

PV

G A Weiss Plant Manager Texaco Refining and Marketing Inc Puget Sound Plant 360 293 0800 600 S Texas Rd (Deliveries Only) P O Box 622 Anacortes WA 98221-0622

August 4, 1995

Mr. Paul Skyllingstad Washington Department of Ecology Industrial Section P.O. Box 47600 Olympia, WA 98504-7600

Dear Mr. Skyllingstad:



Reference: Final Report on 1991 Fidalgo Bay Oil Spill Consent Decree DJ # 90-5-1-1-3766

Please find attached a report entitled "Final Report on the Completion of Activities Associated with the February 22, 1991 Crude Oil Spill" at the Texaco Refining and Marketing, Inc., Puget Sound Plant Volumes I and II. This report is being submitted in fulfillment of the requirements outlined in Consent Decree No 93-2-000913-8 between the Washington State Department of Ecology and Texaco Refining and Marketing, Inc., and Consent Decree No. DJ 90-5-1-1-3766 between the United States of America and Texaco Refining and Marketing, Inc.

To the best of my knowledge, I certify that the information contained in or accompanying this submission is true, accurate and complete.

Questions or comments regarding this report should be directed to Mr. Craig A. Ginnett at telephone # (360) 293-1526. Thank you for your assistance with this matter.

Very truly yours,

TEXACO REFINING AND MARKETING INC.

GAW:cag

cc: Chief, Environmental Enforcement Section Environment and Natural Resources Division

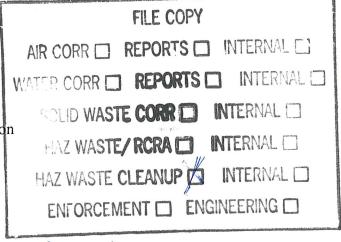
U.S. Department of Justice

P.O. Box 7611

Ben Franklin Station

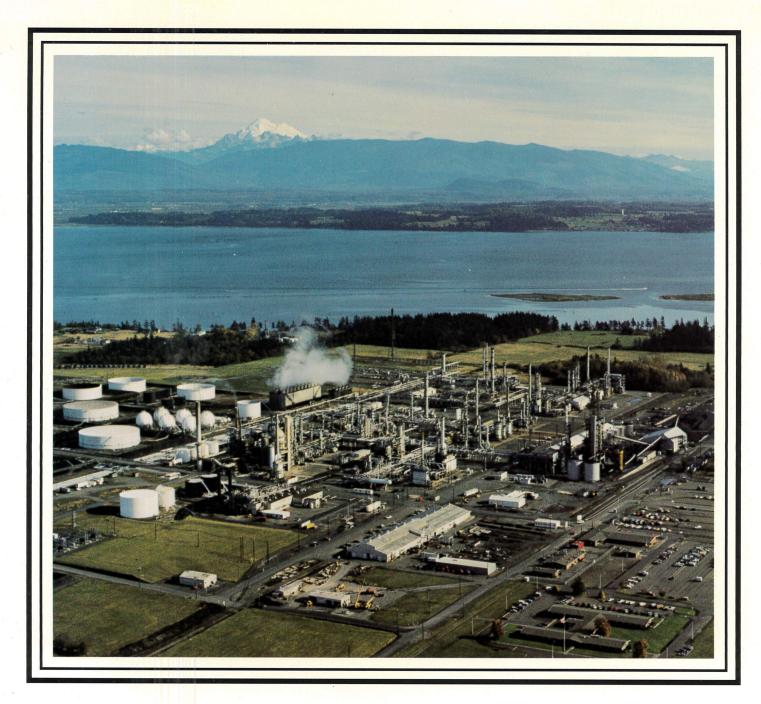
Washington, D.C. 20044

w/attachments



Legal Officer, 13th Coast Guard District Jackson Federal Building 915 Second Avenue, Room 3460 Seattle, Washington 98174 w/attachments

Judith A. Wenker Texaco Refining and Marketing, Inc. Legal Department Universal City Plaza



PUGET SOUND PLANT

Final Report on the Completion of Activities Associated with the February 22, 1991 Crude Oil Spill Volume I TEXACO PUGET SOUND PLANT Anacortes, WA 98221 August 2, 1995



TO THE UNITED STATES JUSTICE DEPARTMENT, LEGAL OFFICER - 13TH COAST GUARD DISTRICT AND TO THE WASHINGTON STATE DEPARTMENT OF ECOLOGY

FINAL REPORT ON THE COMPLETION OF CONSENT DECREE ITEMS ASSOCIATED WITH THE FEBRUARY 22, 1991 CRUDE OIL SPILL AT THE TEXACO REFINING AND MARKETING, INC. PUGET SOUND PLANT

Consent Decree Between:

United States of America and Texaco Refining and Marketing, Inc. # DJ 90-5-1-1-3766

State of Washington Department of Ecology and Texaco Refining and Marketing, Inc. #93-2-00913-8

Submitted by

Texaco, Puget Sound Plant 600 S. Texas Road Anacortes, Washington 98221

AUGUST 1995

Prepared By:

Craig A. Ginnett

Response Coordinator Emergency Services

Reviewed By:

Ken R. Brown

Supervisor - EHS Department

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1.0 BACKGROUND

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2.0 APPENDIX A - SPILL CLEAN UP PLAN MILESTONES (U.S.A. - Texaco Refining and Marketing, Inc.)

Appendix Item Number	Status	Description
2.1.0	Complete	Cleanup activities to prevent cross contamination on Munks Farm
2.2.0	Complete	Field and Fence Restoration on Munks Farm
. 2.3.0	Complete	Meeting with Mr. Munk regarding remedial action activities on property
2.4.0	Complete	Obtain local and state permits prior to conduction of remedial activities
2.5.0	Complete	Cleanup of pump area, west boundary, Burlington Northern Tracks, Catchment basin and blackberry bushes
2.6.0	Active, Phase II	Place lysymeter and groundwater monitoring devices at location selected by the Washington Department of Ecology
2.7.0	Complete	Apply petroleum contaminated soils to existing Texaco landfarms

