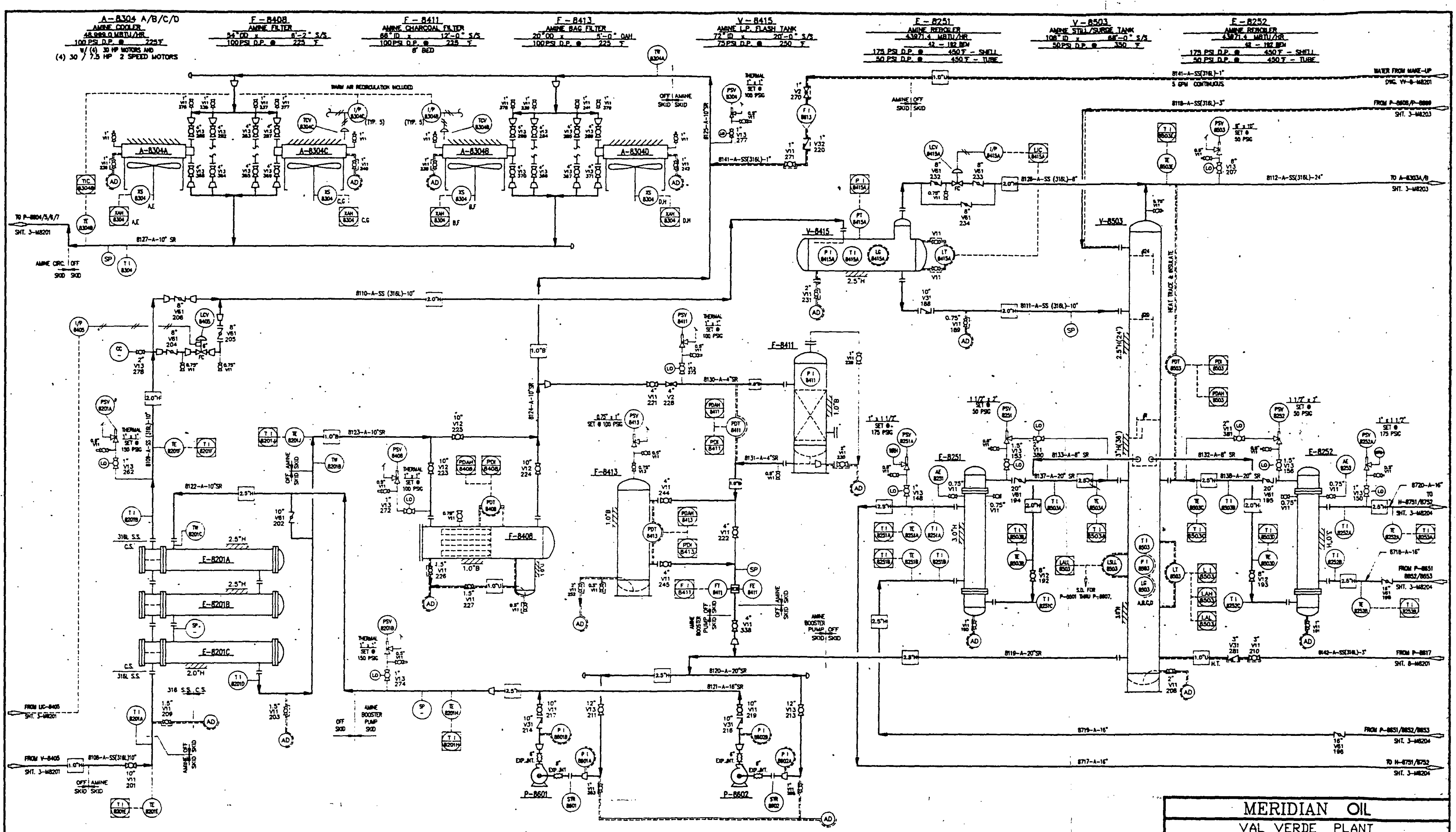
MERIDIAN OIL

VAL VERDE PLANT
TRAIN 8

MECHANICAL FLOW SHEET
AMINE REBOILER WATER HEATER SYSTEM

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
	6-3-91	HDA	01-16-91	W-3-M8204
		HDA	02-18-91	
		JUDI	04-01-91	
		HDA	05-10-91	DRAFTED BY
	6-6-91	JUDI	05-31-91	T.H. RUSSELL CO. TULSA, OK.


A-8303A/B
STILL REFLUX CONDENSER
28690 MBTU/HR
50 PSI D.P. @ 275°F
W/ (2) 30 HP MOTORS
AND (2) 30/7.5 HP 2 SPEED MOTORS
V-8407
STILL REFLUX ACCUMULATOR
48" ID x 12'-0" S/S
50 PSI D.P. @ 350 °F
P-8608
STILL REFLUX PUMP
65 GPM @ 118 FT. TDH
10 H.P. MOTOR
P-8609
STILL REFLUX PUMP
65 GPM @ 118 FT. TDH
10 H.P. MOTOR
V-8414
FUEL GAS SCRUBBER
18" OD x 6'-0"
250 PSI D.P. @ 150 °F
TO V-8503
SHT. 3-M8202
FROM V-8503
SHT. 3-M8202
8118-A-SS(316L)-3"
8112-A-SS (316L)-24"
8315-A-SS(316L)-2"
8314-A-2"
8304-A-4"
8311-A-2"
8303-A-4"
8113-A-SS(316L)-18"
DO NOT POCKET LINE
8114-A-14"
8115-A-14"
8116-A-SS(316L)-3"
8117-A-SS(316L)-3"
8302-A-4"
8301-A-4"
8905-A-SS(316L)-2"
8312-F-1" SR
8300-F-2" SR
8225-A-3" SR
(ST) = STEAM TRAP
WARM AIR RECIRCULATION INCLUDED
STILL REFLUX/ UTILITY PUMP OFF SKID SKID
INLET EXCH. OFF SKID SKID
2" FUEL GAS TO H-8750
SHT. 3-M8204
2" FUEL GAS TO UTIL. PUMP SKID BLDG.
TO 2" FUEL TO GENERATOR
SHT. 3-M8205
TO H-8751/H-8752
SHT. 3-M8204
TO H-8771
SHT. 4-M8201
FROM P-8618
SHT. 3-M8205
TO CAL-8902
SHT. 3-M8201
TO V-8405
SHT. 3-M8201
FROM LINE 8300-F-2" SR
SHT. 3-M8201
FROM V-8573
SHT. 4-M8201
AGA CALC.
SENIOR RUN
I.A.S.
P-8604/5/6 S.D.
AMINE UNIT S.D.
SET @ 250 PSIG
H.T. & INSULATE TO 3' BELOW GRADE
PLOT DATE: 05-30-91
DWG. FILE: 445\VV3M8203.DWG
T.H. RUSSELL CO. JOB NO. 445
PRINT DISTRIBUTION RECORD
REVISIONS
C GENERAL REVISION
0 GENERAL REVISION AND ISSUED AFC
1 ADD FUEL GAS TO H-8750 & UTIL. PUMP SKID BLDG.
2 GENERAL REVISION
MERIDIAN OIL
VAL VERDE PLANT
TRAIN 8
MECHANICAL FLOW SHEET
AMINE REGENERATION
FILE NO.
VV-3-M8203
DRAFTED BY
T.H. RUSSELL CO.
TULSA, OK



T.H. RUSSELL CO. JOB NO. 445

PRINT DISTRIBUTION RECORD

REV.	DATE	P	FA	A	SHOP	FIELD	CUST.	VEND.	FILE		
C	2/5				5				1		HP
D	2/19						2				HDA
0	4/1			✓	5	5	4		1	1	HP
1	5/14			✓	5	4	1		1	1	HP

REVISIONS

REV.	DESCRIPTION
C	GENERAL REVISION
D	GENERAL REVISION
0	GENERAL REVISION, ISSUE AFC
1	REV. XS & XAH-8304, REV. VALVE TYPES @ E-8251/2, REV. PSV-8201A/8B OUTLETS, ADD PSV-8413
2	GENERAL REVISION

MERIDIAN OIL

VAL VERDE PLANT
TRAIN 8

MECHANICAL FLOW SHEET
AMINE REGENERATION

ENGINEERS	DATE	REVISED BY	DATE	FILE NO.
		JUD	10-24-90	VV-3-M8202
		JUD	2-18-91	
		JUD	4-01-91	
		HDA	05-10-91	DRAFTED BY
	6-4-91	JUD	05-30-91	T.H. RUSSELL CO. TULSA, OK.

Bobby Myers needs a copy C-P794519796

DISTRICT I
P.O.Box 1980, Hobbs, NM 88241-1980

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBMIT 2 COPIES TO APPROPRIATE DISTRICT OFFICE IN ACCORDANCE WITH RULE 116 PRINTED ON BACK SIDE OF FORM

NOTIFICATION OF FIRE, BREAKS, SPILLS, LEAKS, AND BLOWOUTS

OPERATOR Meridian Oil Inc.						ADDRESS P.O. Box 4289 Farmington, NM 87499	TELEPHONE # 326-9700
REPORT OF	FIRE X	BREAK	SPILL	LEAK		BLOWOUT	OTHER*
TYPE OF FACILITY	DRLG WELL	PROD WELL	TANK BTRY	PIPE LINE	GASO PLNT X	OIL RFY	OTHER*

FACILITY NAME: Val Verde Gas Plant

LOCATION OF FACILITY Qtr/Qtr Sec. or Footage	SEC.	TWP.	RGE.	COUNTY
Unit P, SE/SE	14	29N	11W	San Juan

DISTANCE AND DIRECTION FROM NEAREST TOWN OR PROMINENT LANDMARK: Approx. 1 mile NE of Bloomfield, N.M.

DATE AND HOUR OF OCCURRENCE	03-09-94 at 6:20 p.m.			DATE AND HOUR OF DISCOVERY	03-09-94 at 6:20 p.m.
WAS IMMEDIATE NOTICE GIVEN?	YES X	NO	NOT REQUIRED	IF YES, TO WHOM	Denny Foust
BY WHOM	Craig A. Bock			DATE AND HOUR	03-10-94 at 11:00 a.m.
TYPE OF FLUID LOST				QUANTITY OF LOSS	VOLUME RECOVERED
DID ANY FLUIDS REACH A WATERCOURSE?	YES	NO X	QUANTITY		

IF YES, DESCRIBE FULLY**

MAR 1 6 1994
OIL CON. DIV.
DIST. 3

DESCRIBE CAUSE OF PROBLEM AND REMEDIAL ACTION TAKEN**

A pump on Train 1 developed a leak of Thermalene 550 oil, which pooled in a catchment basin below the train. The Thermalene 550 oil was ignited by the hot surface of the pump. The train was automatically shut down and the fire was extinguished within five minutes.

DESCRIBE AREA AFFECTED AND CLEANUP ACTION TAKEN**

Extinguished fire with dry fire extinguisher. Fire was contained and put out within five minutes of ignition.

DESCRIPTION OF AREA	FARMING	GRAZING	URBAN	OTHER* Rural			
SURFACE CONDITIONS	SANDY	SANDY LOAM	CLAY	ROCKY X	WET	DRY	SNOW

DESCRIBE GENERAL CONDITIONS PREVAILING (TEMPERATURE, PRECIPITATION, ETC.)**

Slight breeze from the east or northeast. 50 degrees F.

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNED C. A. Bock PRINTED NAME AND TITLE Craig A. Bock Assoc. Environmental Rep. DATE 3/14/94

*SPECIFY **ATTACH ADDITIONAL SHEETS IF NECESSARY

SF 3/17/94

Bobby Myers

DISTRICT I
P.O.Box 1980, Hobbs, NM 88241-1980

DISTRICT II
P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
RECEIVED
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

'94 MAR 10 AM 8 39

SUBMIT 2 COPIES TO APPROPRIATE DISTRICT OFFICE IN ACCORDANCE WITH RULE 116 PRINTED ON BACK SIDE OF FORM

NOTIFICATION OF FIRE, BREAKS, SPILLS, LEAKS, AND BLOWOUTS

OPERATOR Meridian Oil Inc.						ADDRESS P.O. Box 4289 Farmington, NM	TELEPHONE # 505/326-9700
REPORT OF	FIRE X	BREAK	SPILL	LEAK		BLOWOUT	OTHER*
TYPE OF FACILITY	DRLG WELL	PROD WELL	TANK BTRY	PIPE LINE	GASO PLNT X	OIL RFY	OTHER*
FACILITY NAME: Val Verde Plant							
LOCATION OF FACILITY Qtr/Qtr Sec. or Footage	NE/NE, Sec. 14				SEC. 14	TWP. 29N	RGE. 11W COUNTY San Juan
DISTANCE AND DIRECTION FROM NEAREST TOWN OR PROMINENT LANDMARK	Northeast 1.5 miles from Bloomfield, N.M.						
DATE AND HOUR OF OCCURRENCE	02-25-94 at 3:30 a.m.				DATE AND HOUR OF DISCOVERY	02-25-94 at 3:30 a.m.	
WAS IMMEDIATE NOTICE GIVEN?	YES X	NO	NOT REQUIRED		IF YES, TO WHOM	Mary Ellen Villanueva	
BY WHOM	Craig Bock				DATE AND HOUR	02-25-94 at 1:30 p.m.	
TYPE OF FLUID LOST					QUANTITY OF LOSS		VOLUME RECOVERED
DID ANY FLUIDS REACH A WATERCOURSE?	YES	NO X	QUANTITY				

IF YES, DESCRIBE FULLY**

RECEIVED
MAR 14 1994
OIL CON. DIV.
DIST. 3

DESCRIBE CAUSE OF PROBLEM AND REMEDIAL ACTION TAKEN**

A pump on Train #1 developed a leak of Thermalene 550 oil, which pooled in a catchment basin below the train. A bearing in the pump overheated and caught the Thermalene 550 oil on fire. The train automatically shutdown and the fire was extinguished within five minutes.

DESCRIBE AREA AFFECTED AND CLEANUP ACTION TAKEN**

All fluids were contained within the catchment basin below the train. Fluids will be recycled for beneficial use.

DESCRIPTION OF AREA	FARMING	GRAZING	URBAN	OTHER* Rural			
SURFACE CONDITIONS	SANDY	SANDY LOAM	CLAY	ROCKY X	WET	DRY	SNOW

DESCRIBE GENERAL CONDITIONS PREVAILING (TEMPERATURE, PRECIPITATION, ETC.)**

Calm conditions at night.

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNED [signature] PRINTED NAME AND TITLE Craig Bock Assoc. Environmental Rep. DATE 5-March-94

*SPECIFY

**ATTACH ADDITIONAL SHEETS IF NECESSARY

JANUARY 6 THURSDAY

1994 6th day – 359 days follow

8:00 – 12:00
49064 – 49131

Ran MIT on Giant Exploration
Carson Unit 23-13, S-13-25N-13W
Carson Unit 44-13 P-13-25N-13W
Carson Unit 33-13 J-13-25N-13W
Basin Disposal
[redacted] → Colin Hart New Manger contact person
Oil clean up complete.

from Denny Foust, Aztec OCD 1/18/94

OIL CONSERVATION DIVISION
RECEIVED
'94 JAN 19 AM 9 04

FRIDAY 7 JANUARY

1994 7th day – 358 days follow

10:00 – 2:15
49131 – 49205

Jerry Spangler – 1703 Plant Rd
632-2103

Amoco Martinez Gas Com G #1, A-24-T29N-R10W
Amoco will be excavating about 300 yds to be composted onsite. EPNG will be hauling about 100 cy to Envirotech. Definitely has affected water table – need follow up testing Groundwater affected at 10 feet.
Jerry Spangler 1703 Plant Rd Bloomfield – apparently an upset at the Meridian Valverde plant deposited material on the Spangler residence between four and five P.M January 6, 1994. Observing material it appears clear with an oily feel, no apparent odor, possibly some sort of amine.
January 11, 1993 - Mike Frampton is back in town and has discovered an upset of about 50 gals wtr and MDEA near the time in question. We will follow up at the plant and with the Spanglers

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time	Date
	3:40	1/7/94

Originating Party	Other Parties
Denny Faust - Aztec	Bobby Myers

Subject: public complaint - upset 4-5pm Jan 6 (Thurs)
Jerry Spangler = 1703 Plant Road 632 2103

Discussion:
- light clear material, airborne, moved east-southeast from gas corridor area
- Denny will go to Meridian Val Verde, talk w/ Mike Frampton
- I'll check w/ AOB on Mon

* 1/10/94 - no reports of upsets made to AOB (B. Ramanathan); original complaint by Spangler made to ED Farmington office & forwarded to OCD Aztec office

Conclusions or Agreements

Distribution

Signed Robert L Myers

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

November 8, 1993

CERTIFIED MAIL
RETURN RECEIPT NO. P-176-012-042

Mr. C. R. Owen
Meridian Oil Inc.
P.O. Box 4289
Farmington, NM 87499-4289

RE: Discharge Plan GW-51 Renewal
Val Verde Gas Processing Plant
San Juan County, New Mexico

Dear Mr. Owen,

On November 27, 1989, the groundwater discharge plan, GW-51 for the Val Verde Gas Processing Plant located in the NE/4 NE/4 of Section 14, Township 29 South, Range 11 West, NMPM, San Juan County, New Mexico, was approved by the Director of the Oil Conservation Division (OCD). This discharge plan was required and submitted pursuant to Water Quality Control Commission (WQCC) regulations and was approved for a period of five years. The current approval will expire on November 27, 1994.

If your facility continues to have potential or actual effluent or leachate discharges and you wish to continue operation, you must renew your discharge plan. The OCD is reviewing discharge plan submittals and renewals carefully and the review time can extend for several months. Please indicate whether you have made, or intend to make, any changes in you system, and if so, please include these modifications in your application for renewal.

Note that the completed and signed application form must be submitted with your discharge plant renewal request.

If you no longer have any actual or potential discharges please identify this office. If you have any questions, please do not hesitate to contact Bobby Myers at (505)827-4080.

Sincerely,

Roger C. Anderson
Environmental Bureau Chief

RCA/rlm
xc: OCD Aztec Office

MERIDIAN OIL

'90 DEC 13 AM 8 47

December 11, 1990

State of New Mexico
Oil Conservation Division
ATTN: MR. ROGER ANDERSON
PO Box 2088
Land Office Building
Santa Fe, NM 87504-2088

Dear Mr. Anderson:

In a phone conversation on Monday, December 3, 1990, we discussed clean up of spilled diethanolamine product beneath finfan coolers on Trains 1, 2, and 3 at the Meridian Val Verde Gas Plant. The product had initially been spilled during Southtech's operation. The spillage or leakage of diethanolamine (DEA) was a result of leaking bundles in the finfan coolers.

After taking over Southtech's equipment and operations, Meridian installed an impervious liner beneath the towers to collect any product leaking from the finfan coolers. At the same time, Meridian ordered and has now received new bundles to replace existing bundles. At this time we propose to dig out the soil beneath the finfan coolers to a depth of approximately 18", lay down an impervious clay barrier, and then repack dirt on top of the clay. This clay barrier will minimize surface water penetration, eliminating a transport media for the DEA.

Back in September of 1990, Meridian completed a contamination assessment of the Val Verde Gas Plant. This contamination assessment was done in order to evaluate Southtech's operations for compliance and pollution liability. The assessment included soil borings for contamination and also the drilling of four completed monitoring wells. These monitoring wells, located down gradient, would identify pollutants migrating off location.

We believe the installation of the new equipment will reduce, minimize and eliminate future contamination of this nature. If you have any questions concerning this operation, please contact me as indicated below.

Sincerely,

Terry McMillin
Safety/Environmental Rep.

TGM/tt

ID# 135-7

Meridian Oil Inc., 3535 East 30th St., P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-326-9700

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

October 29, 1990

CERTIFIED MAIL
RETURN RECEIPT NO. P-918-402-349

Mr. C. R. Owen
Regional Operations Manager
Meridian Oil, Inc.
P. O. Box 4289
Farmington, New Mexico 87499-4289

RE: Discharge Plan GW-51
Val Verde Compressor Station
San Juan County, New Mexico

Dear Mr. Owen:

The modification of the previously approved ground water discharge plan (GW-51) for the Meridian Oil, Inc. Val Verde Gas Processing Plant located in the NE/4 NE/4, Section 14, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico is hereby approved. The modification consists of the application dated September 6, 1990. The discharge plan, GW-51 was approved September 27, 1989. The modification consists of the addition of three new carbon dioxide removal trains to the three existing trains. The discharge plan, as modified, expires September 27, 1994.

The application for modification was submitted pursuant to WQCC Regulation 3-107.C and is approved pursuant to WQCC Regulation 3-109.F. Please be advised that the approval of this modification does not relieve you of liability should your operation result in actual pollution of surface or ground waters or the environment which may be actionable under other laws and/or regulations.

There will be no routine monitoring or reporting requirements other than those mentioned in the plan and modification.

Please note that Section 3-104 of the regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan." Pursuant to Section 3-107.C. you are required to notify the Director of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants.