3.0 APPENDIX B - OIL SPILL PREVENTION PLAN MILESTONES (U.S.A. - Texaco Refining and Marketing, Inc.)

Appendix Item Number	Status	Description
3,1,0	Complete	Replace failed cast iron pump with new carbon steel pump meeting API Standards
3.2.0	Complete	Remove second pump from service, if replaced, replace with carbon steel casing meeting API Standards
3.3.0	Complete	Install video camera at crude booster pump
3.3.1	Complete	Install video camera at A-Anchor manifold north of the Texaco Employee's Recreational Area
3.4.0	Complete	Install viewing screens in Blending Plant for Monitoring
3,5.0	Complete / Active	Develop visual inspection program to include annual pressure testing by Texaco's Inspection Department
3.5.1	Active	Monthly Visual inspection of pipelines over water by boat
3,5.2	Active	Daily visual inspection of aboveground pipeline
3.5.3	Active	Random visual inspection of underground portion of pipelines
3,5,4	Active	Inspection of water surrounding dock for oil sheen or evidence of spills or discharges
3,6,0	Complete	Install motor operators (which have remote manual controls located in the blending plant) on block valves at crude oil booster pumps
3.7.0	Complete	Complete study of continuous leak detection systems for dock transfer lines
3.8.0	Complete	Install system of gated valves along West march Point Road to prevent flow of oil through culverts
3.9.0	Complete	Install dike to provide containment in the event of a spill or leak in the crude booster pump area
3.10.0	Complete	Evaluate the need for spill containment along the east perimeter of the refinery to eliminate product spillage discharging into Padilla Bay

3.11.0	Complete	Within 12 months of the adoption of Ecology's oil spill prevention operation standards, install, test, and maintain a continuous leak detection system on all dock transfer lines in accordance with state regulations
3.12.0	Closed	Within 12 months of the adoption of Ecology's oil spill prevention operation standards, install, test, and maintain automated line shutoff equipment for the crude oil transfer pipelines in accordance with state regulations
3.13.0	Complete	Identify all remaining pumps in the refinery which have cast iron casin and have the potential to impact the waters of the state
3.14.0	Active	Expose and radiologically examine segments of underground transfer pipelines in intervals not to exceed five years
3.15.0	Active	Pressure test all dock lines annually and submit standard operating practices to ecology
3.16.0	Active	Pressure test all marine loading arms annually and submit standard operating practices to ecology
3.17.0	Active	Conduct ultrasonic tests on all above ground transfer lines at intervals not exceeding 3 years and submit standard operating practices to Ecology

1.1 Introduction

On February 22, 1991 approximately 5,000 barrels of crude oil were released at the Texaco Puget Sound Plant as a result of a catastrophic failure of a crude oil booster pump. Massive emergency clean-up activities were conducted in response to the spill and were reported to the Department of Ecology in a report submitted February 22, 1992 entitled "Report on the Interim Action Cleanup Activities and Remedial Investigation/Feasibility Studies Related to the February 22, 1991 Crude Oil Spill at the Texaco Puget Sound Plant".

On February 10, 1993, a consent decree (No. # DJ 90-5-1-1-3766) between the United States of America and Texaco Refining and Marketing, Incorporated was filed in the United States District Court, Western District of Washington at Seattle.

On August 18, 1993, a consent decree (No. 93-2-00913-8) between the State of Washington Department of Ecology and Texaco Refining and Marketing Incorporated was filed in Skågit County, Washington.

The consent decrees provide the details of additional activities which were to be completed in association with the crude oil spill. The report which follows provides the details in support of the fulfillment and completion of activities in the subject consent decree.

1.2 Site Location

Puget Sound Plant is located approximately 75 miles north of Seattle near the City of Anacortes on Fidalgo Island (Figure 1). The February 1991 oil spill site is located in the northwest corner of Puget Sound Plant, approximately 200 feet east of Fidalgo Bay. (Figure 2).

1.3 Site History

On the evening of February 22, 1991, Texaco Puget Sound Plant was transferring a cargo of Alaskan North Slope crude oil from an oil tanker into the refinery facility tankage. During the transfer, a crude booster pump suffered a catastrophic pump case structural failure which allowed approximately 5000 barrels of crude oil to be released to soils and surface waters adjacent to the Texaco facility. During the spill, crude oil ran from the failed pump westward across a transfer pipeway and railroad right-of-way to drainage ditches located on Mr. Leonard Munk's property to the west of the incident site.

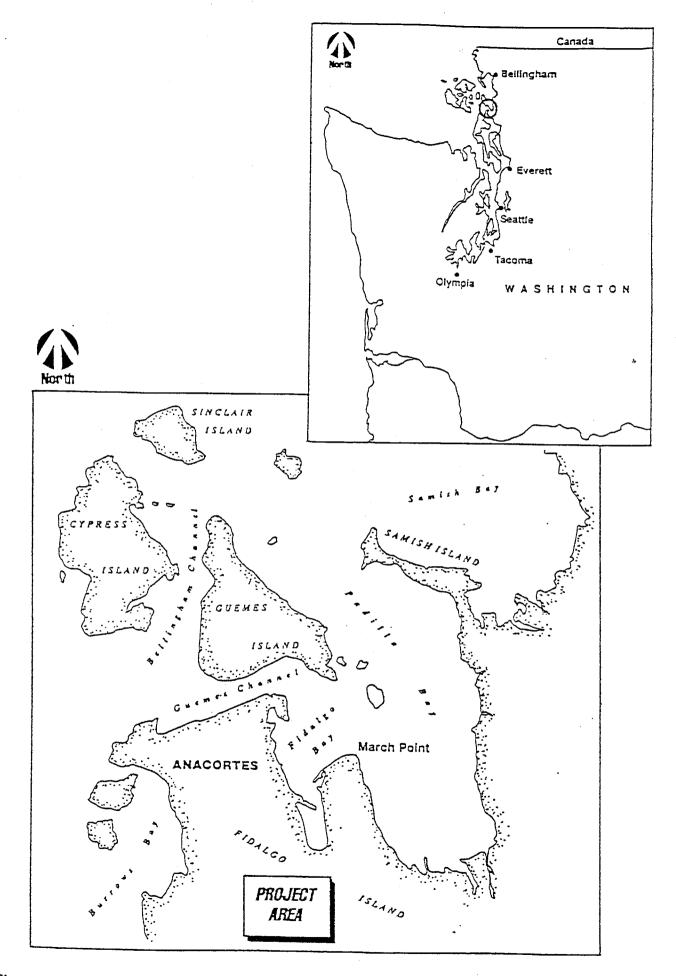
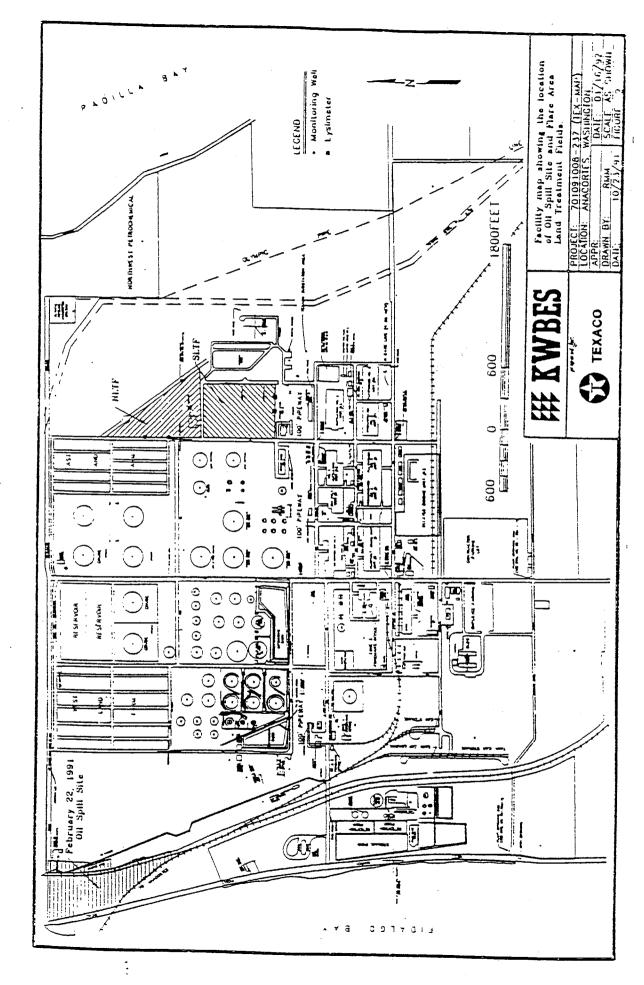