Sincerely,

William J. LeMay
Director

WJL/RCA/sl

cc: OCD Aztec Office

AFFIDAVIT OF PUBLICATION

No. 26563

STATE OF NEW MEXICO,
County of San Juan:

BETTY SHIPP being duly sworn, says: "That she is the NATIONAL AD MANAGER of The Farmington Daily Times, a daily newspaper of general circulation published in English in Farmington, said county and state, and that the hereto attached LEGAL NOTICE

was published in a regular and entire issue of the said Farmington Daily Times, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for ONE consecutive (days) (//////) on the same day as follows:

First Publication FRIDAY, SEPTEMBER 28, 1990

Second Publication

Third Publication

Fourth Publication

and that payment therefore in the amount of $ 37.69 has been made.

Betty Shipp

Subscribed and sworn to before me this 28TH day of SEPTEMBER, 1990.

D. Thornton

Notary Public, San Juan County, New Mexico

My Comm expires: July 5, 1994

COPY OF PUBLICATI

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND
NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan modification application has been submitted to the Director of the Oil Conservation Division, State Land Office Building, P. O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-51) - Meridian Oil Gathering, Inc., Mr. C. R. Owen, Regional Operations Manager, P. O. Box 4289, Farmington, New Mexico 77499-4289, has submitted an application for modification of its previously approved discharge plan for its Val Verde Gas Processing Plant located in the NE/4 NE/4, Section 14, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. The modification consists of the addition of three new carbon dioxide removal trains to the three existing trains. Approximately 7500 gallons per day of process wastewater is collect in above ground steel storage tanks prior to disposal in an OCD approved Class II disposal well. The total dissolved solids cencentration of the wastewater is approximately 747 mg/l. Ground water most likely to be affected by any discharge to the surface is at a depth ranging from 10 to 50 feet with a total dissolved solids concentration ranging from 1600 to 6000 mg /l. The discharge plan addresses how spills, leaks or other discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 24th day of September, 1990.

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
WILLIAM J. LEMAY, Director

Legal No. 26563 published in the Farmington Daily Times, Farmington, New Mexico on Friday, September 28, 1990.

STATE OF NEW MEXICO
ENERGY, MINERALS AND
NATURAL RESOURCES
DEPARTMENT

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 24th day of September, 1990.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
/s/William J. LeMay
Director

Journal, September 29, 1990

STATE OF NEW MEXICO
County of Bernalillo } ss.

NAT'L ADV. MGR. being duly sworn declares and says that he is of **The Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chaper 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for 1 times, the first publication being on the 29 day of Sept, 1990, and the subsequent consecutive publications on .....1990.

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this 1 day of Oct, 1990.

OFFICIAL SEAL
Bernadette Ortiz
NOTARY PUBLIC-NEW MEXICO
FILED WITH SECRETARY OF STATE
Expires 12-18-93

PRICE $23.41

Statement to come at end of month.

ACCOUNT NUMBER C81184

EDJ-15-B (R-12/89)

OIL CONSERVATION DIVISION
RECEIVED
'90 OCT 4 AM 9 30

NOTICE OF PUBLICATION

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 24th day of September, 1990. To be published on or before September 28, 1990.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY, Director

S E A L

MERIDIAN OIL

RECEIVED

SEP 17 1990

OIL CONSERVATION DIV.
SANTA FE

September 13, 1990

New Mexico Oil Conservation Division
ATTN: Mr. Roger C. Anderson
P.O. Box 2088, Rm #206
Santa Fe, NM 87504

RE: Discharge Plan No. GW-51 - Modification
Val Verde Gas Processing Plant

Dear Mr. Anderson:

MOGI (Meridian Oil Gathering Inc.) is submitting a modification to the Ground Water Discharge Plan no. GW-51 for the Val Verde Gas Processing Plant. This modification is to include the addition of trains IV, V and VI to this facility.

Discharge plan no. GW-51 was previously issued for trains I, II, and III, which have a combined gas treating capacity of 130 MMCF/D. This expansion will increase the capacity of Val Verde from 130 MMCF/D to 430 MMCF/D with the addition of the three new treating trains IV, V, and VI (each with a designed capacity of 100 MMCF/D).

As required, three copies of the Discharge Plan are enclosed. If there is a need for any additional information, please contact Larry Dillon at (505)326-9714.

Sincerely,

C.R. Owen
Operations Manager

LWD/dj

xc: L.E. Anderson
T.K. Baker
L.W. Dillon
L.D. Jones
L.W. Mahan
T.G. McMillin
D.D. Priest

VAL VERDE GAS PROCESSING PLANT
MODIFICATION TO
DISCHARGE PLAN NO. GW-51

September 6, 1990

Prepared for:

Meridian Oil Gathering, Inc.

Prepared by:

GEOSCIENCE CONSULTANTS, LTD

CORPORATE OFFICE
SOUTHWEST REGIONAL OFFICE
500 Copper Avenue, NW
Suite 200
Albuquerque, New Mexico 87102
(505) 842-0001
FAX (505) 842-0595

ROCKY MOUNTAIN REGIONAL OFFICE
13111 E. Briarwood Avenue
Suite 250
Englewood, CO 80112
(303) 649-9001
FAX (303) 649-9004

EASTERN REGIONAL OFFICE
4221 Forbes Boulevard
Suite 240
Lanham, MD 20706
(301) 459-9677
FAX (301) 459-3064

GCL

TABLE OF CONTENTS

LIST OF FIGURES

APPENDICES

GCL

MODIFICATION TO DISCHARGE PLAN NO. GW-51

VAL VERDE GAS PROCESSING PLANT

1.0 GENERAL INFORMATION

A. Val Verde Gas Processing Plant is owned and operated by:
Meridian Oil Gathering, Inc.
3535 East 30th Street
P.O. Box 4289
Farmington, NM 87499-4289
(505) 326-9700

B. Regional Operations Manager:

C. R. Owen
Meridian Oil Inc.
P.O. Box 4289
Farmington, NM 87499-4289
(505) 326-9700

C. Plant location:

NE/4 of the NE/4 of Section 14,
T29N, R11W, NMPM
San Juan County, NM (figure 1)

D. Purpose of Plant:

Fruitland coal seam gas treating and dehydration.

The Val Verde Gas Processing Plant will consist of six trains when complete. The processes for trains 1, 2, and 3 are presently covered by discharge plan No. GW-51. The modification will consist of adding new trains 4, 5, and 6, as shown in figure 2. Trains 1, 2, and 3 (formerly owned by South-Tex, Inc.), and trains 4 and 5 are currently in operation. Train 6 is expected to be fully operational by November 1, 1990.

Producer: Meridian Oil Company and Other Producers

Process: CO_2 is removed from a coal seam gas stream by contacting the gas with a lean amine solvent. CO_2 is stripped from the rich amine solvent in the regeneration unit and vented to the atmosphere. The residue gas is contacted with Triethylene Glycol (TEG) to provide 7lb H_2O/MMSCF dewpoint. Refer to appendix A for Material Safety Data Sheet (MSDS) for a description of the solvents.

Design conditions for trains 1, 2, and 3:

Inlet Gas Volume	130 MMSCF/d
Oper. Press	650-800 psig
Inlet Gas CO_2	12%
Outlet Gas CO_2	1% or less
Amine Circulation	1800 gpm
Outlet Gas Dewpoint	7lb H_2O/MMSCF or less
TEG Circulation	40 gpm

Design Conditions for train 4, 5, and 6.

Inlet Gas Volume	100 MMSCF/d each train
Oper. Pressure	650-800 psig
Inlet Gas CO_2	12%
Outlet Gas CO_2	1% or less
Amine Circulation	1233 gpm each train
TEG Circulation	32 gpm each train

E. Three Copies of the Modification to Discharge Plan No. GW-51 to OCD.

GCL

F. Affirmation:

"I hereby certify that I am familiar with the information contained in and submitted with this discharge plan, and that such information is true, accurate, and complete to the best of my knowledge and belief."

[signature]	9/13/90
Signature	Date
C. R. Owen	Operations Manager
Printed Name of Person Signing Document	Title

2.0 PLANT PROCESS

A. Sources and Quantities of Effluent and Process Fluids

The Val Verde Plant utilizes a diethanolamine (DEA) solution to remove carbon dioxide and triethyleneglycol (TEG) to remove water from coal seam natural gas.

Plant discharges are characterized as neutralized demineralization wastewater; unrecycleable process wastewater, which includes waste containing diethanolamine and/or glycol; and uncommon spills or leaks from the process equipment.

Trains 1, 2, and 3 have a combined gas treating capacity of 130 MMSCF/d. Trains 4, 5, and 6 will have a gas treating capacity of 100 MMSCF/d per train.

The natural gas stream entering the plant is a very lean gas, essentially all methane and CO_2. The gas is field dehydrated upstream of the plant; therefore, no liquid/gas separation is required.

The natural gas stream is contacted in seven vertical trayed counter-current absorber vessels with a lean amine solvent. The solvent is made up of 65% by weight H_20 (distilled water) and 35% by weight DEA. Refer to the Material Safety Data Sheets (MSDS) in appendix A for a description of the solvent.

1. The rich amine solvent leaving the absorber vessels is regenerated in a typical amine regeneration system consisting of the following equipment (figure 3) for trains 1, 2, and 3:

    a. Rich Amine Flash Tank
    b. Lean/Rich Cross Exchanger
    c. Stripping Column
    d. Hot Oil Heated Reboiler (Gas Fired Hot Oil Heater)
    e. Stripper Reflux Condenser (Fan Cooled)
    f. Lean Amine Cooler (Fan Cooled)
    g. Lean Amine Surge Tank

    For trains 4, 5, and 6, the typical amine regeneration system (figure 4) is the same, except the amine heated reboiler is a direct fired reboiler, not a hot oil heated reboiler. Trains 4, 5, and 6 also have two flash tanks (high pressure and low pressure) as opposed to only one in trains 1, 2, and 3.

2. Pumps typical of each train include:

    a. Multi-stage high pressure centrifugal lean amine solution pumps with spare.
    b. Low pressure centrifugal solution cooler booster pumps with spare.
    c. Low pressure centrifugal reflux pump with spare.

d. Low pressure centrifugal hot oil circulation pump with spare (trains 1, 2, and 3 only).

3. The heat transfer medium used for trains 1, 2, and 3 in this plant is Conoco heat transfer oil and the enclosed Material Safety Data Sheets (MSDS) provides a description of this oil.

4. CO_2 stripped from the rich solution from trains 1, 2, and 3 is piped to a common 16-inch vent line, through an 8-foot diameter by 32-foot seam-to-seam, carbon steel, horizontal, vent scrubber and then discharged to the atmosphere via a vertical vent stack. Trains 4, 5 and 6 use a common 20-inch vent line, through a 10-foot by 25-foot seam-to-seam, carbon steel, horizontal, vent scrubber. Condensed water vapor collected in the vent scrubber is pumped back into the regeneration units.

   Make-up water for the regeneration units for trains 1, 2, and 3 amounts to approximately 9400 gpd. A hot oil heated water vaporizer is utilized to provide part of this make-up. The raw waterfeed to this vaporizer is a potable water (TDS 166 ppm), at 4 1/2 gpm. The remainder of the make-up water is purchased.

   Make-up water for the regeneration units for trains 4, 5, and 6 amounts to approximately 21,600 gpd. A two bed (anion/cation) water demineralizer provides this make-up.

5. Reject water for trains 1, 2 and 3 is approximately 1 gpm (TDS 747 ppm). Reject water for trains 4, 5, and 6 is estimated at 4.2 gpm. Reject water is collected in an above-ground welded steel storage tank. The collected reject water will be periodically trucked off-site for disposal in an approved waste disposal well by a contracted shipping agent.

B. Quality Characteristics

The dehydration process for the plant includes a common contactor (countercurrent absorber) for trains 1 and 2 and individual contactors for each of trains 3-6. Trains 1-3 share a common regeneration system and trains 4-6 each has its own regeneration system.

The glycol regeneration unit includes the following equipment:

a. Glycol flash tank
b. Lean/Rich glycol cross exchangers
c. Direct fired glycol reboiler with packed stripping column
b. Lean glycol surge tank
c. Lean glycol cooler (Fan cooled)

Pumps for the glycol system include:

a. High pressure reciprocating plunger pump for each glycol contactor with spare.

Water vapor from the reboiler still column in trains 1-3 is piped to an above ground tank where some water vapor is condensed and collected with small amounts of glycol carry-over. Periodically this water containing a small amount of triethylene glycol is trucked off-site for disposal in an approved waste water disposal well by a contracted shipping agent. Water vapor from the still column in each of trains 4-6 is vented to the atmosphere.

C. Transfer and Storage of Process Fluids and Effluents

1. Wastewater is collected in a steel tank within a concrete vault and is pumped to an aboveground steel tank for storage and then is hauled off site to an OCD approved waste disposal location.

Makeup glycol and amine in trains 1-3 are stored in aboveground 500 gallon steel storage tanks. A small portable centrifugal pump is used to transfer from the storage tank into the system. In trains 4-6 makeup glycol and amine are stored in aboveground 90 bbl steel storage tanks.

The hot oil systems for trains 1, 2 and 3 are closed-loop systems, utilizing an elevated surge drum. Hot oil makeup requires a bulk truck delivery.

2. All high pressure process vessels and piping are installed above grade with the exception of approximately 100 feet of 2-inch glycol piping. This 2-inch line is externally coated and is welded utilizing schedule 80 pipe and weld fittings. Design pressure for this line is 1000 psig and it was hydrotested at 1500 psig. The line was doped and wrapped for external corrosion protection.

All pressure vessels in this plant are ASME Coded. All process piping was designed and fabricated per ASME/ANSI B31.3. All pressure piping welds 2-inch and larger were 100 percent x-rayed.

3. Critical areas in the high pressure gas piping have been inspected by U.T. examination for corrosion. This will be repeated as needed. Mobile Inspection Services, Inc., 2104 River Road, Farmington, NM 87401, has been contracted to inspect the critical areas in the liquid process piping for corrosion.

D. Spill/Leak Prevention and Housekeeping Procedures

1. The aboveground tanks are located within bermed areas with a capacity of at least 1 ½ times the largest tank within each bermed area.

All operations personnel have been instructed in case of process fluid spill or leak to handle as follows:

Small Spills: Cover with sand to soak up fluid and shovel into drums for off-site disposal.

Large Spills: Dike around spill and pump into drums. Call vacuum truck if necessary.

Any spill large enough to require a dike to contain it will be reported immediately by phone to the OCD. Written notification will follow within one week per section 1-203 of the New Mexico Water Quality Control Commission Regulation.

2. A 20-foot by 20-foot concrete cleaning slab with a 4-inch high curb is available for cleaning equipment and allowing filter elements to drip dry. These elements are then taken to a land fill and disposed of properly. Empty drums will not be stored at the plant.

   All process pumps are equipped with Seal pans for collecting seal or packing leakage. If this collected leakage is contaminated with dirt and cannot be returned to the process, it is stored in 55 gallon drums for off-site disposal.

3. This plant is manned 24 hours per day by four men per 8 hour shift. Operators are required to log process variables every 2 hours and a walk-through is required at least every hour.

3.0 EFFLUENT DISPOSAL

A.

1. This facility utilizes open drains on all vessels and piping. A fresh water line supplies the control room (bathroom), two water hydrants and the make-up water system. The control room is equipped with a toilet and sink which are piped to the City of Bloomfield sewer system. There are no on-site septic tanks or impoundments.

   Amine samples are collected every 4 hours to determine amine strength and lean loadings. Total sample volume collected per day is 2665 ml and includes the following:

600 ml	Distilled H_2O
1 ml	Methyl Red Indicator
132 ml	Amine Solution
540 ml	0.1 N Sulfuric Acid
1200 ml	Methyl Alcohol
120 ml	Thymolphthalen Indicator 0.05%
72 ml	0.20 Normal Potassium Hydroxide
2665 ml	Total Per Day

   These samples are discarded in 55-gallon drums for periodic off-site disposal.

2. The shipping agent contracted for off-site disposal is Chief Transport Co., 604 West Pinon Street, Farmington, New Mexico.

   The off-Site Disposal is:

   Basin Disposal
   Sec. 3, T-29-N, R-11-W
   6 Rd 5046
   Bloomfield, NM
   632-8936

4.0 SITE CHARACTERISTICS

A. An irrigation canal running from east to west is approximately ½ mile south of this plant site.

Domestic water for this facility is provided by El Paso Natural Gas Company. The water is from the San Juan River. TDS for this water is 166 ppm. Depth of water table at this location is 37 feet.

B. A soil survey was done at this plant site by Western Technologies, Inc., 400 South Lorene Ave., Farmington, NM. Soil samples were taken to a depth of 25 feet. No water was encountered. No rock was encountered. The soil samples were characterized as sand.

C. Flood potential is very unlikely and flood protection is not necessary.

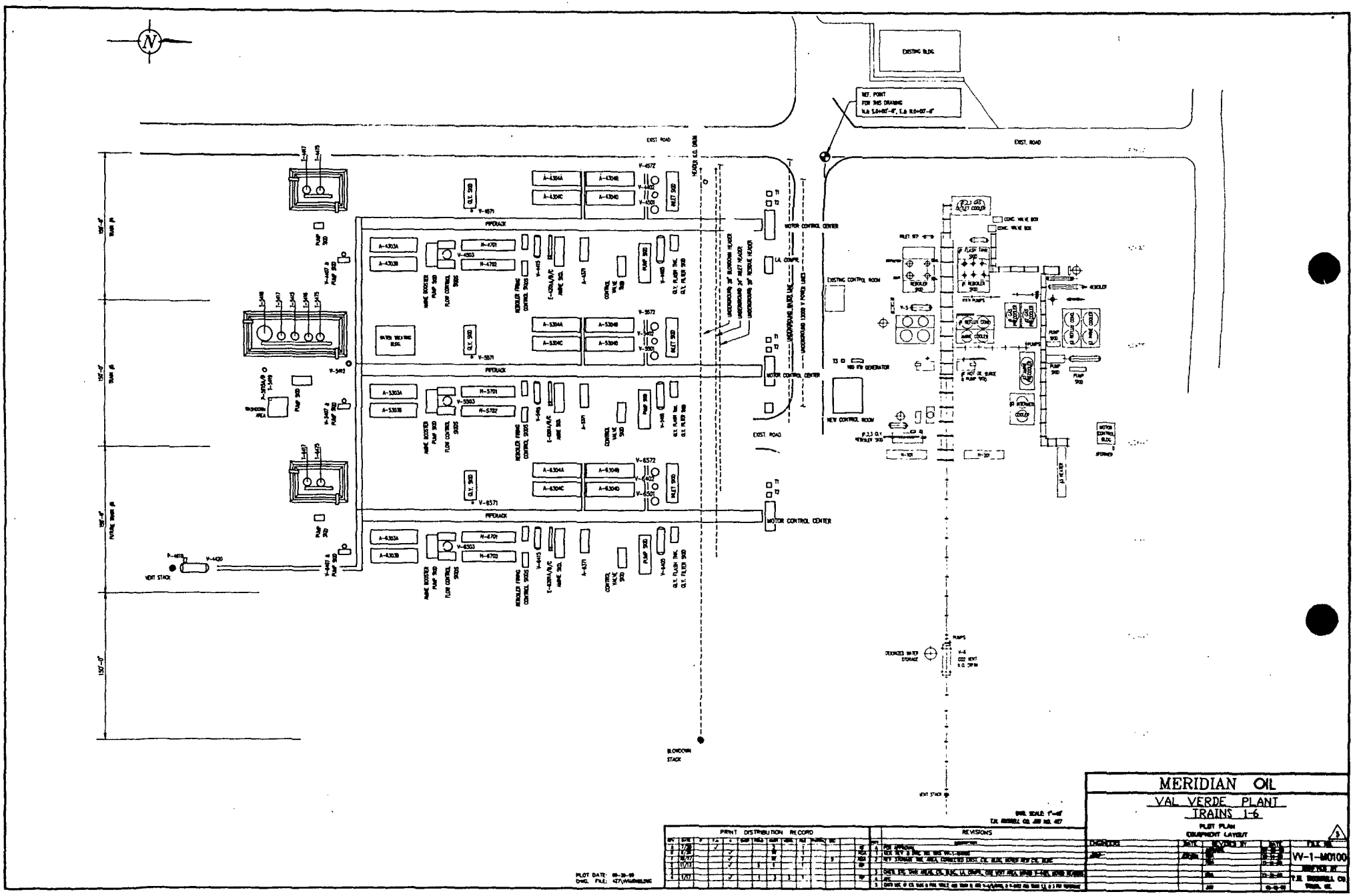
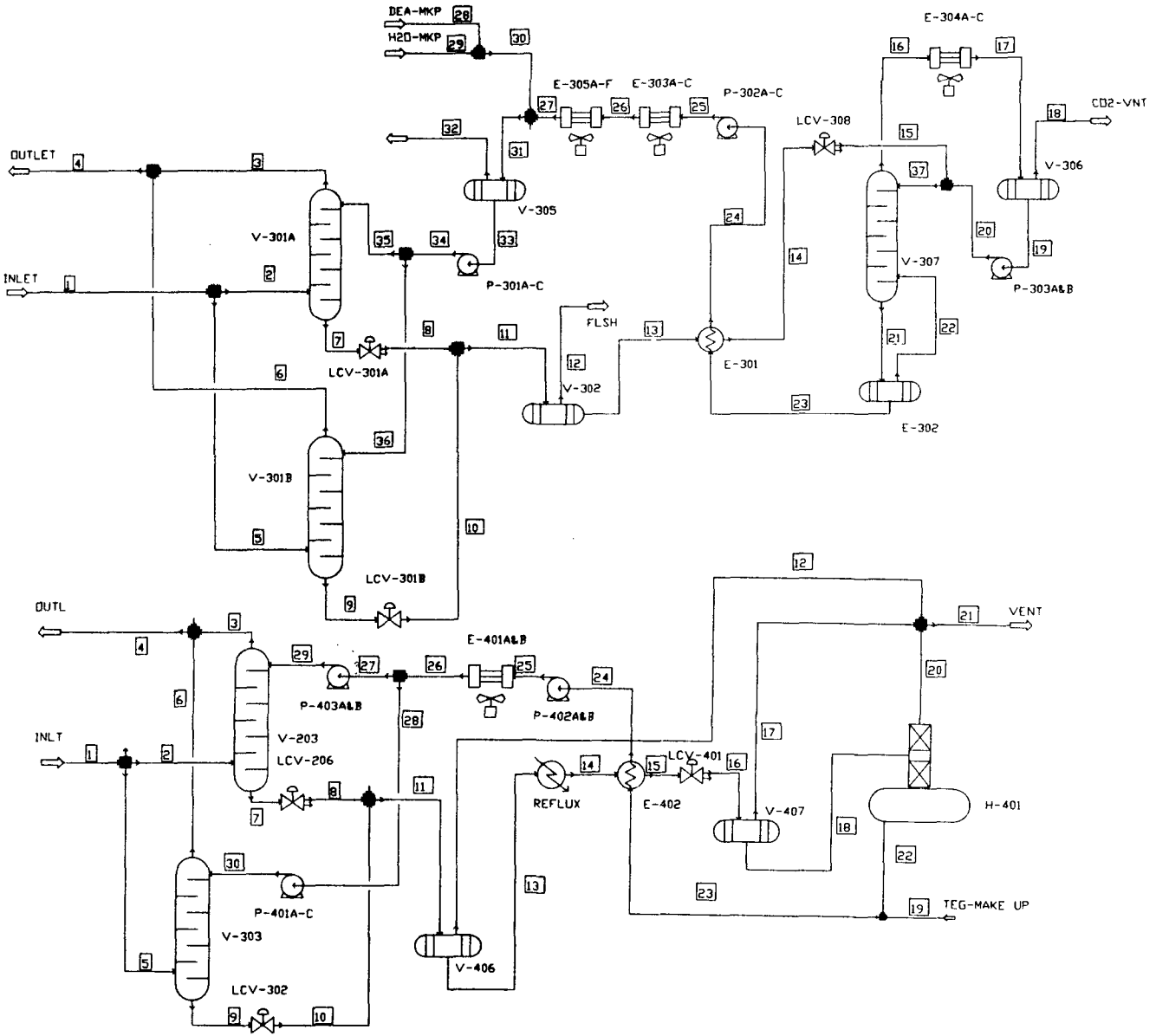