Figure 1. Vicinity map of Texaco Puget Sound Plant



2.1.0 Cleanup activities prioritized so that cross contamination between the four farm areas being cleaned up does not occur, with the interceptor trench remaining open during remedial action to ensure that oil from upgradient areas does not contaminate newly cleaned areas.

Status: Item Closed, this milestone had been completed prior to the implementation of the consent decree and is represented as such within the decree.

2.2.0 Restore field and replace fences on the property to their original state or as modified after consultation with owner Leonard Munks.

Status: Item Closed, Fence replacement completed on June 30, 1993, general overview photo provided.



2.3.0 Meeting with Mr. Munk regarding remedial action activities on property.

Status: Item Closed, this milestone had been completed prior to the implementation of the consent decree and is represented as such within the decree.

2.4.0 Obtain all necessary local and state permits prior to conducting remedial action and determine if proposed remediation complies with local zoning codes.

Status: Item Closed, this milestone had been completed prior to the implementation of the consent decree and is represented as such within the decree.

2.5.0 Complete cleanup in pump area, the ditches along the west boundary of the Texaco property and/Burlington Northern tracks (the "blackberry bushes"), and the catchment basin.

Status: Item complete, Report filed December 1993 as "Report on the Completion of Remedial Activities Associated with the February 22, 1991 Crude Oil Spill at Texaco Puget Sound Plant" (Consent Decree No 93-2-00913-8).

2.6.0 Place lysimeter and groundwater monitoring devices/ at locations as selected by the Washington Department of Ecology ("Ecology"). Based upon results of monitoring and upon consultation with Ecology, undertake further action as required by Ecology.

Status: Item ongoing. Report filed December 1993 as "Report on the Completion of Remedial Activities Associated with the February 22, 1991 Crude Oil Spill at Texaco Puget Sound Plant" (Consent Decree No 93-2-00913-8).

Texaco received a letter from WDOE verifying that Texaco Puget Sound Plant had met the remedial action requirements of Consent Decree #93-2-00913-8. As such, the project has now moved into the compliance monitoring phase per Appendix D of the Consent Decree. As required by Appendix D, the monitoring well at the crude booster pump has been monitored quarterly with the first event occurring on March 1994.

Enclosed in this Appendix is the documentation provided as a result of this program.



3 A Weiss ant Manager

Texaco Refining and Marketing Inc. Puget Sound Plant 360-293-0800

张达多广村的开放飞船 建二烷基 计 THE LANGE COLD MILE

July 20, 1995

MTCA-4607-95-P

Paul Skyllingstad Washington Department of Ecology Industrial Section P.O. Box 47600 Olympia WA 98504-7600

Dear Mr. Skyllingstad,

Re: Texaco Puget Sound Plant Crude Booster Pump - 2nd Qtr 1995 Sampling

This correspondence and attachments are submitted as a "Quarterly Progress Report for Activities Associated with the February 22, 1991 Crude Oil Spill" at Texaco, Puget Sound Plant, Anacortes, Washington. On March 31, 1994, Texaco received a letter from WDOE verifying that Texaco Puget Sound Plant had met the remedial action requirements of Consent Decree #93-2-00913-8. As such, the project has now moved into the compliance monitoring phase per appendix D of the Consent Decree. As required by Appendix D, the monitoring well at the crude booster pump has been monitored quarterly with the first event occurring during March, 1994. The consent decree requires initial quarterly sampling for two years (through year end 1995) followed by annual sampling for the next three years thereafter. Following the initial five year sampling period, the decree requires WDOE and Texaco to exchange proposals to amend exhibit D regarding the need for continued monitoring.

During the sampling round of the 2nd quarter of 1995, no detectable levels of total petroleum hydrocarbons (TPH) or benzene, toluene, ethylbenzene or xylenes (BTEX) were found in the groundwater sample at the site. A copy of the lab results for the sampling round are attached.

Questions or comments regarding this report should be directed to Mr. Brian Rhodes at telephone # (206) 293-1761. Thank you for your assistance with this matter.

Very Truly Yours,

TEXACO REFINING AND MARKETING INC.,

GA Went

BDR/br

cc: Kim Anderson (WDOE address as above)

Enclosure

CONSO795,DOC

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A Corning Company	Enseco

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Environmental

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Texaco Refining Client ID: BOOSTER PUMP Lab ID: 082575-0006-SA

Matrix: 0825/5-0006-SA

Authorized:

AQUEOUS Sampled: 20 JUN 95 23 JUN 95 Prepared: NA

Received: 23 JUN 95 Analyzed: 27 JUN 95

Parameter	Result	Units	Reporting Limit
Benzene Toluene Ethylbenzene Xylenes (total)	ND ND ND ND	ug/L ug/L ug/L ug/L	2.0 2.0 2.0 5.0
Surrogate	Recovery		
a,a,a-Trifluorotoluene	95	%	

ND = Not detected NA = Not applicable

Reported By: Min Qin Yu

Approved By: Patricia Trinidad

The cover letter is an integral part of this report. Rev 230787



Total Petroleum Hydrocarbons (Tríregional) Method 8015 Modified



Environmental Services

Total Petroleum Hydrocarbons by GC/FID (Triregional)

Method TPH-D-TRIREGIONAL

Client Name: Texaco Refining Client ID: BOOSTER PUMP Lab ID: 082575-0006-SA

Matrix: AQUEOUS Sampled: 20 JUN 95 Received: 23 JUN 95 Authorized: 23 JUN 95 Prepared: 26 JUN 95 Analyzed: 27 JUN 95

Parameter	Result	Units	Reporting Limit
Diesel Fuel Unknown hydrocarbon	ND ND	ug/L ug/L	50 50
Surrogate.	Recovery		
o-Terphenyl	73	%	•

ND = Not detected NA = Not applicable

Reported By: Linda Ellithorpe

-

Approved By: Eric Bayless

The cover letter is an integral part of this report.