MERIDIAN OIL
VAL VERDE PLANT
TRAINS 1-6
PLOT PLAN
EQUIPMENT LAYOUT
VV-1-M0100
EXISTING BLDG.
EXIST. ROAD
MOTOR CONTROL CENTER
EXISTING CONTROL ROOM
NEW CONTROL ROOM
PIPERACK
BLOWDOWN STACK
VENT STACK
PRINT DISTRIBUTION RECORD
REVISIONS

FIGURE 2

V-301A&B AMINE CONTACTORS | V-305 AMINE SURGE TANK | V-302 FLASH TANK | P-301A/B/C AMINE HIGH PRESS. PUMPS | E-303A/B/C AMINE PRE-COOLERS | E-305A/B/C/D/E/F AMINE SOLUTION COOLERS | P-302A/B/C AMINE BOOSTER PUMPS | E-301 LEAN/RICH AMINE EXCHANGER

V-307 AMINE REGENERATOR | E-302 AMINE REGENERATOR REBOILER | E-304A/B/C AMINE REFLUX CONDENSER | V-306 AMINE REFLUX ACCUMULATOR | P-303A&B AMINE REFLUX PUMPS



V-203 & V-303 GLYCOL CONTACTORS | P-401A/B/C PLANT #3 HIGH PRESS PUMPS | P-403A&B GLYCOL PUMPS | V-406 PRIMARY SURGE TANK | E-401A&B GLYCOL COOLERS | E-402 LEAN/RICH GLYCOL EXCHANGER | V-407 SEC. SURGE TANK | H-401 GLYCOL REBOILER

MERIDIAN OIL
VAL VERDE PLANT
SAN JUAN COUNTY, NEW MEXICO
VV-1-1222

TRAINS 1-3
PROCESS FLOW DIAGRAM

ENGINEERING, INC.
MIDLAND, TEXAS

FIGURE 3

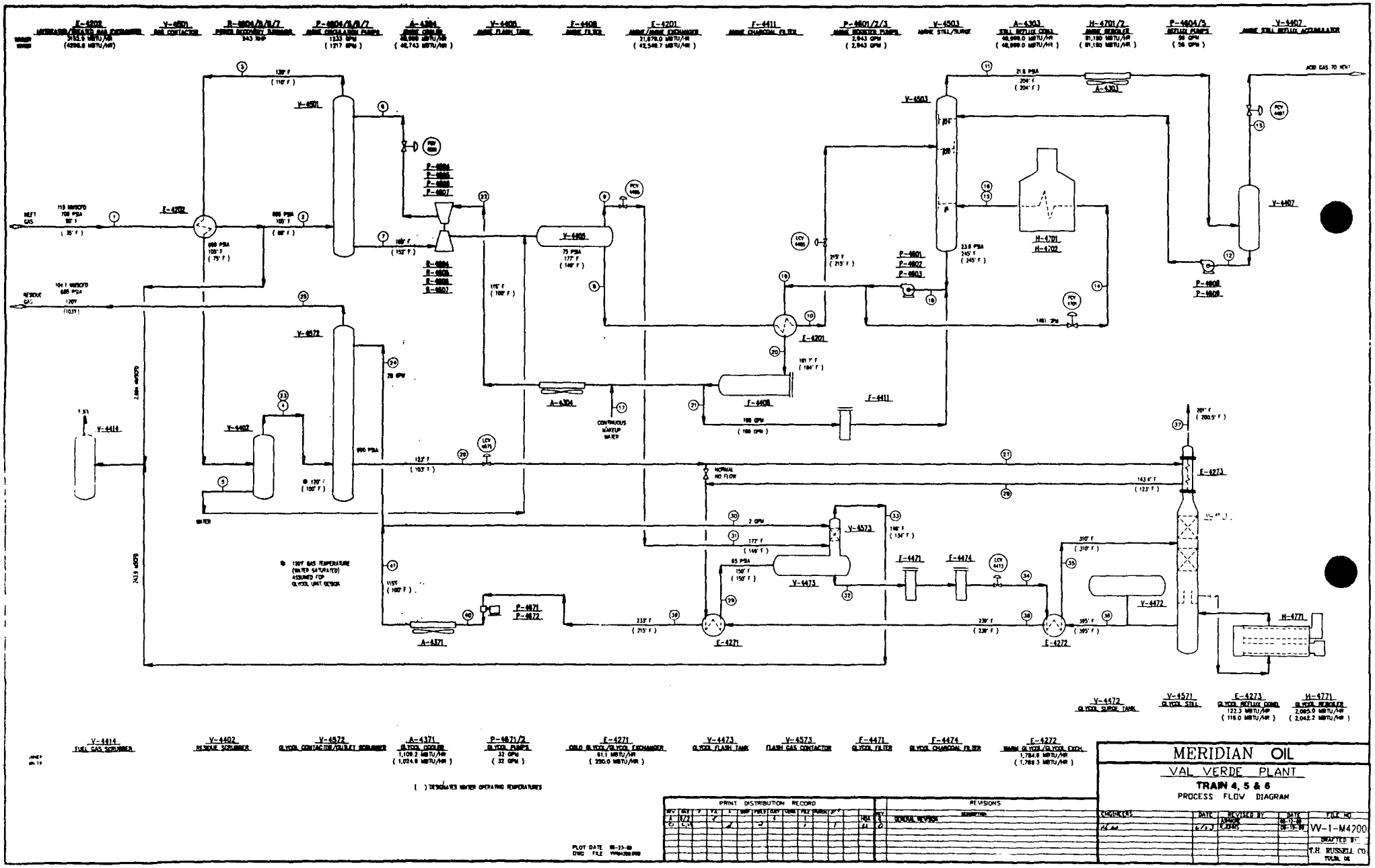

MERIDIAN OIL
VAL VERDE PLANT
TRAIN 4, 5 & 6
PROCESS FLOW DIAGRAM
VW-1-M4200
T.H. RUSSELL CO
TULSA, OK
PRINT DISTRIBUTION RECORD
REVISIONS
GENERAL REVISION
( ) DESIGNATES WINTER OPERATING TEMPERATURES
* 130°F GAS TEMPERATURE (WATER SATURATED) ASSUMED FOR GLYCOL UNIT DESIGN
NORMAL NO FLOW
CONTINUOUS MAKEUP WATER
ACID GAS TO VENT
INLET GAS
RESIDUE GAS
F-4202
V-4401
V-4402
V-4414
V-4472
V-4473
V-4503
V-4505
V-4507
F-4201
F-4408
F-4411
F-4471
F-4474
F-4273
A-4304
A-4371
H-4701
H-4771
P-4801/2/3
P-4804/5
P-4806/7
P-4808/9
P-4871/2

FIGURE 4

APPENDIX A

MATERIAL SAFETY DATA SHEETS (MSDS)

MATERIAL SAFETY DATA SHEET

DOW CHEMICAL U.S.A. MIDLAND, MICHIGAN 48674 EMERGENCY (517) • 636 • 4400

PRODUCT NAME: GAS/SPEC (R) CS-1 SOLVENT

Effective Date: 06/19/90 Date Printed: 07/17/90 MSDS:002116

1. INGREDIENTS: (% w/w, unless otherwise noted)

Methyldiethanolamine	CAS# 000105-59-9	46-62%
Proprietary amine derivatives		28-44%
Water	CAS# 007732-18-5	9-11%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 240-280F
VAP. PRESS: <20 mmHg, @ 70F
VAP. DENSITY: 4
SOL. IN WATER: Complete
SP. GRAVITY: 1.05-1.07
APPEARANCE: Pale straw liquid.
ODOR: Amine odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: >220F
METHOD USED: PMCC

FLAMMABLE LIMITS
LFL: Not determined
UFL: Not determined

EXTINGUISHING MEDIA: Water fog, alcohol foam, CO2, dry chemical, water spray.

FIRE & EXPLOSION HAZARDS: No special hazards.

(Continued on Page 2)

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE-FIGHTING EQUIPMENT: Wear positive pressure, self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) No relevant data available.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Acid, oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: Possible nitrogen oxides.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Wash small amounts with water. Dike to avoid contamination of sewer with large amounts, soak up with absorbent material, scoop into drums.

DISPOSAL METHOD: Dispose by incineration in accordance with all local, state, and federal requirements.

6. HEALTH HAZARD DATA:

EYE: May cause severe eye irritation. May cause moderate corneal injury.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation, even a burn.

(Continued on Page 3)

6. HEALTH HAZARD DATA: (CONTINUED)

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The dermal LD50 has not been determined.

INGESTION: Single dose oral toxicity is believed to be low. Single dose oral LD50 has not been determined. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury.

INHALATION: Excessive exposure may cause irritation to upper respiratory tract.

SYSTEMIC & OTHER EFFECTS: Results from repeated exposure tests on proprietary ingredient in laboratory animals include anemia (rats) and effects on kidney (rats and mice) and liver (mice). Heart and nervous system effects were also observed in these animals given exaggerated doses. Changes in other organs, causes which are nonspecific, were judged secondary to the poor health of the animals due to the extremely high doses given.

MUTAGENICITY (EFFECTS ON GENETIC MATERIAL): Results of in vitro ('test tube') mutagenicity test on proprietary ingredient have been negative.

7. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower.

INGESTION: Induce vomiting if large amounts are ingested. Consult medical personnel.

(Continued on Page 4)

7. FIRST AID: (CONTINUED)

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. Repeated excessive exposure may aggravate preexisting liver and kidney disease.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): Contains proprietary ingredient for which the exposure guideline has been omitted.

VENTILATION: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations (if heated).

RESPIRATORY PROTECTION: For most conditions, no respiratory protection should be needed; however, if handling at elevated temperatures without sufficient ventilation, use an approved air-purifying respirator.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. Use impervious gloves when prolonged or frequently repeated contact could occur.

EYE PROTECTION: Use chemical goggles.

(Continued on Page 5)

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Avoid breathing vapors if generated.

MSDS STATUS: Revised section 9 and regsheet.

SARA 313 INFORMATION:
This product contains the following substances subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
AMINE DERIVATIVES	proprietary	<44 %

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
AMINE DERIVATIVES	proprietary	<44 %

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 87792 Page: 1

PRODUCT NAME: TRIETHYLENE GLYCOL - TECHNICAL

Effective Date: 08/29/89 Date Printed: 04/05/90 MSDS:000271

1. INGREDIENTS: (% w/w, unless otherwise noted)

Triethylene glycol	CAS# 000112-27-6	99%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 545.9F; 286C
VAP PRESS: < 1.0 mmHg @ 20C
VAP DENSITY: 5.18
SOL. IN WATER: Completely miscible
SP. GRAVITY: 1.1 @ 25/25C
APPEARANCE: Colorless liquid.
ODOR: Mild odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 350F; 177C

METHOD USED: PMCC

FLAMMABLE LIMITS
LFL: 0.9%
UFL: 9.2%

EXTINGUISHING MEDIA: Water fog, alcohol resistant foam, CO2, dry chemical.

FIRE & EXPLOSION HAZARDS: Not available.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained

(Continued on Page 2)

* An Operating Unit of The Dow Chemical Company

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Will ignite in air at 700F.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: Burning produces normal products of combustion, including carbon monoxide, carbon dioxide, and water.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small spills: Soak up with absorbent material and collect for disposal. Large spills: dike to prevent contamination of waterways, then pump into suitable containers for disposal.

DISPOSAL METHOD: Burn in an approved incinerator in accordance with all local, state, and federal laws and regulations.

6. HEALTH HAZARD DATA:

EYE: Essentially nonirritating to eyes.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation. May cause more severe response if skin is abraded (scratched or cut).

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful

(Continued on Page 3)

6. HEALTH HAZARD DATA: (CONTINUED)

amounts. The dermal LD50 has not been determined.

INGESTION: Single dose oral toxicity is low. The oral LD50 for rats is 16,800-22,060 mg/kg.

INHALATION: No adverse effects are anticipated from inhalation.

SYSTEMIC & OTHER EFFECTS: Based on available data, repeated exposures are not anticipated to cause any significant adverse effects. Did not cause cancer in long-term animal studies. Birth defects are unlikely. Exposures having no adverse effects on the mother should have no effect on the fetus. In animal studies, has been shown not to interfere with reproduction.

7. FIRST AID:

EYES: Irrigate immediately with water for at least five minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: Induce vomiting if large amounts are ingested. Consult medical personnel.

INHALATION: Remove to fresh air if effects occur. Call a physician.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE: AIHA WEEL is 10 mg/m3 for polyethylene glycols.

VENTILATION: Provide general and/or local exhaust ventilation to

(Continued on Page 4)

8. HANDLING PRECAUTIONS: (CONTINUED)

control airborne levels below the exposure guidelines.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. In misty atmospheres, use an approved mist respirator.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron or full-body suit will depend on operation. If hands are cut or scratched, use impervious gloves even for brief exposures.

EYE PROTECTION: Use safety glasses.

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Not to have met any hazard category

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Practice reasonable care to avoid exposure.

Trace quantities of ethylene oxide (EO) may be present in this product. While these trace quantities could accumulate in headspace areas of storage and transport vessels, they are not

(Continued on Page 5)

9. ADDITIONAL INFORMATION: (CONTINUED)

expected to create a condition which will result in EO concentrations greater than 0.5 ppm (8 hour TWA) in the breathing zone of the workplace for appropriate applications. OSHA has established a permissible exposure limit of 1.0 ppm 8 hr TWA for EO. (Code of Federal Regulations Part 1910.1047 of Title 29).

MSDS STATUS: Revised Sections 6 and 8.

Material Safety Data Sheet

conoco

Emergency Medical Telephone (800) 441-3637

CONOCO HEAT TRANSFER OIL

I. MATERIAL IDENTIFICATION

Name
Conoco Heat Transfer Oil

CAS Registry Number
Mixture; See Section XI

Synonyms
Petroleum Heat Transfer Medium

Product Code
7974

Chemical Family
Petroleum Hydrocarbons

Transportation Emergency Phone
1-(800) 424-9300 (Chemtrec)

II. OSHA HAZARD DETERMINATION

The material is not hazardous as defined by OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Refer to Section XI of this MSDS for federal and state regulatory information.

Hazardous Ingredients	CAS Registry Number	Concentration
None		

Hazardous Physical Properties
None

III. PHYSICAL DATA

Appearance and Odor
Light brown liquid;
Mild petroleum hydrocarbon odor

Specific Gravity (H_2O=1)
0.87

Boiling Point/Range
750° - 1000°F

% Volatiles (by volume)
Nil

Vapor Pressure
Nil

Solubility in Water
Insoluble

Vapor Density (Air = 1.0)
> 1

Evaporation Rate (Ether = 1)
Nil

IV. REACTIVITY DATA

Stable: X **Unstable:** ____

Hazardous Decomposition Materials: Hazardous gases/vapors produced are carbon dioxide. Incomplete combustion may produce carbon monoxide.

Conditions to Avoid: Strong oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

Conoco Inc., P.O. Box 2197, Houston, TX 77252
General Information No. (713) 293-5550

V. FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method used): 295°F (PMCC)

Autoignition Temperature: 680°F

Handle and store in accordance with NFPA procedure for Class IIIB Combustible Liquid.

Extinguishing Media: Use water spray, dry chemical, CO_2, foam.

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

National Fire Protection Association (NFPA) Classification	HAZARD RATING
Health 0 Fire 1 Reactivity 0	Least-0 Slight-1 Moderate-2 High-3 Extreme-4

VI. TRANSPORTATION AND STORAGE

Storage Conditions:
Store in accordance with National Fire Protection Association regulations.

Shipping Information:
DOT: Not Regulated
IATA/IMO: Not Restricted

VII. HEALTH HAZARD INFORMATION

Exposure Limits for Conoco Heat Transfer Oil

PEL: None Established Ceiling Value: None Established
TLV: None Established

Primary Routes of Exposure/Entry: Skin.

Signs and Symptoms of Exposure/Medical Conditions Aggravated by Exposure:
Mouse skin painting studies have shown that highly solvent-refined petroleum distillates, which are similar to ingredients in this product, have not caused skin tumors. The product does not pose a significant health hazard, but as with many petroleum products, poor hygienic practices or inadequate engineering design that allow prolonged or repeated exposure may cause minor skin irritation.

Listed as Carcinogen or Potential Carcinogen by:

Material	NTP	IARC	OSHA
	No	No	No

VIII. EMERGENCY AND FIRST AID INFORMATION

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, immediately wash skin with soap and plenty of water. If irritation develops, consult a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician.

Notes to Physician: Gastric lavage by qualified personnel may be considered, depending on quantity of material ingested.

IX. SPILL, LEAK AND DISPOSAL INFORMATION

In Case of Spill or Leak: Contain spill immediately in smallest possible area. Recover as much of the product as possible by such methods as vacuuming, followed by recovering residual fluids by using absorbent materials. Nonrecoverable product, contaminated soil, debris and other materials should be placed in proper containers for ultimate disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

NOTE: Review FIRE AND EXPLOSION HAZARDS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Waste Disposal Method: Recycle as much of the recoverable product as possible. Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

X. PRECAUTIONARY MEASURES

Respiratory Protection: None required except under unusual circumstances such as described in Section V.

Ventilation: Normal shop ventilation.

Protective Gloves: Should be worn when the potential exists for prolonged or repeated skin exposure. NBR or neoprene recommended.

Eye Protection: Safety glasses with side shields; chemical splash goggles if splashing is probable.

Other Protective Equipment: Coveralls with long sleeves if splashing is probable. Launder contaminated clothing before reuse.

XI. REGULATORY INFORMATION

FEDERAL REGULATIONS

CERCLA, 40 CFR 302
The material contains the following hazardous substance which, when released in quantities equal to or exceeding the Reportable Quantity, triggers National Response Center notification requirements.

Hazardous Substance	Reportable Quantity
Not Applicable	

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986, TITLE III
SECTIONS 302, 304, 311, 312, 313

SECTION 302/304 - Extremely Hazardous Substances (40 CFR 355)
The material does not contain extremely hazardous substances at greater than 1.0% concentration; however, it is possible that this material may contain extremely hazardous substances at a lower concentration so that a large enough spill could warrant an Emergency Release Report under Section 304.

SECTION 311/312 - MSDS and Chemical Inventory Reporting Requirements (40 CFR 370)
The material should be reported under the following EPA hazard categories:

__ Immediate (Acute) Health Hazard
__ Delayed (Chronic) Health Hazard
__ Fire
__ Sudden Release of Pressure
__ Reactive
x Not Applicable

NOTE: See Section II for the concentration of any ingredients classified as hazardous by OSHA.