Rev 230787



QC LOT ASSIGNMENT REPORT Hydrocarbon Work Cell

Laboratory Sample Number

082575-0006-SA

QC Matrix

AQUEOUS

QC Category

QC Lot Number (DCS)

QC Run Number (SCS/BLANK)

_

TPH-D-TR-A

26 JUN 95-11A

26 JUN 95-11A



METHOD BLANK REPORT Hydrocarbon Work Cell

Analyte	Result	Units	Reporting Limit
Test: TPH-D-TR-A Matrix: AQUEOUS QC Lot: 26 JUN 95-11A QC Run: 26 JUN	95-11A		
Diesel Fuel Unknown hydrocarbon	ND ND	ug/L ug/L	50 50



SINGLE CONTROL SAMPLE REPORT Hydrocarbon Work Cell

Analyte

Concentration Spiked Measured

Accuracy(%)
SCS Limits

Category: TPH-D-TR-A
Matrix: AQUEOUS
QC Lot: 26 JUN 95-11A QC Run: 26 JUN 95-11A
Concentration Units: ug/L

o-Terphenyl

40

38

95 50-150

Calculations are performed before rounding to avoid round-off errors in calculated results.



DUPLICATE CONTROL SAMPLE REPORT Hydrocarbon Work Cell

		entration			Acc	uracy	Precision
Analyte	Spiked	DCS1	Measured DCS2	AVG	Aver DCS	age(%) Limits	(RPD) DCS Limit
Category: TPH-D-TR-A Matrix: AQUEOUS QC Lot: 26 JUN 95-11A Concentration Units: ug/L							
Diesel Fuel	300	242	213	228	76	63-125	13 19.0

Concentration

Calculations are performed before rounding to avoid round-off errors in calculated results.



May 3, 1995

MTCA-4607-95-P

Paul Skyllingstad Washington Department of Ecology Industrial Section P.O. Box 47600 Olympia WA 98504-7600

Dear Mr. Skyllingstad,

Re: Texaco Puget Sound Plant Crude Booster Pump - 1st Qtr 1995 Sampling

This correspondence and attachments are submitted as a "Quarterly Progress Report for Activities Associated with the February 22, 1991 Crude Oil Spill" at Texaco, Puget Sound Plant, Anacortes, Washington. On March 31, 1994, Texaco received a letter from WDOE verifying that Texaco Puget Sound Plant had met the remedial action requirements of Consent Decree #93-2-00913-8. As such, the project has now moved into the compliance monitoring phase per appendix D of the Consent Decree. As required by Appendix D, the monitoring well at the crude booster pump has been monitored quarterly with the first event occurring during March, 1994. The consent decree requires initial quarterly sampling for two years (through year end 1995) followed by annual sampling for the next three years thereafter. Following the initial five year sampling period, the decree requires WDOE and Texaco to exchange proposals to amend exhibit D regarding the need for continued monitoring.

During the sampling round of the 1st quarter of 1995, no detectable levels of total petroleum hydrocarbons (TPH) or benzene, toluene, ethylbenzene or xylenes (BTEX) were found in the groundwater sample at the site. A copy of the lab results for the sampling round are attached.

Questions or comments regarding this report should be directed to Mr. Brian Rhedes at telephone # (206) 293-1761. Thank you for your assistance with this matter.

Very Truly Yours,

6 A Wess

TEXACO REFINING AND MARKETING INC.,

BDR/br

cc: Kim Anderson (WDOE address as above)

Enclosure

CONSO495.DOC

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX) - Method 8020



Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Texaco Refining Client ID: BOOSTER PUMP Lab ID: 081011-0003-SA Matrix: AQUEOUS Authorized: 22 MAR 95

Matrix: AQUEOUS Sampled: 21 MAR 95 Received: 22 MAR 95 Authorized: 22 MAR 95 Prepared: NA Analyzed: 28 MAR 95

Parameter	Result	Units	Reporting Limit
Benzene Toluene Ethylbenzene Xylenes (total)	ND ND ND ND	ug/L ug/L ug/L ug/L	0.50 0.50 0.50 1.0
Surrogate	Recovery		
a,a,a-Trifluorotoluene	94	%	

ND = Not detected NA = Not applicable

Reported By: Lisa Stafford

Approved By: Harlan Loui

The cover letter is an integral part of this report.

Rev 230787

Total Extractable Hydrocarbons by GC/FID -Method TEH Diesel



Environmental

Total Extractable Hydrocarbons by GC/FID

Method TEH-Diesel

Client Name: Texaco Refining Client ID: BOOSTER PUMP

Lab ID: 081011-0003-SA

Matrix: AQUEOUS Sampled: 21 MAR 95 Prepared: 28 MAR 95 Received: 22 MAR 95 Analyzed: 28 MAR 95 Authorized: 22 MAR 95

Reporting Limit Parameter Result Units

Total Extractable Hydrocarbons (n-C10 to n-C24) ND ug/L 50

ND = Not detected NA = Not applicable

Reported By: Linda Ellithorpe

Approved By: Lisa Stafford

The cover letter is an integral part of this report.

Rev 230787

Enseco	A Corning Company

CHAIN OF CUSTODY RECORL

1145-A

2644 Industrial Ave., Wast Sacramento, CA. 95691-3435 (916) 372-1393 [] 7440 Lincoln Way, Garden Grove, CA. 92641-1432 (714) 898-6370 [] 18501 East Gate Ave., City of Industry, CA. 91748-1321 (818) 965-1006 [] Mobile Labs, 1 (800) ENSECO-8

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3/21/95 DATE DATE ACCEPTED RELINQUISHED BY (SIGNATURE) RECEIVED BY (SIGNATURE) 08,01 3-77-8 RELINQUISHED BY (SIGNATURE) RECEIVED Pul Stay DATE RECEIVED BY (SIGNATURE) SAMPLERS (SIGNATURE) Rich Stoylo RECEIVED FOR LABOR.

SAMPLE DESPOSITION:

IME

The delivery of samples and the signature on this chain of

4:00 an custody form constitutes authorization to perform the analymeter ses specified above under the Enseco Terms and Conditions,

unless a contract or purchase order has been executed and is sited above.

(Samples will be stored to (thirty (30) days charge; thereafter storage charges will be billed at the published rates.)

2. Sample to be returned to client: □ Yes □ No (Enseco will dispose of unreturned samples for a charge of \$15.00. Disposal will be by incineration wherever possible; otherwise, as appropriate, according to legal requirements.)

SPECIAL INSTRUCTIONS

file



G A Weiss Plant Manager Texaco Refining and Marketing Inc Puget Sound Plant 206 293 0800

January 18, 1995

PUGET SOUND PLANT
PO Box 622
Anacortes WA 98221-0622

OPR

MTCA-4607 95 P JAN 1 0 1995

LAB EHS PLA SH PRO EDP CGN FILE

Paul Skyllingstad Washington Department of Ecology Industrial Section P.O. Box 47600 Olympia WA 98504-7600

Dear Mr. Skyllingstad,

Re: Texaco Puget Sound Plant Crude Booster Pump - 4th Qtr Sampling

This correspondence and attachments are submitted as a "Quarterly Progress Report for Activities Associated with the February 22, 1991 Crude Oil Spill" at Texaco, Puget Sound Plant, Anacortes, Washington. On March 31, 1994, Texaco received a letter from WDOE verifying that Texaco Puget Sound Plant had met the remedial action requirements of Consent Decree #93-2-00913-8. As such, the project has now moved into the compliance monitoring phase per appendix D of the Consent Decree. As required by Appendix D, the monitoring well at the crude booster pump has been monitored quarterly with the first event occurring during March, 1994. During the sampling round of the 4th quarter of 1994, no detectable levels of total petroleum hydrocarbons (TPH) or benzene, toluene, ethylbenzene or xylenes (BTEX) were found in the groundwater sample at the site. A copy of the lab results for the sampling round are attached. The results labelled MW-123 are for the crude booster pump.

Questions or comments regarding this report should be directed to Mr. Brian Rhodes at telephone # (206) 293-1761. Thank you for your assistance with this matter.

Very Truly Yours,

GA wenn

TEXACO REFINING AND MARKETING INC.,

BDR/br

cc: Kim Anderson (WDOE address as above)

The state of the s



Services

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Texaco Refining Client ID: MW-123 Lab ID: 079420-0017-SA

079420-0017-SA

Matrix: AQUEOUS Sampled: 15 DEC 94 Prepared: NA Received: 16 DEC 94 Analyzed: 27 DEC 94 Authorized: 19 DEC 94

Parameter	Result	Units	Reporting Limit
Benzene Toluene Ethylbenzene Xylenes (total)	ND ND ND ND	ug/L ug/L ug/L ug/L	0.50 0.50 0.50 1.0
Surrogate	Recovery		
a,a,a-Trifluorotoluene	101	%	

ND = Not detected NA = Not applicable

Reported By: Ann Marie Carroll

.

Approved By: Min Qin Yu

The cover letter is an integral part of this report. Rev 230787



Total Extractable Hydrocarbons by GC/FID

Method TEH-Diesel

Client Name: Texaco Refining

Client ID:

MW-123 079420-0017-SA AQUEOUS Lab ID:

Matrix:

Sampled: 15 DEC 94 Prepared: 22 DEC 94 Authorized: 19 DEC 94

Received: 16 DEC 94 Analyzed: 11 JAN 95

Reporting Limit Parameter Result Units

Total Extractable Hydrocarbons (n-C10 to n-C24)

ND ug/L

50

ND = Not detected NA = Not applicable

Reported By: Jennifer Bavetta

-

Approved By: Linda Ellithorpe

The cover letter is an integral part of this report. Rev 230787



METHOD BLANK REPORT Hydrocarbon Work Cell

Analyte Result Units Reporting
Test: TEH-D-A
Matrix: AQUEOUS
QC Lot: 16 DEC 94-36A QC Run: 22 DEC 94-36A
Total Extractable Hydrocarbons
(n-Cl0 to n-C24)
ND ug/L 50

,



DUPLICATE CONTROL SAMPLE REPORT Hydrocarbon Work Cell

Analyte	Concentration Spiked Measured				Accuracy		Precision
	Spiked	DCS1	Measured DCS2	AVG	Aver DCS	age(%) Limits	(RPD) DCS Limit
Category: TEH-D-A Matrix: AQUEOUS QC Lot: 16 DEC 94-36A Concentration Units: ug/L		·					
Diesel Fuel	300	306	320	313	104	67-122	4.5 26.0

Calculations are performed before rounding to avoid round-off errors in calculated results.

Erreco	A Corning Company

CHAIN OF CUSTODY RECORD

45.A

L 2544 Industrial Ave., West Sacramento, CA. 95691-3435 (916) 372-1393".

1 7440 Lincoln Way, Garden Grove, CA. 92641-1432 (714) 898-6370

1 16501 East Gale Ave., City of Industry, CA. 91748-1921 (818) 965-1006

1 Mobile Labs. 1 (800) ENSECO.8

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CHAIN C		
	AB NUMBER	
DATE	LAB NI	

L.J MODIIE LADS, 1 (BUU) ENSELU-8	Ċ				Page	\{\bar{\sigma} = \bar{\sigma} \}
	PROJECT MANAGER .					
TEXACO PUGET SOUND PLANT	DOUG PAKIR	٠.			ANALYSES	
ADDRESS	TELEPHONE NUMBER (AREA CODE					
SOO S. TEXAS RD						\
	SITE CONTACT					_
A'NA CORTIN WA 98221	BRIAN RHODFA	(:		\	15)?	_
	TELEPHONE NUMBE					
(TI. US)	1206-2931761			100		
OTE NO.				53) <u> </u>	
PO # 37089			_	/	7	
SAMPLE NO ADENTIFICATION DATE TIME	LAB/SAMPLE SAMPLE TYPE	E TYPE NO. OF	13/30	YC1 2/	1 / / / / / / /	Samole Condition/
DAIE	NUMBER LIO. AI	AIR SOLID TAINERS	*	``\ `v		REMARKS
* NE DITCH	×	5	×	×	201	01 70
THE SE DITCH		N	×	×		
1-90-20NW			×	×		
BLANK		5	×	×		
TRIP BLANK		W	×	×	103	Altas ore client
** NESHAP-DEC		7	×		₹ × 1.5 × 1	IPPO RA
1	>,	8	*		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	したったし
* Cutamers and Mil 19,70%						
XX/cutanies Car Ell 11 th					1202	
Buttonia Mi	21 111111 12	X Clour	di idipira	7	MIL-1735 MW-122	Pl
'' DO THE SAMPLE(S) POSE ANY POTENTAL HAZARD(S)? IF YES, PLEASE EXPLAIN \sim						
SAMPLERS (SIGNATURE) RELINQUISHED BY (SIG	RELINQUISHED BY (SIGNATURE)		,	TIME		on this chain of
1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		12,	65/51/	11:55An		erform the analy-
RECEIVED BY (SIGNATURE) DATE TIME	RECEIVED BY (SIGNATURE)	DATE		TIME	ses specified above under the Enseco Terms and Conditions, unless a contract or purchase order has been executed and	is and Conditions, seen executed and
RECEIVED FOR LABORATORY BY BECEIVED DATE	TIME ACCEPTED	DATE		TIME	is sited above. SAMPLE DESPOSITION:	4
					1. Storage time requested:	days
METHOD OF SHIPMENT					(Samples will be stored for thirty (30) days without additional charge; thereafter storage Charges will be billed at the pub-	without additional billed at the pub-
SPECIAL INSTRUCTIONS					lished rates.)	No (Epopopoliui)
* IF ANY BTEX BI SAMAE "HITS" (EXCEPT	BLACIK, TRIP BLANK OF NLEURPS	Of NL! "	14. (SAR	T.L.	dispose of unreturned samples for a charge of \$15.00. Dis-	e of \$15.00. Dis-
TO WITH TO TO THE TOWN THE TOWN TO THE TOW	LINE A WIN TONIX RUN	B 7			posal will be by incineration wherever possible; otherwise, as appropriate according to lead requirements.)	ole; otherwise, as
ı	1	ł	-		6	/