SECTION 313 - List of Toxic Chemicals (40 CFR 372)
The material contains the following chemical(s) at a level of 1.0% or greater (0.1% for carcinogens) on the list of Toxic Chemicals and is subject to toxic chemical release reporting requirements.

Toxic Chemical	CAS Registry Number	Approx. Concentration (Upper Bound)
None		

TOXIC SUBSTANCES CONTROL ACT (TSCA), 40 CFR 710
This material is a mixture as defined by TSCA. The chemical ingredients in this material are in Section 8(b) Chemical Substance Inventory and/or are otherwise in compliance with TSCA. In the case of ingredients obtained from other manufacturers, Conoco relies on the assurance of responsible third parties in providing this statement.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261, SUBPART C AND D
The material, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however, it could be considered hazardous if it meets criteria for being toxic, corrosive, ignitable or reactive according to U.S. EPA definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This material could also become a hazardous waste if it is mixed with or comes in contact with a listed hazardous waste. If such contact or mixing occurs, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, Regulations 40 CFR 262, 263, 264 and 268 may apply.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15, 40 CFR 116
The material contains the following ingredient(s) which is considered hazardous if spilled in navigable waters.

Ingredient	Reportable Quantity
Petroleum Hydrocarbon	Film or sheen upon or discoloration of the water surface or adjoining shoreline

HAZARDOUS MATERIALS TRANSPORTATION REGULATIONS, 49 CFR 171-178
The material contains the following ingredient(s) which is considered a hazardous substance as defined by 49 CFR 171.8 if spilled while being transported in commerce.

Ingredient	Reportable Quantity
Not Applicable	

FOREIGN REGULATIONS

CANADIAN HAZARDOUS PRODUCTS ACT (WHMIS)

The material is not a WHMIS Controlled Product.

STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 ("PROPOSITION 65")

The material contains the following ingredient(s) known to the State of California to cause cancer, birth defects or other reproductive harm. Read and follow label directions and use care when handling or using all petroleum products.

Ingredient

None

PENNSYLVANIA WORKER AND COMMUNITY RIGHT TO KNOW ACT

The material does not contain any ingredient(s) subject to the Act. Nonhazardous ingredient(s) information is withheld as trade secret in accordance with Section 11 of the Act.

MSDS Code: LUBC0235	
DATE OF LATEST REVISION/REVIEW:	4/89 - Replaces MSDS dated 1/89
DEPARTMENT RESPONSIBLE FOR MSDS:	Environmental and Occupational Health Services
PRODUCT INFORMATION CONTACT:	MSDS Analyst Conoco Inc. (713) 293-5550

SOUTH-TEX TREATERS, INC.
P.O. BOX 9 (505) 632-3896
BLOOMFIELD, N.M. 87413

OIL CON. DIVISION
RECEIVED
'90 JUL 23 AM 9 46

Mr. Mike David
South-Tex Treaters, Inc.
Plant Foreman

July 16, 1990

Oil Conservation Commission
P.O. Box 2088
Sante Fe, N.M. 87504-2088

Dear Sir:

Concerning my phone conversation with Mr. Dave Boyer on July 3, 1990, South-Tex Treaters, Inc. has not been able to find an alternative use or place to reclaim our used amine. We have at this time decided to dispose of the used amine from the Val Verde Gas Plant as discussed.

The amine was used in the removal of CO_2 from Fruitland coal seam gas. The amine was removed due to degradation components related to CO_2 removal.

As I explained in our phone conversation, the 22,000 gallon of used amine has the following specifications:

Amine	23WT%
Deionized water	77WT%
P.H.	10.2

As Dave informed me, these parameters were suitable for the Class II U.I.C. Well, belonging to Hicks Disposal.

I contacted Ronnie Benson (disposal foreman) with Hicks Disposal and informed him of our conversation. Mr. Benson said disposal of the amine would be alright as long as South-Tex Treaters, Inc. could give a few days notice on delivery so he could make room to receive the amine.

I appreciate your help and will proceed with disposal as soon as possible.

Sincerely,

Mike David

Mike David

MD/rd

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time 8:30	Date 7/3/90

Originating Party	Other Parties
~~Dave~~ Mike David South Tex Treaters 632-3896	David

Subject: DEA Disposal (Di-Ethyle Amine)

Discussion

Mr David called to inquire about spent DEA disposal - They have 23,000 gallons from the Val Verde plant that are trying to recycle. (It was waiting for disposal when Meridian took over, but Meridian is not assuming responsibility) If they can't recycle, want to put down disposal well. MSA sheet says it not RCRA hazardous. I told him Class II well could accept but didn't want in any surface ponds. Suggested Hicks or Basin (when reopen).

Conclusions or Agreements

Told him to contact those operators for compatability with other fluids and get back with us for final OK when he finds location

Distribution

Val Verde File

Signed David F Boyer

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
[illegible] NEW MEXICO [illegible]
(505) 827-[illegible]

May 21, 1990

CERTIFIED MAIL
RETURN RECEIPT NO. P-918-402-250

Mr. C. R. Owen
Meridian Oil Inc.
P. O. Box 4289
Farmington, New Mexico 87499-4289

RE: Discharge Plan GW-51 Modification
Val Verde Gas Processing Plant
San Juan County, New Mexico

Dear Mr. Owen:

The Oil Conservation Division (OCD) has received your request dated May 15, 1990, to modify your previously approved discharge plan (GW-51) to include the newly constructed trains IV, V, and VI. The additional trains will increase the capacity of the plant and are contiguous with the facility now operating pursuant to discharge plan GW-51.

This modification request is the result of your purchase of the original plant and subsequent assumption of responsibility for compliance with the terms and conditions of discharge plan GW-51.

Discharge plan GW-51 can be modified with the addition of the new processing trains, therefore, the filing of a new discharge plan requested by the OCD letter dated April 18, 1990 is no longer required.

I am enclosing the OCD Guidelines for the Preparation of Ground Water Discharge Plans at Natural Gas Processing Plants to assist you in assembling the information required for OCD to review the modification. All information pertaining to the expansion should be included. The guidelines are presently being revised to include berming of tanks, curbing and paving of process areas susceptible to leaks or spills and the disposition of any solid wastes. Please include these items in your renewal application as well as plans for controlling spills and accidental discharges at the facility (including detection of leaks in buried underground tanks and/or piping).

If you have any questions, please do not hesitate to call me at (505) 827-5884.

Sincerely,

Roger C. Anderson
Environmental Engineer

RCA/sl

cc: OCD Aztec Office

MERIDIAN OIL

May 15, 1990

Oil Conservation Division
ATTN: Mr. Roger C. Anderson
P.O. Box 2088, Rm #206
Santa Fe, New Mexico 87504

RE: Change of Ownership
Discharge Plan No. GW-51
Val Verde Gas Processing Plant

Dear Mr. Anderson:

MOGI (Meridian Oil Gathering, Inc.) has executed an agreement to purchase trains I, II, and III from South-Tex Treaters, Inc. The effective date of the custody transfer will be May 16, 1990 at 12:01 a.m., after which MOGI will own and operate these facilities.

MOGI has been informed by South-Tex that a discharge plan has been issued by the OCD for these facilities. MOGI requests the transfer of this discharge plan (GW-51) from South-Tex to MOGI. MOGI will assume all responsibilities and agrees to all terms and conditions of this discharge plan.

If any additional information is needed, please contact Keith Baker at (505)326-9842.

Sincerely,

C.R. Owen
Regional Operations Manager

Concur:

David C. Morrow
South-Tex Treaters, Inc.

LWD/dj

xc: L.D. Jones
T.K. Baker
L.E. Anderson
L.W. Dillon
T.G. McMillin
David Morrow, South-Tex Treaters, Inc.

AIRBILL

FEDERAL EXPRESS

USE THIS AIRBILL FOR DOMESTIC SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WB FOR SHIPMENTS TO PUERTO RICO.
QUESTIONS? CALL 800-238-53 REE.

PACKAGE TRACKING NUMBER 343626 4763

92CAM 343626 4963

Date 5-16-90

RECIPIENT'S COPY

1 From (Your Name) Please Print: David C. Morrow
Your Phone Number (Very Important): (915) 367-1958
Company: SCUTH-TEX TREATERS INC
Department/Floor No.:
Street Address: 2310 PROSPECT
City: ODESSA **State:** TX **ZIP Required:** 7 9 7 6 2

2 To (Recipient's Name) Please Print: Roger C. Anderson
Recipient's Phone Number (Very Important): (505) 827-5885
Company: Oil Conservation Division
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 715 Alta Vista
City: Santa Fe, New Mexico **State:** **ZIP Required:** 87501

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

PAYMENT: ☒ Bill Sender ☐ Bill Recipient's FedEx Acct. No. ☐ Bill 3rd Party FedEx Acct. No. ☐ Bill Credit Card ☐ Cash

4 SERVICES

1 ☐ **PRIORITY 1** Overnight Delivery
2 ☐ **COURIER-PAK OVERNIGHT ENVELOPE***
3 ☐ **OVERNIGHT BOX**
4 ☐ **OVERNIGHT TUBE**
5 ☐ **STANDARD AIR** Delivery not later than second business day
6 ☒ **OVERNIGHT LETTER***
7 ☐
8 ☐
9 ☐
10 ☐

DELIVERY AND SPECIAL HANDLING

1 ☐ **HOLD FOR PICK-UP** (Fill in Box H)
2 ☒ **DELIVER WEEKDAY**
3 **DELIVER SATURDAY** (Extra charge) ☐
4 ☐ **DANGEROUS GOODS** (Extra charge)
5 ☐ **CONSTANT SURVEILLANCE SERVICE (CSS)** (Extra charge) (Release Signature Not Applicable)
6 ☐ **DRY ICE** ____ Lbs.
7 ☐ **OTHER SPECIAL SERVICE** ____
8 ☐
9 ☐ **SATURDAY PICK-UP** (Extra charge)
10 ☐
11 ☐
12 ☐ **NONDAY DELIVERY** (If offered) (Extra charge)

PACKAGES	WEIGHT IN POUNDS ONLY	YOUR DECLARED VALUE	OVER SIZE
No Door			
Total	Total	Total	

Received At:
1 ☐ Regular Stop
2 ☒ On-Call Stop
3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

FEDEX Corp. Employee No.: 5

Date/Time for FEDEX Use: 5-16 1 23

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City State ZIP Required

Emp. No. Date
☐ Cash Received
☐ Return Shipment
☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

Federal Express Use	
Base Charges	
Declared Value Charge	
Other 1	
Other 2	
Total Charges	

PART #111800
REVISION DATE 10/88
PRINTED IN U.S.A. FXEM
009 PROD.3/89

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MULTIPLE PACKAGE SERVICE

IF YOU ARE MAKING A MPS SHIPMENT, APPLY THE SELF ADHESIVE MPS COPY HERE

TERMS AND CONDITIONS

DEFINITIONS

On this Airbill we, our and us refer to Federal Express Corporation, its employees and agents. You and your refer to the sender, its employees and agents.

AGREEMENT TO TERMS

By giving us your package to deliver, you agree to all the terms on this Airbill and in our current Service Guide, which is available on request. If there is a conflict between the current Service Guide and this Airbill, the *Service Guide will control. No one is authorized to alter or modify the terms* of our Agreement.

RESPONSIBILITY FOR PACKAGING AND COMPLETING AIRBILL

You are responsible for adequately packaging your goods and for properly filling out this Airbill. Omission of the number of packages and weight per package from this Airbill will result in a billing based on our best estimate of the number of packages received from you and an estimated "default" weight per package, as determined and periodically adjusted by us.

AIR TRANSPORTATION TAX INCLUDED

Our basic rate includes a federal tax required by Internal Revenue Code Section 4271 on the air transportation portion of this service.

LIMITATIONS ON OUR LIABILITY AND LIABILITIES NOT ASSUMED

Our liability for loss or damage to your package is limited to your actual damages or $100, whichever is less, unless you pay for and declare a higher authorized value. We do not provide cargo liability insurance, but you may pay forty cents for each additional $100 of declared value. If you declare a higher value and pay the additional charge, our liability will be the lesser of your declared value or the actual value of your package.

In any event, we will not be liable for any damages, whether direct, incidental, special or consequential in excess of the declared value of a shipment, whether or not Federal Express had knowledge that such damages might be incurred including, but not limited to, loss of income or profits.

We won't be liable for your acts or omissions, including but not limited to improper or insufficient packing, securing, marking or addressing, or for the acts or omissions of the recipient or anyone else with an interest in the package. Also, we won't be liable if you or the recipient violates any of the terms of our agreement. We won't be liable for loss of or damage to shipments of cash, currency or other prohibited items.

We won't be liable for loss, damage or delay caused by events we cannot control, including but not limited to acts of God, perils of the air, weather conditions, mechanical delays, acts of public enemies, war, strikes, civil commotions, or acts or omissions of public authorities (including customs and quarantine officials) with actual or apparent authority.

DECLARED VALUE LIMITS

The highest declared value we allow for Overnight Letter and Courier-Pak Overnight Envelope shipments is $100. For other Priority-1 and Standard Air shipments, the highest declared value we allow is $25,000 unless your package contains items of "extraordinary value," in which case the highest declared value we allow is $500. Items of "extraordinary value," include artwork, jewelry, furs, money, precious metals, negotiable instruments and other items listed in our current Service Guide.

If you send more than one package on this Airbill, you may fill in the total declared value for all packages, not to exceed the $100, $500 or $25,000 per package limit described above. (Example: 5 packages can have a total declared value of up to $125,000.) If more than one package is shipped on this airbill, our liability for loss or damage will be limited to the actual value of the package(s) lost or damaged (not to exceed the lesser of the total declared value or the per package limits described above). You have the responsibility of proving the actual loss or damage.

FILING A CLAIM

ALL CLAIMS MUST BE MADE BY YOU IN WRITING. You must notify us of your claim within strict time limits. See current Service Guide.

We'll consider your claim filed if you call and notify our Customer Service Department at 800-238-5355 and notify us in writing as soon as possible.

Within 90 days after you notify us of your claim, you must send us all relevant information about it. We are not obligated to act on any claim until you have paid all transportation charges, and you may not deduct the amount of your claim from those charges.

If the recipient accepts your package without noting any damage on the delivery record, we will assume that the package was delivered in good condition. In order for us to process your claim, you must, to the extent possible, make the original shipping cartons and packing available for inspection.

RIGHT TO INSPECT

We may, at our option, open and inspect your packages prior to or after you give them to us to deliver.

NO C.O.D. SERVICES

We don't provide C.O.D. services.

RESPONSIBILITY FOR PAYMENT

Even if you give us different payment instructions, you will always be primarily responsible for all delivery costs, as well as any costs we may incur in either returning your package to you or warehousing it pending disposition.

QUALIFIED ACCEPTANCE

We reserve the right to reject a shipment at any time, when such shipment would be likely to cause damage or delay to other shipments, equipment or personnel, or if the transportation of which is prohibited by law or is in violation of any rules contained in this Airbill or our Service Guide.

MONEY-BACK GUARANTEE

In the event of untimely delivery, Federal Express will at your request and with some limitations, refund or credit all transportation charges. See current Service Guide for further information.

Part #111800
Rev. 10/88

MERIDIAN OIL

'90 MAY 16 AM 8 40

May 15, 1990

New Mexico Oil Conservation Division
ATTN: Mr. Roger C. Anderson
P.O. Box 2088, Rm #206
Santa Fe, New Mexico 87504

RE: Request for Modification to
Discharge Plan No. GW-51
Val Verde Gas Processing Plant

Dear Mr. Anderson:

MOGI (Meridian Oil Gathering Inc.) requests a modification to the discharge plan for the Val Verde gas processing plant. This request applies to the expansion of this facility.

Discharge plan no. GW-51 was issued for trains I, II, and III, which have a combined gas treating capacity of 130 MMCF/D. The plant expansion will increase the capacity of Val Verde from 130 MMCF/D to 430 MMCF/D with the addition of new treating trains IV, V, and VI (each with a designed capacity of 100 MMCF/D). These new facilities are being constructed at the same location, and will be contiguous to trains I, II, and III.

A Notice of Intent to Discharge for trains IV, V, and VI was filed with your office on April 16, 1990. MOGI subsequently received the notification that a discharge plan is required for these facilities on April 18, 1990. MOGI has since agreed to purchase trains I, II, and III from South-Tex Treaters, prompting this request for modification. A request for change of ownership of discharge plan no. GW-51 has been submitted.

If there are any questions or if additional information is required, please contact Keith Baker at (505)326-9842.

Sincerely,

C.R. Owen
Regional Operations Manager

LWD/CRO/dj

xc: T.K. Baker
L.W. Dillon
L.E. Anderson
L.D. Jones
T.G. McMillin

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

April 18, 1990

CERTIFIED MAIL
RETURN RECEIPT NO. P-918-402-142

Mr. C. R. Owen
Meridian Oil Inc.
P. O. Box 4289
Farmington, New Mexico 87499-4289

RE: Discharge Plan Requirement
Val Verde Plant
San Juan County, New Mexico

Dear Mr. Owen:

The Oil Conservation Division (OCD) has received the Notice of Intent to Discharge, dated April 16, 1990, for the above referenced facility.

Based on the location of the facility, observations during an OCD site inspection on April 12, 1990, and pursuant to the provisions of the Water Quality Control Commission (WQCC) Regulations, you are hereby notified that the filing of a discharge plan is required for your Val Verde Plant located in the NE/4 NE/4, Section 14, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico.

This notification of discharge plan requirement is pursuant to Sections 3-104 and 3-106.B of the WQCC Regulations. The discharge plan, defined in Section 1.101.P. of the WQCC Regulations, should cover all discharges of effluent or leachate at the plant site or adjacent to the plant site. Included in the application should be plans for controlling spills and accidental discharges at the facility (including detection of leaks in buried underground tanks and/or piping).

A copy of the regulations is enclosed for your convenience. Also enclosed is a copy of an OCD guide to the preparation of discharge plans for gas processing plants. The guidelines are presently being revised to include berming of tanks, curbing and paving of process areas susceptible to leaks or spills and the disposition of any solid wastes. Please include these items in your renewal application. Three copies of your discharge plan should be submitted for review purposes.

Section 3-106.B. of the WQCC Regulations allows the Director to authorize discharges from a facility without an approved discharge plan for a period not to exceed 120 days.

Pursuant to Section 3-106.B. of the WQCC Regulations, your request during the April 12, 1990 inspection to place the first train in operation the week of April 16, 1990 and for good cause shown, approval is hereby granted for the Meridian Val Verde Plant to discharge without an approved discharge plan for a period of 120 days. This approval will expire on August 14, 1990. This approval will allow the OCD sufficient time to receive and review the Discharge Plan Application. The regulations do not allow for extension of this discharge period.

If there are any questions on this matter, please feel free to call David Boyer at 827-5812, or Roger Anderson at 827-5884 as they have the assigned responsibility for review of all discharge plans.

Sincerely,

William J. LeMay
Director

WJL/RCA/sl

cc: OCD Aztec Office

MERIDIAN OIL

'90 APR 19 AM 8 31

April 16, 1990

Oil Conservation Division
ATTN: Mr. Roger C. Anderson
P.O. Box 2088, RM #206
Santa Fe, NM 87504

RE: Val Verde Notice of Intent to Discharge

Dear Mr. Anderson:

Enclosed is a Notice of Intent to Discharge for Meridian Oil, Inc.'s Val Verde Plant located near Bloomfield, NM. The basis for the estimated wastewater volume is 5 treatment trains.

As was discussed with you during your plant visit on April 12, 1990, the plant's first train will become operational during the week of April 16, 1990 and will be in a testing phase for approximately one month and will then become fully operational.

We look forward to working with you as you review our Notice of Intent and your determination as for need of a Discharge Plan for our Val Verde Plant.

Sincerely,

for C.R. Owen

C.R. Owen
Regional Operations Manager

LWD/CRO/dj

Enclosure

NOTICE OF INTENT

1. Name and address of person making the discharge:

   Meridian Oil Gathering, Inc.
   P.O. Box 4289
   Farmington, NM 87401

2. Location of the discharge: NE/4 NE/4 of Section 14, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico (See Figure 1).

3. Type of discharge: (1) Neutralized demineralization waste water. (2) Unrecyclable process wastewater which includes wastes containing methyldiethanolamine and/or glycol. (3) Uncommon spills or leaks from the process equipment.

4. The means of discharge: Wastewater is collected in a steel tank within a concrete vault and is pumped to above ground steel tanks for storage, on site, and then is hauled off site to an OCD approved waste disposal location. The above ground tanks are within bermed areas whose capacity is 1 1/2 times the largest tank within the bermed area.

5. The type of operation from which the discharge is derived: The Val Verde Plant utilizes a methyldiethanolamine solution to remove carbon dioxide and a glycol solution to remove water from coal seam natural gas.

6. The estimated flow to be discharged per day: The only normal flow of wastewater is from the demineralization of raw water. This flow is estimated at 6,000 gallons per day. Unrecycleable process solutions and spills or leaks are uncommon and no estimate of their frequency or amount is quantifiable.

7. The estimated depth to ground water: The estimated depth to ground water is 35 feet.

Signed: JA Jones for C.R. Owen Date: 4/16/90

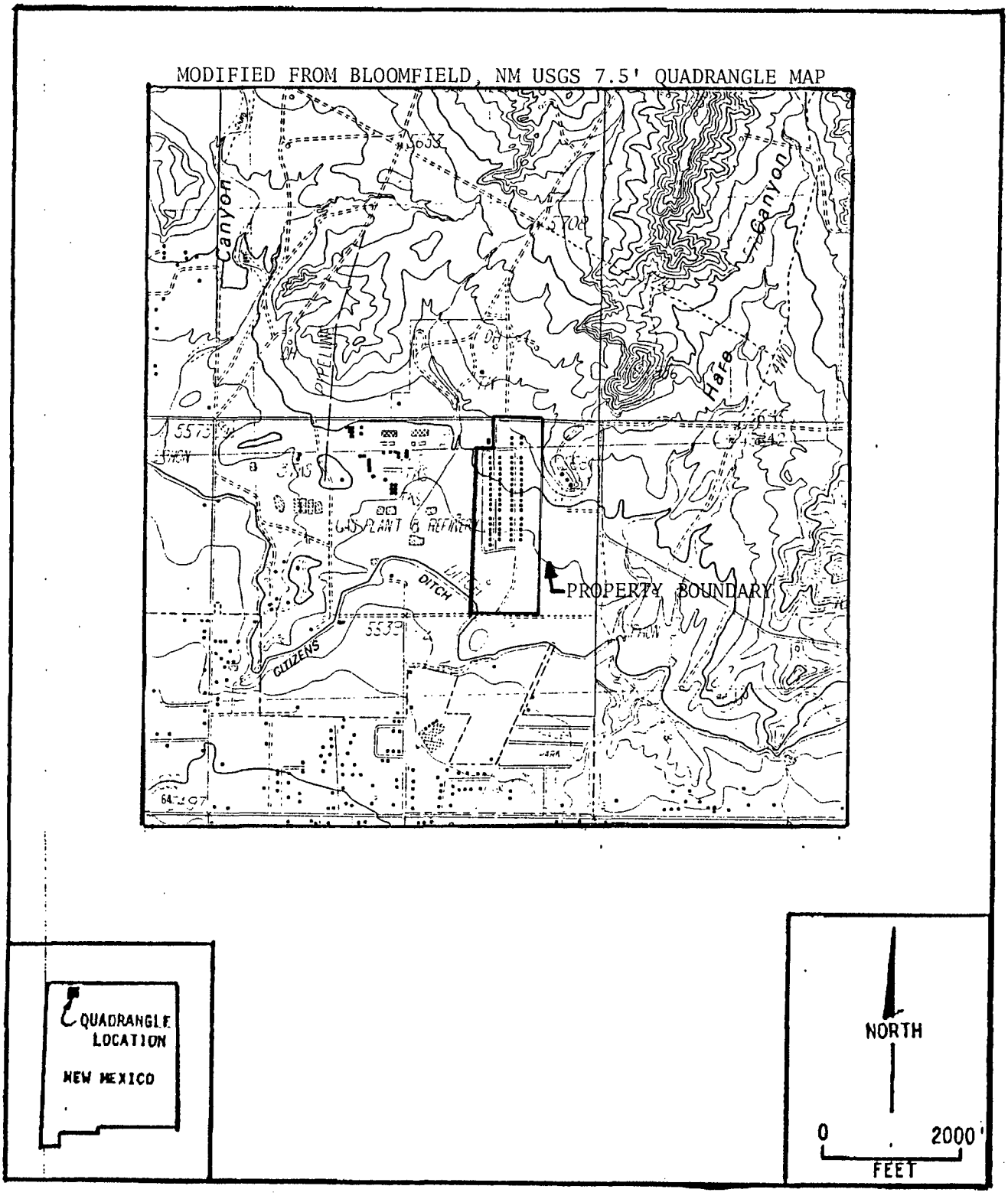
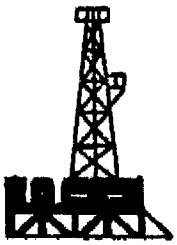


FIGURE 1
LOCATION OF VAL VERDE TREATING PLANT

RECEIVED

'90 APR 17 PM 1 12

TELECOPIER FORM



MERIDIAN OIL

P.O. BOX 4289 Farmington, N.M. 87499-4289
3535 East 30th St.
Farmington, New Mexico 87401
(505) 326-9700
Telecopier Telephone (505) 326-9833/1st Floor

TO: Roy Anderson

COMPANY: New Mexico OCD

TELECOPIER NUMBER: 821-5741

FROM: Ray Owen/Larry Dillon

DATE: 4-16-90

TOTAL NUMBER OF PAGES (Including this one): 4

SPECIAL INSTRUCTIONS: _____

Please call (505) 326-9700 Ext. 9849 to confirm transmission.

MERIDIAN OIL

April 16, 1990

Oil Conservation Division
ATTN: Mr. Roger C. Anderson
P.O. Box 2088, RM #206
Santa Fe, NM 87504

RE: Val Verde Notice of Intent to Discharge

Dear Mr. Anderson:

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As was discussed with you during your plant visit on April 12, 1990, the plant's first train will become operational during the week of April 16, 1990 and will be in a testing phase for approximately one month and will then become fully operational.

We look forward to working with you as you review our Notice of Intent and your determination as for need of a Discharge Plan for our Val Verde Plant.

Sincerely,

for C.R. Owen

C.R. Owen
Regional Operations Manager

LWD/CRO/dj

Enclosure

NOTICE OF INTENT

1. Name and address of person making the discharge:

   Meridian Oil Gathering, Inc.
   P.O. Box 4289
   Farmington, NM 87401

2. Location of the discharge: NE/4 NE/4 of Section 14, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico (See Figure 1).

3. Type of discharge: (1) Neutralized demineralization waste water. (2) Unrecyclable process wastewater which includes wastes containing methyldiethanolamine and/or glycol. (3) Uncommon spills or leaks from the process equipment.

4. The means of discharge: Wastewater is collected in a steel tank within a concrete vault and is pumped to above ground steel tanks for storage, on site, and then is hauled off site to an OCD approved waste disposal location. The above ground tanks are within bermed areas whose capacity is 1 1/2 times the largest tank within the bermed area.

5. The type of operation from which the discharge is derived: The Val Verde Plant utilizes a methyldiethanolamine solution to remove carbon dioxide and a glycol solution to remove water from coal seam natural gas.

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7. The estimated depth to ground water: The estimated depth to ground water is 35 feet.

Signed: for C.R. Owen Date: 4/16/90

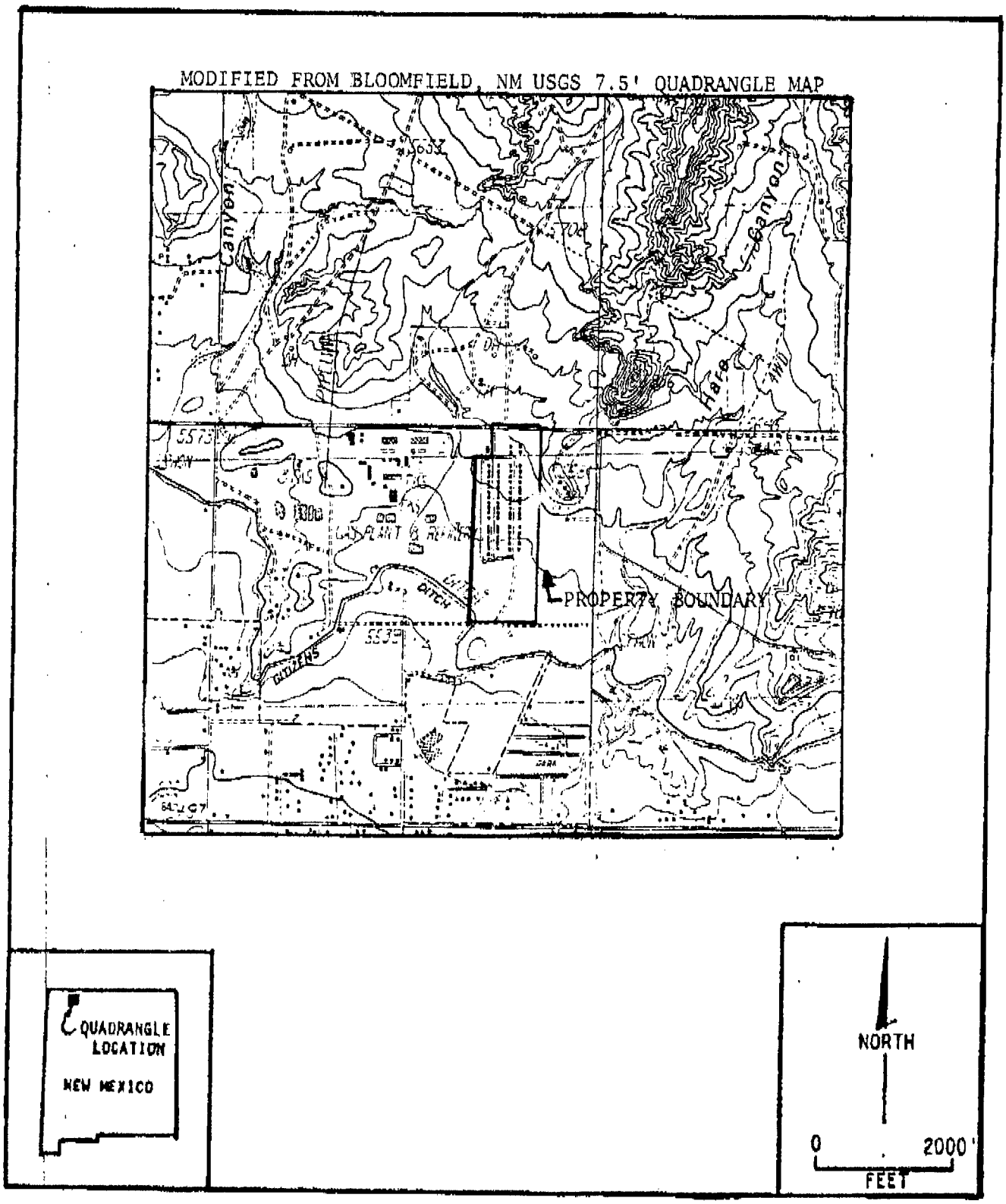


FIGURE 1
LOCATION OF VAL VERDE TREATING PLANT

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

September 27, 1989

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-106-675-123

Mr. David C. Morrow, President
SOUTH-TEX TREATERS, INC.
P. O. Box 60480
Midland, Texas 79711-0580

RE: Discharge Plan GW-51
Valverde Gas Processing Plant
San Juan County, New Mexico

Dear Mr. Morrow:

The ground water discharge plan (GW-51) for the South-Tex Treaters Valverde Gas Processing Plant located in the NE/4 NE/4 of Section 14, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico, is hereby approved.

The approved discharge plan consists of the plan dated July 13, 1989 and materials dated September 13, 1989 and September 26, 1989 submitted as supplements to the discharge plan.

The discharge plan was submitted pursuant to Section 3-106 of the N.M. Water Quality Control Commission Regulations. It is approved pursuant to Section 3-109.F., which provides for the possible future amendments of the plan. Please be advised that the approval of this plan does not relieve you of liablity should your operation result in actual pollution of surface or ground waters which may be actionable under other laws and/or regulations.

There will be no routine monitoring or reporting requirements other than those contained in the plan.

Please note that Section 3-104 of the regulations requires that "when a plan has been approved, discharges must be consistent with the terms and conditions of the plan." Pursuant to Section 3-107.C., you are required to notify the Director of the Oil Conservation Division (OCD) of any facility expansion, production increase, or process modification that would result in any significant change in discharge water quality or volume.

Pursuant to Section 3-109.G.4., this plan approval is for a period of five (5) years. This approval will expire September 27, 1994 and you should submit an application for renewal in ample time before that date.

On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this dishcarge plan review.
Sincerely,

William J. LeMay
Director

WJL/RCA/sl

cc: OCD Aztec Office

periodic off-site disposal.

Shipping agent contracted for off-site disposal is Chief Transport Co., 604 W. Pinon St, Farmington, N.M.

Off-Site Disposal Well:

Meridian's McGrath No.4
Class II Disposal Well
Sec. 34, T-30-N, R-4-W
San Juan County

IV. Site Characteristics

A. An irrigation canal running from east to west is approximately 1/2 mile south of this plant site.

Domestic water for this facility is provided by El Paso Natural Gas. Their well locations are approximately 2 miles southeast of this location. TDS for this well water is 166 PPM. Depth of water table at this location is 37'.

B. A soil survey was done at this plantsite by Western Technologies, Inc.,400 South Lorene Ave., Farmington, N.M.. Soil samples were taken to a depth of 25'. No water was encountered. No rock was encountered. Soil samples-Sand.

C. Flood potential is very unlikely
Flood protection-NA

V. Inadvertent Spills or Leaks

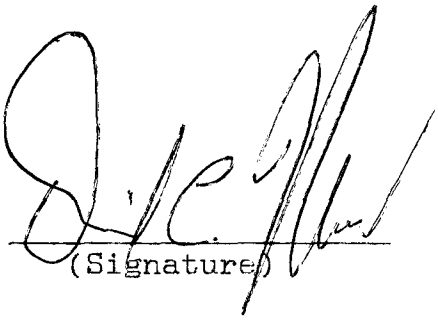
All operations personnel have been instructed in case of process fluid spill or leak to handle as follows:

Small Spills; Cover with sand to soak up fluid and shovel into drums for off-site disposal.

Large Spills; Dike around spill and pump into drums. Call vacuum truck if necessary.

Any spill large enough to require a dike to contain will be reported immediately by phone to the OCD. Written notification will follow within one week per section 1-203 of the New Mexico Water Quality Control Commission Regulation.

" I hereby certify that I am familiar with the information contained in and submitted with this application and that such information is true , accurate and complete to the best of my knowledge and belief."



(Signature)

9/23/89
(Date)

David C. Morrow
(Print Name)

President
(Title)

SOUTH-TEX TREATERS, INC.

P.O. Box 60480
Midland, Texas 79711-0480

(915) 367-1958 (915) 362-9291

September 1, 1989

State of New Mexico
Energy, Mineral and Natural Resources Department
Oil Conservation Division

Attention: Mr. Roger C. Anderson
Environmental Engineer

Reference: Discharge Plan GW-51
Valverde Gas Processing Plant
San Juan County, New Mexico
Your letter Dated, August 7, 1989

Dear Mr. Anderson:

Please find enclosed the following additional items that you requested.

1. Valverde Gas Processing Dwg. FP-001, Site plan showing the location of all process equipment, tanks, and water piping.
2. MSD Sheets are enclosed for the following chemicals.
   A. DOW Amine CS-1
   B. Union Carbide Amine CR-301
   C. Triethylene Glycol
   D. Chemtherm 550 Heat Transfer Oil
3. A signed affirmation statement.

Drawing FP-001 Clarification:

A. A 1 fresh water supply line supplies the control room (bathroom). Two water hydrants and a make-up water vaporizer. Sewer line to Bloomfield sewer system.
B. Tanks:
   TK-101: This is a 210 BBL welded steel tank used to contain draw-off water from the make-up water vaporizer. This water is periodically hauled to a disposal well. We monitor the hardness of this water on a daily basis. Since the total hardness never exceeds 360 PPM, we do not believe this water would be harmful to fresh water or the environment.

TK-102: This is a 100 BBL welded steel tank used for amine storage. As required by the OCD, we will build a 22' dia. by 30" high berm. This berm will be completed by 9-1-89.

TK-103: This is a 100 BBL welded steel tank used to contain condensed water vapors and any triethylene glycol carry over from the glycol reboiler. This glycol is periodically reclaimed or hauled to a disposal well. We will build a 22' dia. by 30" high berm around this tank. This berm will be completed by 9-1-89.

TK-104: This is a 500 BBL welded steel tank used for water condensate. This water would not be harmful to fresh water or the environment.

Please note that we have on site a 10' x 20' concrete slab with a 4" high curb that is used for drum storage and used filter elements.

All process pumps are either skid mounted (skids equipped with drip pans) or they have individual drip pans to contain any seal leakage.

Exchangers that require periodic tube bundle removal are installed on skids with drip pans to contain spillage.

Please advise if additional information is required.

Very truly yours,

David C. Morrow P.E.
President

DCM/sw

UNION CARBIDE CHEMICALS& PLASTICS CO. INC.
P.O. BOX 670, BOUND BROOK, NJ 08805
Specialty Chemicals Division

17 JULY 1989

SAFETY DIRECTOR
SOUTH TEXAS TREATERS
VAL VERDE PLANT #3
COUNTY RD 4937 BLDG 101A
BLOOMFIEL , NM 87413

Dear Customer:

Specialty Chemicals Division of Union Carbide is pleased to enclose for your use the following Material Safety Data Sheet (MSDS) which contains health and safety information:

UCARSOL CR Solvent 301

This takes precedence over and supercedes any previous Material Safety Data Sheet you may have for this product.

Effective 1 January 1989, a person who sells or otherwise distributes a mixture or trade name product containing a toxic chemical (i.e., a chemical or member of chemical catagory in 40 CFR PART 372) must provide written notice to the recipient with the first shipment in each calendar year. This is pursuant to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). The attached MSDS (Section X) is supplied to you pursuant to these new legal requirements. Please note that if you repackage or otherwise redistribute this product a notice including the SARA 313 information should be sent to the recipients.

MSDSs are an integral part of the hazard communication and employee information and training programs required of employers under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

This MSDS, as all previously furnished MSDSs, is the result of the work of a group of specialists including toxicologists, physical chemists and information specialists. It was prepared only after a careful review of the information in our own files and that available in generally accessible public literature. It contains valuable health and safety information which you should use in developing safe handling procedures for your employees. We urge you to send this MSDS to the individuals in your organization responsible for health and safety practices, and to notify your employees, customers, agents, and contractors of the information so that they will be fully informed regarding health, safety, and environmental protection measures.

If you have any questions or require additional information in the storage, handling, use or disposal of this product, please contact us.

Bernice Bloom (201) 563-5710
Product Safety -
EPSDS/MSDS Coordinator

Attachment
UCC REF NO: 33728801
MSDS NO: B0019D

UNION CARBIDE

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.

Specialty Chemicals Division

MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE: 05/31/89

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material of the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

I. IDENTIFICATION

PRODUCT NAME: UCARSOL CR Solvent 301

CHEMICAL NAME: Alkanolamine Formulation

CHEMICAL FAMILY: Alkanolamines

FORMULA: Trade Secret

MOLECULAR WEIGHT: Mixture

SYNONYMS: None

CAS # and CAS NAME: Trade Secret
Alkanolamines

II. PHYSICAL DATA (Determined on typical material)

BOILING POINT, 760 mm Hg: 164.1 C (327.4 F)

FREEZING POINT: POUR POINT: -40 C (-40 F)

SPECIFIC GRAVITY(H2O = 1):
1.0673 at 20/20 C

VAPOR PRESSURE AT 20°C:
1.5 mm Hg (0.20 kPa)

VAPOR DENSITY (air = 1):
3.4

SOLUBILITY IN WATER by wt:
100

EVAPORATION RATE
(Butyl Acetate = 1): 0.17

APPEARANCE AND ODOR: Dark amber liquid; amine odor.

EMERGENCY PHONE NUMBER: 1-800-UCC-HELP (Number available at all times)

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.
Specialty Chemicals Division
39 Old Ridgebury Road, Danbury, CT. 06817-0001

PRODUCT NAME: UCARSOL CR Solvent 301

III. INGREDIENTS

MATERIAL	%	TLV (Units)	HAZARD
Trade Secret-Alkanolamine Mixture	100	3 ppm, OSHA & ACGIH 1988-89	See Section V

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method(s)): 255 F, Pensky-Martens Closed Cup ASTM D 93
310 F, Cleveland Open Cup ASTM D 92

FLAMMABLE LIMITS IN AIR, % by volume: LOWER: Not determined
UPPER: Not determined

EXTINGUISHING MEDIA: Apply alcohol-type or all-purpose-type foam by manufacturer's recommended techniques for large fires. Use CO2 or dry chemical media for small fires.

SPECIAL FIRE FIGHTING PROCEDURES: Use water spray (fog) to reduce intensity of flames and to cool fire exposed containers and structures. Do not spray a solid stream of water or foam directly into hot, burning liquid; may cause frothing. Use self-contained breathing apparatus and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

V. HEALTH HAZARD DATA

TLV AND SOURCE: 3 ppm, OSHA & ACGIH 1988-89

EFFECTS OF SINGLE OVEREXPOSURE:

SWALLOWING: May cause irritation of the mouth, throat, esophagus, and stomach. Signs and symptoms will include pain or discomfort in the mouth, chest, and abdomen, nausea, vomiting, diarrhea, dizziness, drowsiness, faintness, weakness, collapse, and coma. Aspiration may occur during swallowing or vomiting, resulting in lung injury

SKIN ABSORPTION: No evidence of adverse effects from available information.

INHALATION: Mist and vapor formed from heated solutions may be irritating and cause coughing and discomfort in the nose, throat, and chest.