DISTRIBUTION: WHITE - With Report, CANARY - To ENSECO, PINK - To Courier, GOLDENROD - To Sample Control



G A Weiss Fam Manager Texaco Refining and Marketing Inc Puget Sound Plant 206/233/3800

500 S Texas Pd (Deliveries Only) PIO Box 622 Anaulities WA 19221-0622

September 10, 1994

G-1030-94-P

Paul Skyllingstad Washington Department of Ecology Industrial Section P.O. Box 47600 Olympia WA 98504-7600

Dear Mr. Skyllingstad,

Re: Texaco Puget Sound Plant Crude Booster Pump - 3rd Qtr Sampling

This correspondence and attachments are submitted as a "Quarterly Progress Report for Activities Associated with the February 22, 1991 Crude Oil Spill" at Texaco, Puget Sound Plant, Anacortes, Washington. On March 31, 1994, Texaco received a letter from WDOE verifying that Texaco Puget Sound Plant had met the remedial action requirements of Consent Decree #93-2-00913-8. As such, the project has now moved into the compliance monitoring phase per appendix D of the Consent Decree. As required by Appendix D, the monitoring well at the crude booster pump has been monitored quarterly with the first event occurring on March 1994. During the sampling round of the 3rd quarter of 1994, no detectable levels of total petroleum hydrocarbons (TPH) or benzene, toluene, ethylbenzene or xylenes (BTEX) were found in the groundwater sample at the site. A copy of the lab results for the sampling round are attached. The results labelled MW-123 are for the crude booster pump.

Questions or comments regarding this report should be directed to Mr. Brian Rhodes at telephone # (206) 293-1761. Thank you for your assistance with this matter.

Very Truly Yours,

TEXACO REFINING AND MARKETING INC.,

Xlien. a Weise

BDR/br

cc: Kim Anderson (WDOE address as above)

Enclosure

Materials Testing & Consulting, Inc

WSDOE Laboratory #C057 WSDOH Laboratory #046

P.O. Box 309 Mount Vernon, WA 98273 (206)757-1400 - FAX (206)757-1402

Client: Texaco, P.S.P., Anacortes

600 S. Texas Rd. Anacortes, WA 98221

Attn: Mr Brian Rhodes

Report Date: 9/26/94 Reference: 94-1714 Date Analyzed: 9/16/94

Project: P O # 25989 Date Sampled: 9/14/94

Data Report

Page: 1 of 1

				•			
Lab Number	Sample	ppm		ppb			
	Description	TPH	Benzene	Toluene	Ebenzene	Xylenes	Surrogate
81-94-03847.0W 81-94-03848.0W	The state of the s	nd	nd	nd	nd	nd	% Recovery
01-94-03040.000	TF-NESHAPS	7.62-G	1,650	2,210	3,165	14,840	102
QC-Gas	Fortified Blank - 0.4ppm	105%				·.	
QC-BETX	Fortified Blank - 4ppb ea.	100%	99%	96%	99%	93%	101 101
-							
					ļ		:
·							
ļ	Methods:	1			ļ	ļ	
Į,	WSDOE: WTPH-G/WTPH-D						Method
. [G- Gasoline A-Aged D-Diesel	Soil/Water	Soil/Water	Soil/Water	Soil/Water	O-HAAL I	Acceptance
<u> </u>	Method Reporting Limit (MRL)**	10.0/0.10	100/1.0	100/1.0	100/1.0	Soil/Water	Limits
Commonto	Maximum Contamination Levels	100/1	500/5	40000/40	20000/30	100/1.0	Soil: 50-150

Comments: *- indicates heavier hydrocarbons

** - A value of "<n" indicates elevated detection limits due to dilution or chromatographic interference

MS - Matrix Spike at 200 ppm Gasoline\Diesel

QC Review:

TEL: (206) 293-0800 FAX: (206) 293-1584 RELINOUISHED BY : (Signature) RECEIVED BY: (Signature) TEXACO () TEXACO () TEXACO() () BV TEXACO (1/) RELINOUIȘHED BY : (Signature) ANACORTES, WA 98221 LVB RECEIVED BY: (Signature) LAB (C) SAMPLED BY: TEL: (206) 2931761 600 S. TEXAS ROAD EXACO PUGET SOUND PLANT PROJECT NAME: TF-NESHAPS B.D. RHODE! MU-123 ME - 123 SAMPLE No's D-LON D 3.40x C OUANTITY CHAIN OF CUSTODY MUST BE SIGNED AND RETURNED TO TEXACO - PUGET SOUND PLANT" 9-14-59 SIGNATURE: DATE = 7 9-14-99 WATLL SAMPLE TYPE DATE DATE DATE DATE 2 PRESERVATIVES HC R 176 8 NONE COMMENTS: CHAIN OF CUSTODY RECORD LABORATORY: CRUPE BOOSTAL MATERIALS TESTING & CONSULTING BURLINGION, WA 98273 INVOICE TRICKLING FICTUL SAMPLE LOCATION P.O. #25989 8020 BIEX 5108 RODO BIEK ANALYSES REQUIRED Hal

1111 NO



G A Weiss Plant Manager Texaco Refining and Marketing Inc Puget Sound Plant 206 293 0800

600 S Texas Rd (Deliveries Only) P O Box 622 Anacortes WA 98221-0622

July 6, 1994

G-1030-94-P

Paul Skyllingstad Washington Department of Ecology Industrial Section P.O. Box 47600 Olympia WA 98504-7600

Dear Mr. Skyllingstad,

Re: Texaco Puget Sound Plant Crude Booster Pump - 2nd Otr Sampling

This correspondence and attachments are submitted as a "Quarterly Progress Report for Activities Associated with the February 22, 1991 Crude Oil Spill" at Texaco, Puget Sound Plant, Anacortes, Washington. On March 31, 1994, Texaco received a letter from WDOE verifying that Texaco Puget Sound Plant had met the remedial action requirements of Consent Decree #93-2-00913-8. As such, the project has now moved into the compliance monitoring phase per appendix D of the Consent Decree. As required by Appendix D, the monitoring well at the crude booster pump has been monitored quarterly with the first event occurring on March 1994. This sampling round is for the 2nd quarter of 1994. During the June sampling round, no detectable levels of total petroleum hydrocarbons (TPH) or benzene, toluene, ethylbenzene or xylenes (BTEX) were found in the groundwater sample at the site. A copy of the lab results for the sampling round are attached.