SKIN CONTACT: Brief contact may cause minimal irritation, seen as mild local redness. Prolonged contact, as with clothing wetted with the material, may cause more severe irritation experienced as discomfort, and seen as local redness and swelling, and possible chemical burns.

EYE CONTACT: May cause irritation, experienced as discomfort, and seen as marked excess redness and swelling of the conjunctiva, and possible corneal injury. Vapor may cause temporary disturbance of vision. (See "Notes to Physician.")

EFFECTS OF REPEATED OVEREXPOSURE:
May possibly cause kidney and liver damage.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:
Inhalation may aggravate asthma and inflammatory or fibrotic pulmonary

disease. Because of its irritating properties, this material may aggravate an existing dermatitis.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION: There are literature reports that ingestion of formulations containing a component in this product produced evidence of nerve injury in dogs.

OTHER EFFECTS OF OVEREXPOSURE:
Contains amines which may react with nitrites to form nitrosamines. Some nitrosamines have been shown to be carcinogenic in laboratory animals.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:	Give at least two glasses of milk or water, unless the patient is unconscious. Do not induce vomiting. Obtain medical attention.
SKIN:	Remove contaminated clothing and wash skin with soap and water. Wash clothing before reuse.
INHALATION:	Remove to fresh air.
EYES:	Immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention promptly, preferably an ophthalmologist.
NOTES TO PHYSICIAN:	The hazards of this material are mainly due to its severe irritant properties on the skin and mucosal surfaces. Careful gastric lavage is required. There is no specific antidote, and treatment should be directed at the control of symptoms and the clinical condition. Exposure to the vapor may cause minor transient edema of the corneal epithelium. This condition, referred to as 'glaucopsia,' 'blue haze,' or 'blue-gray haze,' produces a blurring of vision against a general bluish haze and the appearance of halos around bright objects. The effect disappears spontaneously within a few hours of the end of an exposure, and leaves no sequelae. Although not detrimental to the eye per se, glaucopsia predisposes an affected individual to physical accidents and reduces the ability to undertake skilled tasks such as driving a motorized vehicle.

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: WARNING: Do not mix this product with nitrites or other nitrosating agents because nitrosamines may be formed. Nitrosamines may cause cancer.

INCOMPATIBILITY (materials to avoid):
Avoid strong acids and strong oxidizing agents.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:
Burning can produce nitrogen oxides, carbon monoxide, and/or carbon dioxide.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: None

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
Wear suitable protective equipment, especially eye protection. Collect for disposal. Toxic to fish; avoid discharge to natural waters.

WASTE DISPOSAL METHOD: It is recommended that disposal of this material be performed by incineration, biological treatment or by other means in full compliance with Federal, State, and local regulations. See Section IX.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):
Use self-contained breathing apparatus in high vapor concentrations.

VENTILATION: This product should be handled in covered equipment, in which case general (mechanical) room ventilation is expected to be satisfactory. Special, local ventilation is recommended at points where vapors can be expected to escape to the workplace air.

PROTECTIVE GLOVES: Rubber

EYE PROTECTION: Monogoggles

OTHER PROTECTIVE EQUIPMENT:
Eye bath and safety shower.

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
WARNING: HARMFUL IF INHALED OR SWALLOWED.
CAUSES EYE AND SKIN IRRITATION.
REPEATED EXPOSURE MAY CAUSE LIVER AND KIDNEY DAMAGE.
ASPIRATION MAY CAUSE LUNG DAMAGE.
VAPOR MAY CAUSE TEMPORARY BLURRING OF VISION.
Avoid breathing vapor.
Do not swallow.
Avoid contact with eyes, skin and clothing.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
Do not add nitrites or other nitrosating agents. A nitrosamine, which may cause cancer, may be formed.
FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS: DISPOSAL: This product is expected to be toxic to aquatic life at relatively low concentrations in water. Laboratory tests indicate that it is rapidly biodegraded at very low concentration (~10ppm) in water.

X. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS:
The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

FEDERAL EPA

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:
**** NONE ****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III
requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:
**** NONE ****

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III
requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Alkanolamine	Trade Secret	50.00

STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains no levels of listed substances, which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute.

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:
HAZARDOUS SUBSTANCES (=> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Alkanolamine	Trade Secret	50.00

PENNSYLVANIA Right-To-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:
HAZARDOUS SUBSTANCES (=> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Alkanolamine	Trade Secret	50.00

Toxic Substances Control Act(TSCA) STATUS:
The ingredients of this product are on the TSCA inventory.

CALIFORNIA SCAQMD RULE 443.1 VOC'S:
**** NOT APPLICABLE ****

OTHER REGULATORY INFORMATION:
EPA Hazard Categories: Immediate Health, Delayed Health

NOTE ----

The opinions expressed herein are those of qualified experts within Union Carbide Chemicals and Plastics Company. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and of these opinions and the conditions of the use of the product are not within the control of Union Carbide Chemicals and Plastics Company, it is the user's obligation to determine the conditions of safe use of the product.

Date: 03/24/88
Revision Date: 06/21/89 Printed in USA
PC: 56074
F NUMBER: B0019D

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

PRODUCT NAME: GAS/SPEC (R) CS-1 SOLVENT

Effective Date: 03/20/88 Date Printed: 08/31/88 MSDS:002116

1. INGREDIENTS:

Methyldiethanolamine	CAS# 000105-59-9	46-62%
Proprietary amine derivatives		28-44%
Water	CAS# 007732-18-5	9-11%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 240-280F
VAP. PRESS: <20 mmHg, @ 70F
VAP. DENSITY: 4
SOL. IN WATER: Complete
SP. GRAVITY: 1.05-1.07
APPEARANCE: Pale straw liquid.
ODOR: Amine odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: >185F
METHOD USED: PMCC

FLAMMABLE LIMITS
LFL: Not determined
UFL: Not determined

EXTINGUISHING MEDIA: Water fog, alcohol foam, CO2, dry chemical, water spray.

FIRE & EXPLOSION HAZARDS: No special hazards.

(Continued on Page 2)

* An Operating Unit of The Dow Chemical Company

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE-FIGHTING EQUIPMENT: Wear positive pressure, self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) No relevant data available.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Acid, oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: Possible nitrogen oxides.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Wash small amounts with water. Dike to avoid contamination of sewer with large amounts, soak up with absorbent material, scoop into drums.

DISPOSAL METHOD: Dispose by incineration in accordance with all local, state, and federal requirements.

6. HEALTH HAZARD DATA:

EYE: May cause severe eye irritation. May cause moderate corneal injury.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation, even a burn.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The dermal LD50 has not been determined.

(Continued on Page 3)

6. HEALTH HAZARD DATA: (CONTINUED)

INGESTION: Single dose oral toxicity is believed to be low. Single dose oral LD50 has not been determined.

INHALATION: Excessive exposure may cause irritation to upper respiratory tract and liver and kidney injury.

SYSTEMIC & OTHER EFFECTS: Repeated excessive exposures may cause liver and kidney injury. Results of in vitro ('test tube') mutagenicity tests on proprietary component have been negative.

7. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower.

INGESTION: Induce vomiting if large amounts are ingested. Consult medical personnel.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. Repeated excessive exposure may aggravate preexisting liver and kidney disease.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): None established for methyldiethanolamine.

VENTILATION: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary

(Continued on Page 4)

8. HANDLING PRECAUTIONS: (CONTINUED)

for some operations (if heated).

RESPIRATORY PROTECTION: When respiratory protection is required for certain operations, use an approved air-purifying respirator.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. Use impervious gloves when prolonged or frequently repeated contact could occur. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.

EYE PROTECTION: Use chemical goggles.

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Avoid prolonged or repeated contact with skin. Wash thoroughly after handling. Avoid breathing vapors if generated.

MSDS STATUS: Revised Section 9.

MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 87792 Page: 1

PRODUCT NAME: TRIETHYLENE GLYCOL - TECHNICAL

Effective Date: 03/20/88 Date Printed: 05/10/88 MSDS:000271

1. INGREDIENTS:

Triethylene glycol	CAS# 000112-27-6	99%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 545.9F; 286C
VAP PRESS: < 1.0 mmHg @ 20C
VAP DENSITY: 5.18
SOL. IN WATER: Completely miscible
SP. GRAVITY: 1.1 @ 25/25C
APPEARANCE: Colorless liquid.
ODOR: Mild odor.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 350F; 177C
METHOD USED: PMCC

FLAMMABLE LIMITS
LFL: 0.9%
UFL: 9.2%

EXTINGUISHING MEDIA: Water fog, alcohol resistant foam, CO2, dry chemical.

FIRE & EXPLOSION HAZARDS: Not available.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained

(Continued on Page 2)

* An Operating Unit of The Dow Chemical Company

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Will ignite in air at 700F.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: Burning produces normal products of combustion, including carbon monoxide, carbon dioxide, and water.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small spills: Soak up with absorbent material and collect for disposal. Large spills: dike to prevent contamination of waterways, then pump into suitable containers for disposal.

DISPOSAL METHOD: Burn in an approved incinerator in accordance with all local, state, and federal requirements.

6. HEALTH HAZARD DATA:

EYE: Essentially nonirritating to eyes.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation. May cause more severe response if skin is abraded

(scratched or cut).

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful

(Continued on Page 3)

6. HEALTH HAZARD DATA: (CONTINUED)

amounts. The dermal LD50 has not been determined.

INGESTION: Single dose oral toxicity is low. Amounts ingested incidental to industrial handling are not likely to cause injury; however ingestion of larger amounts may cause injury. The oral LD50 for rats is 16,800-22,060 mg/kg.

INHALATION: No adverse effects are anticipated from inhalation.

SYSTEMIC & OTHER EFFECTS: Based on available data, repeated exposures are not anticipated to cause any significant adverse effects. Did not cause cancer in long-term animal studies. Birth defects are unlikely. Exposures having no adverse effects on the mother should have no effect on the fetus. In animal studies, has been shown not to interfere with reproduction.

7. FIRST AID:

EYES: Irrigate immediately with water for at least five minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: Induce vomiting if large amounts are ingested. Consult medical personnel.

INHALATION: Remove to fresh air if effects occur. Call a physician.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to the patient.

(Continued on Page 4)

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE: None established.

VENTILATION: Good general ventilation should be sufficient.

RESPIRATORY PROTECTION: In misty atmospheres, use an approved mist respirator.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed.

EYE PROTECTION: Use safety glasses.

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Not to have met any hazard category

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Practice reasonable care to avoid exposure.

Trace quantities of ethylene oxide (EO) may be present in this product. While these trace quantities could accumulate in headspace areas of storage and transport vessels, they are not expected to create a condition which will result in EO concentrations greater than 0.5 ppm (8 hour TWA) in the breathing zone of the workplace for appropriate applications. OSHA has established a permissible exposure limit of 1.0 ppm 8 hr TWA for EO. (Code of Federal Regulations Part 1910.1047 of Title 29).

(Continued on Page 5)

9. ADDITIONAL INFORMATION: (CONTINUED)

MSDS STATUS: Revised Section 9.

COASTAL CHEMICAL COMPANY
P.O. Box 820
Abbeville, La 70510-0820
(318) 893-3862

MATERIAL SAFETY DATA SHEET
CHEMTHERM 550

SECTION I - IDENTIFICATION

COMPANY NAME..... COASTAL CHEMICAL COMPANY
EMERGENCY PHONE NUMBER... 318-893-3862
EFFECTIVE DATE..... 4/87
REVISED DATE..... N/A
CHEMICAL NAME..... SYNTHESIZED HYDROCARBON
TRADE NAME..... CHEMTHERM 550
CHEMICAL FAMILY..... PETROLEUM PROCESS OIL

CHEMICAL FORMULA..... PROPRIETARY

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENTS	HAZARDOUS %	TLV (Units)	PROD. CAS #
HEAVY PARAFFININC DISTILLATE	99%	5 MG/M3	64742-65-0

SECTION III - PHYSICAL DATA

BOILING Point(F)..... 560 Deg F
FREEZING POINT (F)..... N/A
VOLATILITY/VOL(%)..... NEGLIGIBLE FROM OPEN CUP IN 4 HRS @ 38 C(100F)
MELTING POINT..... -6 Deg C (20 Deg F)
VAPOR PRESSURE (mm Hg)... (0.01 MM HG @ 20 C
VAPOR DENSITY (Air=1)....)5.0
SOLUBILITY IN H2O..... NEGLIGIBLE; (0.1%
APPEARANCE/ODOR..... CLEAR LIQUID, LIGHT YELLOW COLOR
FAINT PETROLEUM HYDROCARBON ODOR
SPECIFIC GRAVITY (H2O=1). 0.880 @ 15.6 C
EVAPORATION RATE..... LESS THAN 0.01 @ 1 ATM, 25C (77F)
PH..... NEUTRAL

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT..... 199 C, (390 F) COC ASTM D92
FLAMMABLE LIMITS.....

LOWER FLAME LIMIT..... 0.9%
HIGHER FLAME LIMIT..... 7%
EXTINGUISH MEDIA..... In case of fire, use water spray, foam, dry chemical, or CO_2.

COASTAL CHEMICAL COMPANY
P.O. Box 820
Abbeville, La 70510-0820
(318) 893-3862

MATERIAL SAFETY DATA SHEET
CHEMTHERM 550

FOR FIRE.....	APPROACH FORM UPWIND SIDE. FULL PROTECTIVE CLOTHING INCLUDING PRESSURE DEMAND BREATHING APPARATUS. DO NOT DIRECT STREAMS INTO BURNING LIQUID.
UNUSUAL FIRE HAZARD,.....	Containers may explode if exposed to direct flame. Cool with water. KEEP PEOPLE AWAY.
ATTENTION.....	OCONTWRN,ATTN,249,1,

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE....	5 MG/M3
CARCINOGENICITY.....	NO
OVER EXPOSURE EFFECTS....	PROLONGED OR REPEATE CONTACT WITH SKIN MAY CAUSE IRRITATION.
FIRST AID PROCEDURES.....	FIRST AID: If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Get medical attention. FIRST AID: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. If swallowed, get medical attention.
VARIABILITY AMONG INDIVIDUALS:.....	Health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks which may vary from person to person. As a precaution exposure to liquids, vapors, mists, or fumes should be minimized.

SECTION VI - REACTIVITY DATA

CHEMICAL STABILITY.....	THIS PRODUCT WILL NOT REACT VIOLENTLY WITH WATER OR WILL IT POLYMERIZE.
CONDITIONS TO AVOID.....	AVOID CONTACT WITH STRONG OXIDANTS SUCH AS LIQUID CHLORINE, CONCENTRATED OXYGEN, SODIUM HYPOCHLORITE AND CALCIUM HYPOCHLORITE.
INCOMPATIBLE MATERIALS...	STONG OXIDIZERS SUCH AS LIQUID CHLORINE, CONCENTRATED OXYGEN, SODIUM HYPOCHLORITE AND CALCIUM HYPOCHLORITE
DECOMPOSITION PRODUCTS...	FUMES, SMOKE, CARBON MONOXIDE, SULFUR OXIDES, ALDEHYDES AND OTHER DECOMPOSITION PRODUCTS IN THE CASE OF INCOMPLETE COMBUSTION.
HAZARDOUS POLYMERIZATION.	WILL NOT OCCUR
POLYMERIZATION AVOID.....	N/A

SECTION VII - SPILL OR LEAK PROCEDURE

08/25/1988

COASTAL CHEMICAL COMPANY
P.O. Box 820
Abbeville, La 70510-0820
(318) 893-3862

MATERIAL SAFETY DATA SHEET
CHEMTHERM 550

FOR SPILL	SMALL SPILLS: COVER WITH ABSORBENT MATERIAL, SOAK UP AND SWEEP INTO DRUM. LARGE SPILLS: DIKE AROUND SPILL AND PUMP INTO SUITABLE CONTAINERS.
WASTE DISPOSAL METHOD....	DISPOSE OF AT (CLASS 1) DISPOSAL SITE, KEEPING IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.

SECTION VIII - SPECIAL PROTECTION

RESPIRATORY PROTECTION...	Use supplied air respirator protection in confined or enclosed spaces, if needed.
VENTILATION.....	Use local exhaust to capture vapor,mists or fumes, if necessary.Provide ventilation sufficient to prevent exceeding recommended expoeer limit or buildup of explosive concentrations of vapor in air. Use explosive proof equipment.
PROTECTIVE GLOVES.....	Use chemical-resitant gloves, if needed, to avoid prolonged or repeated skin contact.
EYE PROTECTION.....	Use splash goggles or face shield when eye contact ma occur
OTHER PROTECTIVE EQUIPMENT.....	Use chemical-resistant apron or other impervios clothing, if needed, to avoid contaminating regular clothing which could result in prolonged or repeated skin contact.
HANDLING AND STORAGE.....	Store away from any sources of ignition.

SECTION IX - SPECIAL PRECAUTIONS

HAZARD CLASS.....	NON HAZARDOUS
DOT SHIPPING NAME.....	NON HAZARDOUS CHEMICALS, NOS (CHEMTHERM 550)
REPORTABLE QUANTITY (RQ).	N/A
IDENTIFICATION.....	N/A
FOOT NOTES.....	N/A (Material is not applicable) N/D (Material is not determined)
REFERENCES.....	N/A
DISCLAIMER.....	The information and recommendations contained herein are, to the best of Coastal Chemical's knowledge, accurate as of the date issued. Coastal Chemical does not guarantee their accuracy and shall not be liable for any loss or damage due to the use thereof
DATE PREPARED.....	8-26-87

SIGNED:

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

August 7, 1989

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-106 675 106

Mr. David C. Morrow, President
SOUTH-TEX TREATERS, INC.
P. O. Box 60480
Midland, Texas 79711-0480

RE: Discharge Plan GW-51
Valverde Gas Processing Plant
San Juan County, New Mexico

Dear Mr. Morrow:

The Oil Conservation Division (OCD) has received and is in the process of reviewing the above referenced discharge plan application. The application was received by the OCD on July 13, 1989. The following clarification and requests for additional information are based on the review of the application:

1. The following items were omitted from the application.

   a. A site plan detailing the process areas, tanks, sumps, etc.

   b. Generalized water and wastewater piping schematics.

   c. MSD sheets for all chemicals used at the facility.

   Please submit these items for review as part of your application.

2. A signature sheet was provided at the end of the application but was not signed. Please supply a signed affirmation statement as described in the guidelines (enclosed).

3. The OCD is requiring that above grade tanks that contain materials with consisutents that can be harmful to fresh water and the environment, if a sudden and catastriphic spill were to occur, must be contained at the site of the spill and mitigated immediately. Containment in a small area at the tank site allows for maximum recovery of fluids and small volumes of contaminants available for infiltration. Without

berming, the rupture of a tank will spread its contents over a large area minimizing the amount that can be recovered and increasing the surface area of contaminated soil available to leach contaminants. All tanks that contain these types of materials must be bermed to prevent migration of the fluids and decrease the potential for infiltration. Therefore a commitment and completion schedule is required for the berming of vessels that contain fluids other than fresh water. The bermed areas shall be large enough to hold one-third more than the volume of the largest vessel or one-third larger than the total volume of all interconnected vessels contained within the berm.

4. The OCD is requiring the curbing and paving of some process areas to prevent migration and infiltration of any spilled or leaked materials from the process units. Submit plans a completion schedule for paving and berming those portions of the process and storage areas where leaks or spills can occur. The total process area does not need to be curbed and paved. Small containment facilities should be placed under and around valves and pumps. Vessels that have overflowed or leaked or have the potential to overflow or leak should also have containment. All drum storage must be paved and bermed.

If you have any questions, please do not hesitate to call me at (505) 827-5884.

Sincerely,

Roger C. Anderson
Environmental Engineer

RCA/sl

cc: OCD Aztec Office

RECEIVED
AUG - 2 1989
OIL CONSERVATION DIV.
SANTA FE

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Oil Conservation Division Regulations, the following permit to construct and operate a commercial evaporation facility has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico, 87504-2088, Telephone: (505) 827-5800:

(GW-51) South-Tex Treaters, Inc., David C. Morrow, President, P.O. Box 60480, Midland, Texas 79711-0480, has submitted for approval a ground water discharge plan application for its Valverde Gas Processing Plant located in the NE/4 NE/4, Section 14, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. Approximately 1440 gallons per day of process waste water is collected in an above ground steel storage tank prior to disposal in an OCD approved class II disposal well. The total dissolved solids concentration of the wastewater is approximately 749 mg/l. Ground water most likely to be affected by any discharge to the surface is at a depth ranging from 10 to 50 feet with a total dissolved solids concentration ranging from 1600 to 6000 mg/l. The discharge plan addresses how spills leaks or other discharges to the ground at the plant will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed permit or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 21st day of July, 1989. To be published on or before August 4, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/WILLIAM J. LEMAY, Director
Journal, July 31, 1989

STATE OF NEW MEXICO }
County of Bernalillo } ss

THOMAS J. SMITHSON

..... being duly sworn declares and says that he is **NAT'L ADV. MGR.** of the **Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for 1 times, the first publication being on the 31 day of July, 1989, and the subsequent consecutive publications on .....,198.....

Thomas J. Smithson

OFFICIAL SEAL
Signature: Angela M. Archibeque
ANGELA M. ARCHIBEQUE
NOTARY PUBLIC - NEW MEXICO
Filed with Secretary of State
My Commission Expires 6/30/92

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this 31 day of July, 1989

PRICE $ 22.22

Statement to come at end of month.

ACCOUNT NUMBER C80932

EDJ-15 (R-2/86)

RA

AFFIDAVIT OF PUBLICATION

No. 23921

STATE OF NEW MEXICO,
County of San Juan:

Betty Shipp being duly sworn, says: That he is the National Ad Manager of THE FARMINGTON DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice

was published in a regular and entire issue of the said FARMINGTON DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for One consecutive (days) (weeks) on the same day as follows:

First Publication Thursday, July 27, 1989

Second Publication

Third Publication

Fourth Publication

and that payment therefor in the amount of $ 27.35 has been made.

Betty Shipp

Subscribed and sworn to before me this 27th day of July, 19 89.

NOTARY PUBLIC, SAN JUAN COUNTY, NEW MEXICO

My Commission expires: June 23, 1990

Copy of Publication

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES
DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan has been submitted for approval to the Director of the Oil Conservation Division, State Land Office Building, P. O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-51) South-Tex Treaters, Inc., David C. Morrow, President, P.O. Box 60480, Midland, Texas 79711-0480, has submitted for approval a ground water discharge plan application for its Valverde Gas Processing Plant located in the NE/4 NE/4, Section 14, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. Approximately 1440 gallons per day of process waste water is collected in an above ground steel storage tank prior to disposal in an OCD approved class II disposal well. The total dissolved solids concentration of the wastewater is approximately 749 mg/l. Ground water most likely to be affected by any discharge to the surface is at a depth ranging from 10 to 50 feet with a total dissolved solids concentrations ranging from 1600 to 6000 mg/l. The discharge plan addresses how spills leaks or other discharges to the ground at the plant will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Divison shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by an interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 21st day of July, 1989. To be published on or before August 4, 1989.

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
WILLIAM J. LEMAY,
Director

Legal No. 23921 published in the Farmington Daily Times, Farmington, New Mexico on Thursday, July 27, 1989.

NOTICE OF PUBLICATION

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 21st day of July, 1989. To be published on or before August 4, 1989.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY, Director

S E A L

SOUTH- TEX TREATERS, INC.

P.O. Box 60480
Midland, Texas 79711-0480

(915) 367-1958 (915) 362-9291

State of New Mexico
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
Oil Conservation Division
Post Office Box 2088
State Land Office Building
Santa Fe, New Mexico 87504

Attn: William Lemay Director OCD

Ref: Valverde Gas Plant discharge plan

Gentlemen;
South-Tex Treaters Inc. proposes the attached discharge plan for the Valverde Gas Plant near Bloomfield, New Mexico. We used your guide as a basis for the format of the over all plan. Per our June 15 telephone conversation (Ronald Rains and David Boyer) our experience is very limited and may apparent when you review this 1st draft. We welcome any comment or suggestions for improvement of this plan and look to the opportunity to work together again.

Sincerely,

David C. Morrow P.E.
President

Proposed Discharge Plan Application

I. General Information

A. Valverde Gas Processing Plant
P.O. Box 9
Bloomfield, N.M. 87413
Phone: 505-632-0201

Plant is owned and operated by:
South-Tex Treaters, Inc.
P.O. Box 60480
Midland, Texas 79711
Phone: 915-367-1958

B. Plant Manager:
G. Mike David
P.O. Box 9
Bloomfield, N.M. 87413
Phone: 505-632-0201

C. Plant Location:
San Juan County
Section 14
Township 29
Range 11

D. Purpose of Plant:

Contract natural gas treating and dehydration.

Producer: Meridian Oil Company
Process: CO2 is removed from a natural gas stream contacting the gas with a lean amine solvent. CO2 is stripped from the rich amine solvent in the regeneration unit and vented to the atmosphere. The residue gas is contacted with TEG to provide a 7lb. H2O/MMSCF dewpoint.

Design Conditions:

Gas Volume	170 MMSCFD
Oper. Press	650-800 PSIG
Inlet Gas CO2	10-12%
Outlet Gas CO2	1% or less
Amine Circulation	1800 GPM
Outlet Gas Dewpoint	7lb./MM or less
TEG Circulation	40 GPM

II. Plant Process

A. The natural gas stream entering the plant is a very lean gas, essentially all methane and CO2. A typical inlet gas analysis is enclosed. The gas is field dehydrated upstream of plant, therefore no liquid/gas separation is required.

The natural gas stream is contacted in four (approximately equal split) vertical trayed counter-current absorber vessels with a lean amine solvent. This solvent is made up of 50% by weight H2O (steam condensate) and a Dow Chemical MDEA selective amine solvent called CS-1. Please refer to the enclosed Dow Chemical (MSDS) Material Safety Data Sheets for a description of the solvent.

The rich amine solvent leaving the absorber vessels regenerated in a typical amine regeneration system consisting of the following equipment:

1. Rich Amine Flash Tank
2. Lean/Rich Cross Exchanger
3. Stripping Column
4. Hot Oil Heated Reboiler (Gas Fired Hot Oil Heater)
5. Stripper Reflux Condenser (Fan Cooled)
6. Reflux Accumulator Drum
7. Lean Amine Cooler (Fan Cooled)
8. Lean Amine Surge Tank

The regeneration system for this plant actually consists of three (3) trains. Two (2) 500 GPM and one (1) 800 GPM train.

Pumps typical of each train include:

1. Multi-stage high pressure centrifugal, lean amine solution pump with spare.
2. Low pressure centrifugal, solution cooler booster pump with spare.
3. Low pressure centrifugal reflux pump with spare.
4. Low Pressure centrifugal hot oil circulation pump with spare.

The heat transfer oil used in this plant is a Chemtherm 550. Please refer to the enclosed (MSDS) Material Safety Data Sheets for a description of this product.

CO2 stripped from the rich solution from all three trains is piped to a common 16" vent line, thru a 8' Diameter. x 32' s/s horizontal vent scrubber and then discharged to the atmosphere via a vertical vent stack. Condensed water vapor collected in the vent scrubber is pumped back into the regeneration

units.
Make-up water for the regeneration units amounts to approximately 5000 Gals. per day, total required for three trains. A hot oil heated water vaporizer is utilized to provide this make-up. The raw water feed to this vaporizer is a potable water (TDS 166 PPM)

Raw water feed to vaporizer is 4 1/2 GPM. Reject water is approximately 1 GPM (TDS 747PPM). Reject water is collected in an above ground welded steel storage tank. The collected reject water will be periodically trucked off-site for disposal in an approved waste disposal well by others.

B. The Dehydration Process consist of two (approximately equal split) vertical trayed counter current absorber vessels and one common glycol regeneration unit.

The glycol regeneration unit includes the following equipment:
1. Wet glycol flash tank
2. Lean/Rich glycol cross exchanger
3. Direct fired glycol reboiler with packed stripping column
4. Lean glycol surge tank
5. Lean glycol cooler (Fan cooled)

Pumps for the glycol system include:
1. High pressure reciprocating plunger pump for each glycol contactor with spare.
2. Low pressure, centrifugal, lean glycol cooler booster pump with spare.

Water vapor from the reboiler still column is piped to an above ground tank where some water vapor is condensed and collected with small amounts of glycol carry-over. Periodically this water containing a small amount of triethylene glycol is trucked off-site for disposal in an approved waste water disposal well by others.

C. Makeup glycol and amine are stored in above ground 500 gallon steel storage tanks. A small portable centrifugal pump is used to transfer from storage tank into system.

The hot oil systems are closed loop utilizing an elevated surge drum. Hot oil make-up would require a bulk truck delivery.

All process vessels and piping are installed above grade with exception of approximately 100' of 2" glycol piping. This 2" line is welded utilizing sch.

80 pipe and weld fittings. Design pressure for this line is 1000 PSIG and it was hydrotested at 1500 PSIG. Line was doped and wrapped for external corrosion protection.

All pressure vessels in this plant are ASME Code. All process piping was designed and fabricated per B31.3. All pressure piping welds 2" and larger were 100% X-rayed.

Critical areas in the high pressure gas piping have been inspected by U.T. examination for corrosion. This will be repeated every 6 months. Mobil Inspection Services, Inc. has been contacted to inspect the critical areas in the liquid process piping for corrosion.

D. This facility utilizes open drains on all vessels and piping. The control room is equipped with toilet and sink which are piped to the city of Bloomfield sewer system. There are no on-site septic tanks or impoundments.

Please note that this plant is manned 24 hours per day by three men per 8 hour shift. Operators are required to log process variables every 2 hrs. and a walk thru is required at least every hour.

All process pumps are equipped with Seal pans for collecting seal or packing leakage. If this collected leakage is contaminated with dirt and cannot be returned to the process, it is stored in 55 gallon drums for off-site disposal.

Used filter elements are allowed to drip dry in 55 gallon drums, separate drums for each process fluid filter. These elements are then taken to a land fill.

Amine samples are collected every 4 hours to determine amine strength and lean loadings. Total sample volume collected per day is 2665 ML and includes the following:

600 ML	Distilled H2O
1 ML	Methyl Red Indicator
132 ML	Amine Solution
540 ML	0.1 N Sulfuric Acid
1200 ML	Methyl Alcohol
120 ML	Thymolphthalen Indicator 0.05%
72 ML	0.20 Normal Potassium Hydroxide
2665 ML	Per Day

These samples are collected in 55 gallon drums for

periodic off-site disposal.

Shipping agent contracted for off-site disposal is Chief Transport Co., 604 W. Pinon St, Farmington, N.M.

Off-Site Disposal Well:

Meridian's McGrath No.4
Class II Disposal Well
Sec. 34, T-30-N, R-4-W
San Juan County

IV. Site Characteristics

A. An irrigation canal running from east to west is approximately 1/2 mile south of this plant site.

Domestic water for this facility is provided by El Paso Natural Gas. Their well locations are approximately 2 miles southeast of this location. TDS for this well water is 166 PPM. Depth of water table at this location is 37'.

B. A soil survey was done at this plantsite by Western Technologies, Inc.,400 South Lorene Ave., Farmington, N.M.. Soil samples were taken to a depth of 25'. No water was encountered. No rock was encountered. Soil samples-Sand.

C. Flood potential is very unlikely
Flood protection-NA

V. Inadvertent Spills or Leaks

All operations personnel have been instructed in case of process fluid spill or leak to handle as follows:

Small Spills; Cover with sand to soak up fluid and shovel into drums for off-site disposal.

Large Spills; Dike around spill and pump into drums. Call vacuum truck if necessary.

Any spill large enough to require a dike to contain will be reported immediately by phone to the OCD. Written notification will follow within one week per section 1-203 of the New Mexico Water Quality Control Commission Regulation.

" I hereby certify that I am familiar with the information contained in and submitted with this application and that such information is true , accurate and complete to the best of my knowledge and belief."

(Signature)	(Date)
(Print Name)	(Title)

NEW MEXICO INTERSTATE STREAM COMMISSION

BATAAN MEMORIAL BUILDING
STATE CAPITOL
SANTA FE, NEW MEXICO 87503

May 25, 1989

Mr. Jerry Crockford
Bureau of Land Management
1235 La Plata Highway
Farmington, New Mexico 87401

Re: Val Verde Gathering System Project; 2800 (019)

Dear Mr. Crockford:

This letter is in response to the Farmington Resource Area announcement dated May 5, 1989, of an open house and request for comments on the Val Verde Gathering System Project (Project) proposed by Meridian Oil Gathering Incorporated. The Project involves the construction of pipelines to carry methane gas and water produced from the Fruitland coal formation.

Because the Project involves activities that could impact the salinity of the waters of the Colorado River, this office, as New Mexico's representative to the Colorado River Basin Salinity Control Forum, has a strong interest in the Project and its proposed Environmental Assessment (EA).

The Forum's "1987 Review, Water Quality Standards for Salinity, Colorado River System," (Standards) that have been approved by the Environmental Protection Agency and are adopted as part of the "Water Quality Standards for Interstate and Intrastate Streams in New Mexico", include the objective of no salt return whenever practicable. Also, the Colorado River Basin Salinity Control Act Amendment of 1984 (P.L. 98-569), Section 203(b)(3), directs the Secretary of the Interior "to develop a comprehensive program for minimizing salt contributions to the Colorado River from lands administered by the Bureau of Land Management..." Thus, the EA should specifically address the Project's potential for increasing soil erosion which could result in increased salt discharge into the San Juan River. Surface disturbing activities such as road and pipeline

construction should be undertaken in a manner which will insure that surface runoff is not increased and that the maintenance of these features is adequate to prevent increases in the salt loading into the Colorado River. The water pipeline should be carefully designed and constructed to provide a leak-free system for its planned lifetime of service.

Thank you for the opportunity to participate in the scoping of this Project. If additional discussion of these concerns would be helpful, please feel free to contact me at (505) 827-6160.

Sincerely,

Philip B. Mutz
Interstate Stream Engineer

PBM:JCG:rav

cc w/copy incoming:
Oil Conservation Division
Mr. Jack A. Barnett

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
FARMINGTON RESOURCE AREA
1235 LA PLATA HIGHWAY
FARMINGTON, NEW MEXICO 87401

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
2800 (019)

Dear Public Land User and Other Interested Parties:

You are invited to attend an Open House from 1:00 pm to 5:00 pm, May 22, 1989 at the Bureau of Land Management, Farmington Resource Area, 1235 La Plata Highway, Farmington, New Mexico. We want to give interested and concerned public an opportunity to review the Val Verde Gathering System Project proposed by Meridian Oil Gathering Incorporated. Maps and drafts of the Proposed Action that will be analyzed in an Environmental Assessment (EA) that is being prepared will be available for viewing. A representative of Meridian will be present. Comments and concerns generated by this scoping will be addressed in the EA.

Project description

The proposed project would involve Federal, State, and private lands. Generally, the project area lies between the Colorado/New Mexico state line on the north, and Cutter Reservoir on the south; and between the Carson National Forest on the east, and Aztec, New Mexico on the west.

The proposed project follows roads and pipelines for approximately 90 percent of its length. The total length of the proposed project is approximately 306 miles with the following administrative break-down: BLM - 245 miles, BOR - 15 miles, State - 16 miles, private - 30 miles.

The project involves both gas and water pipelines that would carry methane gas and water produced from the Fruitland coal formation. The gas pipelines would terminate at the Val Verde Gas Plant where the CO2 and other impurities are removed and where the Meridian gas is delivered to the El Paso Natural Gas Company system for transportation. Producing Fruitland gas also involves production of large amounts of water that contains coal fines and up to 20,000 parts per million sodium bi-carbonates with traces of dissolved CO2. The water thus gathered from the wells would be transported to existing fluid disposal wells.

Originally Meridian planned to connect the Fruitland wells to existing pipelines. This could not be accomplished for two reasons: 1) coal seam gas cannot be commingled with other gas because the CO2 content is too high and there is a lack of natural gas liquids, and 2) there is too much volume. The Fruitland gas produced by Meridian contains from three to fourteen percent CO2. This is unacceptable to El Paso Natural Gas Company because contracts with their customers limit CO2 content to one percent.

Construction of the proposed pipelines would probably take place from about July 1, 1989 through November 1, 1989, but could extend into the first half of 1990. Several construction companies would be involved and would work seven days a week. Each company would construct an average of one-half to one mile of pipeline a day (less in areas of special concern. eg., cultural and visual).

Local construction companies would be employed. The work-force would include typical pipeline construction crews that normally utilize many different skills; including laborers, equipment operators, and welders. The work-force should peak in August 1989. Approximately 50 percent of the work-force would include people from the northwest New Mexico area, but it would include workers from other parts of the country.

Equipment, pipe, and other construction material would be hauled from various parts of the United States, brought to Farmington and stored in Meridian's wareyard until needed.

Materials and equipment would be hauled over State roads 173, 550, and 511 as well as U.S. Highway 64. During construction, existing roads and the pipeline right-of-way would be used as access.

The project would utilize an estimated 19,000 tons of pipe, 1,000 tons of valves and fittings, and 2,500 tons of equipment. This translates into approximately 1500 semi-trailer loads.

Need for an Environmental Assessment (EA)

This Environmental Assessment (EA) is being prepared to examine the potential impacts of constructing and operating various sizes of pipelines that are up to 24 inches in diameter and to develop the mitigation measures needed to mitigate effects.

Comments will be utilized by the Bureau of Land Management in it efforts to determine:

1. The nature of potential impacts associated with construction and operation of the pipelines,

2. levels of interest and/or controversy,

3. appropriate mitigation scenarios.

The Environmental Assessment will be the mechanism used to address comments and concerns.

The long term cumulative impacts would include a substantial increase in daily human activity, increased heavy equipment activity, increased noise level, and increased visual disturbance.

Conclusions

We feel an EA of this magnitude, that includes public input, is necessary to meet BLM requirements under the National Environmental Policy Act (NEPA). Previous NEPA documents prepared by the Farmington Resource Area are not directed toward this level of development.

The main focus of the EA will be an examination of the short term, long term, and cumulative effects of this gathering system in order to determine their level of significance. Mitigation strategies will also be analyzed.

Comments Requested

If you are unable to attend the open-house and have comments or information you believe pertinent to the project, please send your comments to Jerry Crockford, Bureau of Land Management, 1235 La Plata Highway, Farmington, NM 87401 by June 2, 1989. The EA is scheduled for completion by June 23, 1989.

Sincerely,

Ron Fellows
Area Manager

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

May 11, 1989

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-106 675 529

Mr. David C. Morrow, President
SOUTH-TEX TREATERS, INC.
P. O. Box 60480
Midland, Texas 79711-0480

RE: Discharge Plan GW-51
Valverde Gas Processing Plant
San Juan County, New Mexico

Dear Mr. Morrow:

The Oil Conservation Division (OCD) has received your request dated May 10, 1989, for authorization to discharge without an approved discharge plan.

Pursuant to Section 3-106.B of the New Mexico Water Quality Control Commission Regulations and for good cause shown, South-Tex Treaters is hereby granted authorization until September 22, 1989, or until discharge plan approval, whichever is earlier, to discharge without an approved discharge plan. This authorization is granted to allow for the submittal of the discharge plan application and review by the OCD. All plant specifications, operations, and discharges must be consistent with those stated in your authorization request. No discharges to the surface or ground water at the plant site are authorized.

Please be advised that the approval to discharge without an approved discharge plan does not relive you of liability should your operation result in actual pollution of the environment which may be actionable under other laws and/or regulations.

Approval to discharge without an approved discharge plan may be allowed for a period not to exceed 120 days and cannot be extended.

Sincerely,

William J. LeMay
Director

WJL/RCA/sl

SOUTH-TEX TREATERS, INC.

P.O. Box 60480
Midland, Texas 79711-0480

(915) 367-1958 (915) 362-9291

State of New Mexico
Oil Conservation Division
Santa Fe, New Mexico

Attention: Mr. Roger Anderson

Reference: Valverde Gas Processing Plant
Bloomfield, New Mexico
Plant Expansion

Gentlemen:

In reference to our phone conversation of May 3, 1989, we hereby request a 120 day authorization to discharge waste water without an approved discharge plan while our discharge plan application is being submitted and reviewed. We anticipate startup of the plant expansion to be May 22,1989. The plant expansion consists of the following:

1 Increasing the Amine circulation and regeneration capacity from 1000 gal/min to 1800 gal/min.

2 Addition of gas contactors and scrubbers to allow a gas treating and dehydration capacity of 170 million standard cubic feet per day of inlet gas.

3 Tie-ins to existing glycol regeneration and carbon dioxide vent systems.

4 Addition of a makeup water vaporizer which will utilize existing potable water as makeup, vaporize approximately 80-90 % to use as system makeup, and divert the remaining water (which will now be concentrated in mineral content) to an above ground storage tank for disposal in an approved waste water disposal well by others.

5 Liquid water recovered in the dehydrator will continue to be collected in an above ground storage tank for disposal in an approved waste water disposal well.(by others)

6 Used filter elements and other miscellaneous process waste will continue to be collected and disposed of by an approved waste disposal company.

Thank you for your assistance in this regard. Please let us know if we can provide further clarification.

Sincerely,

David C. Morrow, P.E.
President

copies:

Larry Anderson - Meridian Oil - Farmington
Mike David - Plant Manager- Valverde Plant

MERIDIAN OIL

March 31, 1989

APR - 1989

Oil Conservation Division
ATTN: Mr. David G. Boyer
Environmental Bureau Chief
P.O. Box 2088
Santa Fe, NM 87504

Dear Mr. Boyer:

I am writing to you in reference to your letter of March 16 (attached). You stated that analyses of the water from a below grade tank at our Val Verde Plant indicates a need to install leak detection or move the tank above ground. The tank has been removed and reinstalled above ground.

Sincerely,

T. Keith Baker
Regional Facilities Engineer

LEA/dj

xc: D.M. Drummond
L.W. Dillon
D.C. Morrow (South-Tex Treaters)

Meridian Oil Inc., 3535 East 30th St., P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-327-0251

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

March 16, 1989

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P 106 675 501

Mr. T. Keith Baker
Regional Facilities Engineer
MERIDIAN OIL, INCORPORATED
P. O. Box 4289
Farmington, New Mexico 87499-4289

RE: ValVerde Plant
San Juan County

Dear Mr. Baker:

Enclosed are the analyses of the samples from the below grade fiberglass tank associated with the TEG regenerator at your ValVerde Plant. The samples were obtained during an OCD site visit on October 25, 1988.