Questions or comments regarding this report should be directed to Mr. Brian Rhodes at telephone # (206) 293-1761. Thank you for your assistance with this matter.

Very Truly Yours,

TEXACO REFINING AND MARKETING INC.,

BDR/br

cc: Kim Anderson (WDOE address as above) Enclosure

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS 4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 98424 - TELEPHONE (206)922-2310 - FAX (206)922-5047

Report To: Texaco - Puget Sound

Date: July 1, 1994

Report On: Analysis of Water & Soil Lab No.: 40927

IDENTIFICATION:

Samples received on 06-10-94

P. O. No. 25444

ANALYSIS:

Lab Sample No. 40927-1

Matrix: Water

Client ID: MW-123

BTEX by EPA Method 8020 Date Analyzed: 6-15-94

Units: mg/L

Parameter	Result	POL	Flag
Benzene Toluene Ethyl Benzene Xylenes	ND ND ND	0.001 0.001 0.001 0.001	
SURROGATE RECOVERY, %			
Trifluorotoluene	95		

- Not Detected

PQL - Practical Quantitation Limit

Texaco - Puget Sound Lab No. 40927 July 1, 1994

Lab Sample No. 40927-1

Matrix: Water

Client ID: MW-123

TPH Per EPA Method 8015 Modified Date Extracted: 6-14-94 Date Analyzed: 6-14-94

Units: mg/L

<u>Parameter</u>	<u>Result</u>	POL	Flag
Total Petroleum Fuel Hydrocarbons	ND	1.0	
SURROGATE RECOVERY, % 1-chlorooctane o-terphenyl	93 120		

ND - Not Detected

PQL - Practical Quantitation Limit

LAB() TEXACO() RECEIVED BY: (Signature) TEXACO () RELINQUISHED BY: (Signature) TEXACO() RECEIVED BY: (Signature) TEXACO (7 |RELINQUISHED BY : (Signature) TEXACO - PUGET SOUND PLANT TEL: (206) 293-1761 SAMPLED BY: TEL: (206) 293-0800 FAX: (206) 293-1584 ANACORTES, WA 98221 600 S. TEXAS ROAD SEE BELOW PROJECT NAME: MW-123 MW-123 Brian D. Rhodes SAMPLE No's. J-40ME 1-16 VIIINVOD 6/9/97 SIGNATURE: 6/9/99 50165 SAMPLE TYPE WATER DATE DATE DATE PRESERVATIVES HCL ζ0 ح FOR ICE CHAST IN SHIPMENT COMMENTS: WLTF-8.877, WLTF-7-BT2, WLTF-10W-DIL, WB-BTE SAMPLE NOS: BKGRN-WO-MTZ, ELTF-O-BTZ, ELTF-O-BTZ SOUND ANALYTICAL ELTE-MIZ-COMP, WLTE-MIZ-COMP, FLAKE-MIZ-COMP Tacoma, WA 98424 4813 Pacific Hwy East LABORATORY: ELTF-5-BTZ, ELTF-6E-BTZ, ELTF-6EC-BTZ, ELTF-6WC-BT CHAIN OF CUSTODY RECORD CRUDE BOOSTELL INVOICE CANDEALMS SAMPLE LOCATION DO#25494 TEL: (206) 922-2310 ANALYTE LIST * 2 (ADACHED 8015 TPH 8020 BIEX AMALYSES REQUIRED

CHAIN OF CUSTODY MUST BE SIGNED AND RETURNED TO TEXACO - PUGET SOUND PLANT



G A Weiss ⊇har Manager Texaco Refining and Marketing Inc. Puget Sound Plant 206-293 (80)

The Park of the Section of the Secti

April 29, 1994

Enforcement Actions G-1030-94-P

Paul Skyllingstad Washington Department of Ecology Industrial Section P.O. Box 47600 Olympia WA 98504-7600

Dear Mr. Skyllingstad,

This correspondence and attachments are submitted as a "Quarterly Progress Report for Activities Associated with the February 22, 1991 Crude Oil Spill" at Texaco, Puget Sound Plant, Anacortes, Washington. On March 31, 1994, Texaco received a letter from WDOE verifying that Texaco Puget Sound Plant had met the remedial action requirements of Consent Decree #93-2-00913-8. As such, the project has now moved into the compliance monitoring phase per appendix D of the Consent Decree. As required by Appendix D, the monitoring well at the crude booster pump has been monitored quarterly with the first event occurring on March 1994. During the March sampling round, no detectable levels of total petroleum hydrocarbons (TPH) or benzene, toluene, ethylbenzene or xylenes (BTEX) were found in the groundwater sample at the site. A copy of the lab results for the sampling round are attached.

Questions or comments regarding this report should be directed to Mr. Brian Rhodes at telephone # (206) 293-1761. Thank you for your assistance with this matter.

Very Truly Yours,

GA Wennes

TEXACO REFINING AND MARKETING INC.,

BDR/br

cc: Kim Anderson (WDOE address as above)

Enclosure

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS
4813 PACIFIC HIGHWAY EAST, TACOMA, WASHINGTON 96424 - TELEPHONE (206)922-2310 - FAX (206)922-3047

HUDINAROMEM LATTIMENART

DATE: March 23, 1994

TO: Brian Rhodes

Texaco Puget Sound

LABORATORY NUMBER: 38643

Enclosed are the original and one copy of the Tier II data deliverables package for Laboratory Work Order Number 38643. Five samples were received for analysis at Sound Analytical Services, Inc., on March 10, 1994.

If there are any questions regarding this data package, please do not hesitate to call me at (206) 922-2310.