In the OCD letter to you dated October 31, 1988, you were informed that, depending on the results of the analyses, you may be required to retrofit the below grade tank with a leak detection system or move the tank above ground. Based on the analyses of the fluids in the tank, the continued use of the below grade tank as it now exists will not be permitted. If you wish to keep the tank below grade, it must be equipped with leak detection. I am enclosing the OCD guidelines for below grade tanks for your information.

Within thirty (30) days of receipt of this letter, notify the OCD of the actions you intend to take. If the tank is to be equipped with leak detection, include engineering drawings and a completion schedule for approval. If the tank is to be moved above ground, include a completion schedule.

If you have any questions, please do not hesitate to contact Roger Anderson at (505) 827-5885 or me at (505) 827-5812.

Sincerely

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

DGB/RA/sl

Enclosure

cc: OCD Aztec Office

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

March 16, 1989

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P 106 675 501

Mr. T. Keith Baker
Regional Facilities Engineer
MERIDIAN OIL, INCORPORATED
P. O. Box 4289
Farmington, New Mexico 87499-4289

RE: ValVerde Plant
San Juan County

Dear Mr. Baker:

Enclosed are the analyses of the samples from the below grade fiberglass tank associated with the TEG regenerator at your ValVerde Plant. The samples were obtained during an OCD site visit on October 25, 1988.

In the OCD letter to you dated October 31, 1988, you were informed that, depending on the results of the analyses, you may be required to retrofit the below grade tank with a leak detection system or move the tank above ground. Based on the analyses of the fluids in the tank, the continued use of the below grade tank as it now exists will not be permitted. If you wish to keep the tank below grade, it must be equipped with leak detection. I am enclosing the OCD guidelines for below grade tanks for your information.

Within thirty (30) days of receipt of this letter, notify the OCD of the actions you intend to take. If the tank is to be equipped with leak detection, include engineering drawings and a completion schedule for approval. If the tank is to be moved above ground, include a completion schedule.

If you have any questions, please do not hesitate to contact Roger Anderson at (505) 827-5885 or me at (505) 827-5812.

Sincerely

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

DGB/RA/sl

Enclosure

cc: OCD Aztec Office

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

October 31, 1988

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. T. Keith Baker
Regional Facilities Engineer
Meridian Oil, Inc.
P.O. Box 4289
Farmington, New Mexico 87499-4289

RE: ValVerde Plant
San Juan County.

Dear Mr. Baker:

The Oil Conservation Division has received your letter dated October 14, 1988, describing the processes involved in your ValVerde carbon dioxide extraction plant. Based on the plant description contained in the letter and the results of an inspection visit of the plant site on October 25, 1988, a discharge plan will not be required at this time.

You will be required to file a discharge plan application with this office if any of the following events occur.

1. If the facility is expanded beyond the present units.

2. If there is a significant change in the volume or quality of the self-contained waste streams.

3. If any of the waste streams can no longer be reused in the closed loop process system and require other disposal.

4. If any major spills occur at the facility.

During the inspection trip, samples were taken from the below grade fiberglass tank associated with the TEG regenerator. Initial indications are that this tank contains some carryover glycol as well as condensed water. If the samples submitted to the lab confirm this, the tank will be required to be moved to above ground or, if you desire to keep it below grade, retro-fitted with an approved leak detection system. We will inform you of the requirements as soon as we receive the sample analysis.

Please be advised that the determination that a formal discharge plan is not required does not relieve you of liability should your operation result in actual pollution of surface or ground waters.

If there are any questions, please do hesitate to contact Roger Anderson at 827-5885 or me at 827-5812.

Sincerely,

David G. Boyer, Hydrogeologist
Environmental Bureau Chief

DGB:RCA:sl

cc: OCD - Aztec Office

SCIENTIFIC LABORATORY DIVISION
ORGANIC ANALYSIS REQUEST FORM
Organic Section - Phone: 841-2570

754 WP4

[redacted]

REPORT TO: DAVID BOYER
N.M. OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, NM 87504-2088

S.L.D. No. OR-
DATE REC. 11/3/88
PRIORITY 3
PHONE(S): 827-5812

COLLECTION CITY: Bloomfield ; COUNTY: San Juan

COLLECTION DATE/TIME CODE: (Year-Month-Day-Hour-Minute) | 8 | 8 | 1 | 0 | 2 | 5 | 1 | 3 | 4 | 0 |

LOCATION CODE: (Township-Range-Section-Tracts) | 2 | 9 | N + 1 | 1 | W + 1 | 4 + 2 | 2 | 1 | (10N06E24342)

USER CODE: | 8 | 2 | 2 | 3 | 5 | SUBMITTER: David Boyer CODE: | 2 | 6 | 0 |

SAMPLE TYPE: WATER | ☑ |, SOIL | |, FOOD | |, OTHER:

This form accompanies 2 Septum Vials, ____ Glass Jugs, and/or ____
Samples were preserved as follows:

- ☒ NP: No Preservation; Sample stored at room temperature.
- ☒ P-Ice: Sample stored in an ice bath (Not Frozen).
- ☐ P-AA: Sample Preserved with Ascorbic Acid to remove chlorine residual.
- ☐ P-HCl: Sample Preserved with Hydrochloric Acid (2 drops/40 ml)

RECEIVED
MAR 15 1989
OIL CONSERVATION DIVISION
SANTA FE

ANALYSES REQUESTED: Please check the appropriate box(es) below to indicate the type of analytical screens required. Whenever possible list specific compounds suspected or required.

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
- ☒ (754) Aromatic & Halogenated Purgeables
- ☐ (765) Mass Spectrometer Purgeables
- ☐ (766) Trihalomethanes
- ☐ (774) SDWA VOC's I (8 Regulated +)
- ☐ (775) SDWA VOC's II (EDB & DBCP)

Other Specific Compounds or Classes

- ☐ _____
- ☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (755) Base/Neutral Extractables
- ☐ (758) Herbicides, Chlorophenoxy acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

Remarks: Meridian Val Verde CO_2 Extraction Plant

FIELD DATA:

pH=____; Conductivity=72 umho/cm at 16.5 °C; Chlorine Residual=____mg/l

Dissolved Oxygen=____mg/l; Alkalinity=____mg/l; Flow Rate____ ____/____

Depth to water ____ft.; Depth of well____ft.; Perforation Interval ____-____ft.; Casing:____

Sampling Location, Methods and Remarks (i.e. odors, etc.)

Below grade tank assoc w/ TEG regeneration

I certify that the results in this block accurately reflect the results of my field analyses, observations and activities.(signature collector): Jamie Bailey Method of Shipment to the Lab: Hand delivered

CHAIN OF CUSTODY

I certify that this sample was transferred from ____ to ____

at (location) ____ on ____/____/____ - ____:____ and that

the statements in this block are correct. Evidentiary Seals: Not Sealed ☐ OR Seals Intact: Yes ☐ No ☐

Signatures ____ ____

For OCD use: Date owner notified: 3/15/89 Phone or (Letter)? Initials RAS RA

ANALYSES PERFORMED

LAB. No.: OR- 1842

THIS PAGE FOR LABORATORY RESULTS ONLY

This sample was tested using the analytical screening method(s) checked below:

PURGEABLE SCREENS

- ☐ (753) Aliphatic Headspace (1-5 Carbons)
- ☒ (754) Aromatic & Halogenated Purgeables
- ☒ (765) Mass Spectrometer Purgeables
- ☐ (766) Trihalomethanes
- ☐ (774) SDWA VOC's I (8 Regulated +)
- ☐ (775) SDWA VOC's II (EDB & DBCP)

Other Specific Compounds or Classes

- ☐ _____
- ☐ _____

EXTRACTABLE SCREENS

- ☐ (751) Aliphatic Hydrocarbons
- ☐ (755) Base/Neutral Extractables
- ☐ (758) Herbicides, Chlorophenoxy acid
- ☐ (759) Herbicides, Triazines
- ☐ (760) Organochlorine Pesticides
- ☐ (761) Organophosphate Pesticides
- ☐ (767) Polychlorinated Biphenyls (PCB's)
- ☐ (764) Polynuclear Aromatic Hydrocarbons
- ☐ (762) SDWA Pesticides & Herbicides

ANALYTICAL RESULTS

COMPOUND(S) DETECTED	CONC. [PPB]	COMPOUND(S) DETECTED	CONC. [PPB]
benzene	280		
toluene	690		
ethylbenzene	33		
p-xylene	56		
m-xylene	190		
o-xylene	51		
* DETECTION LIMIT *	5ppb	+ DETECTION LIMIT +	

ABBREVIATIONS USED:

N D = NONE DETECTED AT OR ABOVE THE STATED DETECTION LIMIT

T R = DETECTED AT A LEVEL BELOW THE STATED DETECTION LIMIT (NOT CONFIRMED)

[RESULTS IN BRACKETS] ARE UNCONFIRMED AND/OR WITH APPROXIMATE QUANTITATION

LABORATORY REMARKS: This sample was easier to run by GC/MS because of matrix effects. All quantitative values reported here are approximations because the sample sat at room temperature overnight with a headspace before it was run by GC/MS. At least twelve other compounds were detected by GC/MS including aliphatic & benzenoid compounds that were not specifically identified.

CERTIFICATE OF ANALYTICAL PERSONNEL

Seal(s) Not Sealed ☒ Intact: Yes ☐ No ☐. Seal(s) broken by: _____ date: _____

I certify that I followed standard laboratory procedures on handling and analysis of this sample unless otherwise noted and that the statements on this page accurately reflect the analytical results for this sample.

Date(s) of analysis: 1-04-89. Analyst's signature: _____

I certify that I have reviewed and concur with the analytical results for this sample and with the statements in this block.

Reviewers signature: _____

STATE OF NEW MEXICO HEALTH AND ENVIRONMENT DEPARTMENT
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud, NE
Albuquerque, NM 87106 [505]-841-2500
ORGANIC CHEMISTRY SECTION [505]-841-2570

January 23, 1989

ANALYTICAL REPORT
SLD Accession No. OR-88-1842

Distribution
(■) Submitter
(※) SLD Files

To: NM Oil Consv. Div.
State Land Office Bldg.
P. O. Box 2088
Santa Fe, NM 87504-2088

From: Organic Chemistry Section
Scientific Laboratory Div.
700 Camino de Salud, NE
Albuquerque, NM 87106

Re: **A purgeable water sample submitted to this laboratory on November 3, 1988**

User:
OIL CONSERVATION DIV
State Land Office Bldg.
P. O. Box 2088
Santa Fe, NM 87504-2088

DEMOGRAPHIC DATA

COLLECTION		LOCATION	
On: 25-Oct-88	*By:* Boy . . .	*Township:* 29N	*Section:* 14
At: 13:40 hrs.	*In/Near:* Bloomfield	*Range:* 11W	*Tract:* 221

ANALYTICAL RESULTS: Mass Spectrometer Purgeable Screen

Parameter	Value	Note	MDL	Units
Benzene	280.00		5.00	ppb
Toluene	690.00		5.00	ppb
Ethylbenzene	33.00		5.00	ppb
1,4-Dimethylbenzene	56.00		5.00	ppb
1,3-Dimethylbenzene	190.00		5.00	ppb
1,2-Dimethylbenzene	51.00		5.00	ppb
Halogenated Purgeables (33)	0.00	N	5.00	ppb

Notations & Comments:

MDL = Minimal Detectable Level.

A = Approximate Value; N = None Detected above Detection Limit; P = Compound Present, but not quantified; T = Trace (<Detection Limit); U = Compound Identity Not Confirmed.

Seals: Not Sealed [X]; Intact: No [ ], Yes [ ] & Broken By: _____ Date: _____

Laboratory Remarks: Meridian Val Verde

All quantitative values reported here are approximations because the sample sat at room temperature overnight with a headspace, before it was run by GC/MS. At least twelve other compounds were detected by GC/MS, including alphatic and benzenoid compounds that were not specifically identified.

Analyst: J. F. Finney 1-04-89
John F. Finney — *Analyst, Organic Chemistry* — Analysis Date

Reviewed By: R. Meyerhein
Richard F. Meyerhein 01/23/89
Supervisor, Organic Chemistry Section

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106 — (505) 841-2555

859 WNW

GENERAL WATER CHEMISTRY and NITROGEN ANALYSIS

DATE RECEIVED 11 | 5 | 88 LAB NO. W6-1555

USER CODE ☐ 59300 ☐ 59600 ☒ OTHER: 82235

Collection DATE 10 | 25 | 88

Collection TIME 1340

SITE INFORMATION ►

Sample location: Meridian Val Verde Plant

Collection site description: Tank assoc w/ TEG regenerator

Collected by — Person/Agency: Anderson / OCD

SEND FINAL REPORT TO ►

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg, PO BOX 2088
Santa Fe, NM 87504-2088

Attn: David Boyer

Phone: 827-5812

RECEIVED JAN 09 1989 OIL CONSERVATION DIVISION — SANTA FE

Station/ well code

Owner

SAMPLING CONDITIONS

☐ Bailed ☐ Pump ☒ Dipped ☐ Tap	Water level	Discharge	Sample type: grab
pH (00400)	Conductivity (Uncorrected): 78 µmho	Water Temp. (00010): 16.5 °C	Conductivity at 25°C (00094): µmho

Field comments: Below grade tank

SAMPLE FIELD TREATMENT — *Check proper boxes*

No. of samples submitted: 1

☒ NF: Whole sample (Non-filtered) ☐ F: Filtered in field with 0.45 µmembrane filter ☐ A: 2 ml H_2SO_4/L added

☒ NA: No acid added ☐ Other-*specify:* ☐ A: 5ml conc. HNO_3 added ☐ A: 4ml fuming HNO_3 added

ANALYTICAL RESULTS from SAMPLES

NA		Units	Date analyzed
☒ Conductivity (Corrected) 25°C (00095)	92	µmho	11/10
☐ Total non-filterable residue (suspended) (00530)		mg/l	
☒ Other: Lab pH	8.19		12/5
☐ Other:			
☐ Other:			

A-H_2SO_4			
☐ Nitrate-N +, Nitrate-N total (00630)		mg/l	
☐ Ammonia-N total (00610)		mg/l	
☐ Total Kjeldahl-N ( )		mg/l	
☐ Chemical oxygen demand (00340)		mg/l	
☐ Total organic carbon ( )		mg/l	
☐ Other:			
☐ Other:			

From NF, NA Sample:

			Date Analyzed
☒ Calcium	11.0	mg/l	11/10
☒ Potassium	<1	mg/l	12/9
☒ Magnesium	0	mg/l	11/10
☒ Sodium	<5	mg/l	12/9
☒ Bicarbonate	199	mg/l	12/5
☒ Chloride	<5	mg/l	12/8
☒ Sulfate	6.55	mg/l	12/8
☒ Total Solids	1670	mg/l	12/2
☒ CO_3	0		12/5
☐			
☒ Cation/Anion Balance			

Analyst | Date Reported: 12 | 16 | 88 | Reviewed by

Laboratory remarks: This sample had a non-ionic liquid in it which would not volatilize at 180°C - thus elevated TDS, Chris Dean

FOR OCD USE -- Date Owner Notified _____ Phone or Letter? _____ Initals _____

New Mexico Health and Environment Department
SCIENTIFIC LABORATORY DIVISION
700 Camino de Salud NE
Albuquerque, NM 87106

HEAVY METAL ANALYSIS FOR

Telephone: (505)841-2553

Date Received	11/3/88	Lab No. ICAP-594	User Code	☐ 82235	☐ Other:

COLLECTION DATE & TIME: yy 88 | mm 10 | dd 25 | hh 13 | mm 40

COLLECTED BY: Anderson

COLLECTION SITE DESCRIPTION: Meridian Val Verde Plant

TO:

RECEIVED
JAN 06 1989
OIL CONSERVATION DIVISION
SANTA FE

OWNER:

ENVIRONMENTAL BUREAU
NM OIL CONSERVATION DIVISION
State Land Office Bldg., PO Box 2088
SANTA FE, NM 87504-2088

SITE LOCATION:
County: San Juan

Township, Range, Section, Tract: (10N06E24342)
29N+11W+14+21

ATTN: D Boyer
TELEPHONE: 827-5812

STATION/ WELL CODE:

LATITUDE, LONGITUDE:

SAMPLING CONDITIONS:

☐ Bailed ☒ Dipped ☐ Pump ☐ Tap	Water Level:	Discharge:	Sample Type:

pH(00400)	Conductivity(Uncorr.)	Water Temp.(00010)	Conductivity at 25°C (00094)
	70 µmho	16.5 °C	µmho

FIELD COMMENTS: Tank assoc. w/ TEG regenerator

SAMPLE FIELD TREATMENT Check proper boxes:		LAB ANALYSIS REQUESTED:
☒ WPN: Water Preserved w/HNO_3 Non-Filtered	☐ WPF: Water Preserved w/HNO_3 Filtered	☒ ICAP Scan Mark box next to metal if AA is required.

ANALYTICAL RESULTS (MG/L)

ELEMENT	ICAP VALUE		AA VALUE	ELEMENT	ICAP VALUE		AA VALUE
Aluminum	<0.1			Silicon	<0.1		
Barium	<0.1			Silver	<0.1	☐	
Beryllium	<0.1			Strontium	<0.1		
Boron	<0.1			Tin	16.		
Cadmium	<0.1	☐		Vanadium	<0.1		
Calcium	<0.1			Zinc	<0.1		
Chromium	<0.1	☐		Arsenic		☐	
Cobalt	<0.05			Selenium		☐	
Copper	<0.1			Mercury		☐	
Iron	1.3					☐	
Lead	0.5	☐				☐	
Magnesium	<0.1					☐	
Manganese	<0.05					☐	
Molybdenum	0.4					☐	
Nickel	<0.1					☐	

LAB COMMENTS: Abright

For OCD Use:
Date Owner Notified:
Phone or Letter?
Initials:

ICAP Analyst JA **Date Analyzed** 12/14/88

Reviewer [signature] **Date Received** 12/29/88

MERIDIAN OIL

October 14, 1988

New Mexico Oil Conservation Division
310 Old Santa Fe Trail, Room 206
Santa Fe, New Mexico 87503

Attention: Mr. Roger Anderson

Subject: Meridian's Val Verde Plant

Dear Mr. Anderson:

As I mentioned to you during our telephone conversation of October 13, I am sorry that we have not contacted your office in reference to our Val Verde Plant. Since we now know that our plant is under your jurisdiction, we will make every effort to comply with NMOCD regulations.

The Val Verde Plant is owned and operated by Val Verde Treating Company under contract with Meridian Oil Co. I use the term "we" to collectively refer to these two companies.

On the inlet line to Val Verde Plant, Meridian operated a pig receiver, slug catcher, and inlet filter separator. Liquids separated from the gas stream will be collected in an above ground storage tank. We anticipate receiving only corrosion inhibitor from the gathering system; we plan to reuse it in order to offset costs in our corrosion inhibitor program.

The Val Verde Plant is a gas treating plant designed to remove carbon dioxide from the natural gas produced from the Fruitland coal seam. The Plant consists of two gas treating trains which have an ultimate inlet capacity of 100 million standard cubic feet per day (MMSCFD) of gas. The treating solution is a proprietary, amine-based solvent. Heat for the solution regeneration system is provided by a closed loop, hot oil system. The hot oil is heated via gas fired heaters. Cooling for the solution regeneration system is provided by air-cooled heat exchangers (fin-fans). The carbon dioxide removed from the gas stream is vented to the atmosphere. There is no water disposal from the treating plant.

Treated gas from the outlet of the two treating contractors is dehydrated in a standard triethylene glycol (TEG) contactor. The TEG circulates through a regeneration system which boils the water out of the TEG. Most of this water vapor is vented to the atmosphere; however, some of this water condenses and collects in an underground fiberglass storage tank. You mentioned that this tank would probably require leak protection system under it; the purpose of

Meridian Oil Inc., 3535 East 30th St., P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone 505-327-0251

this system would be to protect the ground water from contamination. However, the water in the tank is condensed water (i.e., distilled water); if the tank were to leak, would it not improve the ground water? Since the tank is already installed it would be rather costly to install leak detection under it now. Therefore, we request that a leak detection system not be required.

If we install any other underground tanks, we understand that a leak detection system may be required. For future reference, would you please send us an NMOCD approved leak detection system specification for buried tanks.

If you need further information, please write to me at the letterhead address or call me at 326-9842. I look forward to meeting you in person.

Sincerely,

T. Keith Baker

T. Keith Baker
Regional Facilities Engineer

LEA/dj

xc: C.R. Owen
D.M. Drummond
L.W. Fothergill
L.W. Dillon
Jake Roll
Terry McMillin
Tom Owen

Val Verde Gas Treating Co.
P.O. Box 9
Bloomfield, NM 87413

9/1/89 Submittal

VALVERDE GAS PROCESSING

VALVERDE GAS TREATING PLANT
FOUNDATION PLAN — SAN JUAN, COUNTY NEW, MEXICO

CUSTOMER	
SCALE: 1" = 20'-0"	W.O.
DATE: 7-8-'88	P.O.
DRAWN BY: C. L. W.	DWG NUMBER FP-001
APPROVED:	

RUNING 44-131 54551-2