Sincerely,

Andrew J. Riddell Project Manager

Train Dyerian

SPECIALIZING IN INDUSTRIAL & TOXIC WASTE ANALYSIS 4813 PACIFIC HIGHWAY BAST, TACOMA, WASHINGTON 98424 - TBL.IP! KONE (206)922-2316 - FAX (206)922-5047

Report To: Texaco Puget Sound

Date: March 23, 1994

Report On: Analysis of Water & Soil Lab No.: 38643

IDENTIFICATION:

Samples received on 03-10-94

P. O. No. PSP24669

ANALYSIS:

Lab Sample No. 38643-1

Matrix: Water

Client TD: 123

BTEX by EPA Method 8020 Date Analyzad: 3-10-94 Units: mg/L

Parameter	Result	POL	Flag
Benzene Toluene Ethyl Benzene Xylenes	ND ND ND ND	0.0 0.0 0.0	01 01

SURROGATE RECOVERY, 4

Trifluorotoluene

109

ND - Not Detected PQL - Practical Quantitation Limit

Texaco Puget Sound Lab No. 38643 March 23, 1994

Lab sample No. 30043 1 Matrix: Water

Client ID: 123

TPH Per EPA Method 8015 Modified Date Extracted: 3-18-94 Date Analyzed: 3-21-94 Units: mg/L

<u>Parameter</u>	Result	POL	Flag
Total Petroleum Fuel Hydrocarbons	ND	1.0	
SURROGATE RECOVERY, & 1-Chlorocctane o-terphenyl	100 88		

ND - Not Detected PQL - Practical Quantitation Limit

TELP-SKINNER METALS ANALYSES REQUIRED BTEX BY 8020 TPH 87 8015 TCLP - BTEX TEL: (206) 922-2310 SULFIDEN 5031 TRUP-BTEX, 10TAL - BTEX, CHAIN OF CUSTODY RECORD INVOICE P.O. # PSP24669 *CHAIN OF CUSTODY MUST BE SIGNED AND RETURNED TO TEXACO - PUGET SOUND PLANT* 4813 Pacific Hwy East Tacoma, WA 98424 SOUND ANALYTICAL #12 #2 SAMPLE LOCATION LABORATORY: HTV # Z BOOSTER/ API COMMENTS: **PRESERVATIVES** 42504 0 2 20 20 11- WATER. 125 ml Bothe SAMPLE TYPE 1c BOTTLE JUN THE 3/6/84 DATE DATE DATE SIGNATURE: 3/9/94 3/8/24 DATE EXACO - PUGET SOUND PLANT QUANTITY RELINQUISHED BY: (Signature) RELINQUISHED BY: (Signature) 4 90 RECEIVED BY: (Signature) RECEIVED BY: (Signature) TEL: (206) 293-1761 ANACORTES, WA 98221 54/A2-126A1/A3 Brian D. Rhodes 1238 - 126B 600 S. TEXAS ROAD TEL: (206) 293-0800 FAX: (206) 293-1584 HTUCAT-SPI PROJECT NAME: SAMPLE No's. SAMPLED BY: TEXACO () API-I TEXACO () TEXACO () TEXACO (LAB () LAB (

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Appendix A

2.7.0 Apply petroleum contaminated soils excavated during interim action to existing Texaco landfarms or stockpiled in an area on the Texaco Plant site. Landfarm the more oily soil on hazardous waste portion of East Land Treatment Field and the less oily portion on non-hazardous Treatment Field.

Status: Interim clean-up activities associated with the February 1991 Alaskan Crude Oil Spill resulted in the generation of approximately 6,000 cubic yards of non-hazardous oily soils (K.W. Brown and Associates - July 1991) is completed. The consent decree required that these soils be applied to existing Texaco landfarms or stockpiled in an area on the Texaco Plant site by December 31, 1993. All soils excavated during interim (spill response) remedial activities were either applied directly to Texaco's existing landfarms or stockpiled on a concrete storage pad or landfarm roads awaiting proper landfarm application prior to December of 1993. The last of the stockpiled soils from the interim action were applied to Texaco's flare landfarms in 1994. The ongoing treatment and handling of these oily soils has been completed under the general oversite of Ms. Kimberly Wigfield of the Washington State Department of Ecology during her annual RCRA landfarm inspections and record reviews. Landfarm operations (tilling, fertilizing and monitoring) associated with these soils/landfarms will continue as applicable under our RCRA permit and/or the Washington State Model Toxics Control Act. This action item, with respect to consent decree Item 7 requirements is now closed.



JMH_ oil spill file_

July 31, 1991

Mr. Ken Willis Environmental Health Specialist Skagit County Health Department Administration Building Room 301 700 South Second Street Mt. Vernon, WA 98273

Dear Mr. Willis:

This letter is written on behalf of Texaco Refining and Marketing, Inc's Puget Sound Plant (Texaco). The intent of this letter is to present Texaco's plan to bioremediate stockpiled non-hazardous oily soil, and to seek approval from Skagit County Health Department to implement this plan.

The oily soil was generated during clean-up of the February 1991 release of Alaskan crude oil onto Texaco property and adjacent land owner's property. The non-hazardous oily soil is currently stockpiled on a storage pad and on roadways near the East Land Treatment Field. The volume of stockpiled soil is approximately 6,000 cubic yards.

Texaco would like to use the temporary non-hazardous land treatment area near the Flare to bioremediate the above described non-hazardous oily soil. This is the same area used by Texaco to treat non-hazardous spoil material excavated from the shipping basin in Autumn 1990. The non-hazardous spoil material contained some petroleum hydrocarbons which are being degraded, through bioremediation, to levels below the Department of Ecology clean-up standards of 200 mg/kg Total Petroleum Hydrocarbons (TPH). The area designated to receive the oily soil recovered from the crude oil release currently has TPH values ranging from non detect to 12 mg/kg.

K. W. Brown & Associates, Inc.

Texaco has discussed with Ecology the plans to bioremediate the stockpiled oily soil and has received an approved plan in the form of an Agreed Order (Order). The section of the Order detailing the remedial action for the stockpiled oily soil is enclosed for your review. A brief discussion of the plan follows.

As mentioned above, the temporary non-hazardous land treatment area near the Flare (referred to as the Flare Land Treatment Field in the Order) will be used to treat the oily soil. The Flare Area Land Treatment Field (FLTF) consists of two plots, a north plot and a south plot. Texaco plans to use only the north plot to treat the oily soil. Only non-hazardous stockpiled oily soil will be treated in this area. Texaco considers this area a temporary facility. Ecology has established three conditions which must be met prior to application of oily soil. These include:

- A. Obtaining necessary local permits and/or approvals, which Texaco is seeking through this letter;
- B. Installation of two lysimeters below the treatment zone in the North FLTF, Texaco intends to complete this installation by August 9, 1991.
- C. Determination of current oil and grease concentrations in the Zone of Incorporation (ZOI) in the north and south plots of the FLTF. This has been completed and data is enclosed with this letter.

Oily soil will only be applied to the FLTF when levels of TPH in existing materials are less than 200 mg/kg. Current TPH levels are well below 200 mg/kg in the north plot of the FLTF as evidenced by the soil data enclosed. Further, Texaco will apply the oily soil in 6 inch lifts, tilling the material twice per week as described in the Order. Subsequent lifts will not be added until the TPH levels in the previous lift are less than 200 mg/kg.

Lysimeters will be monitored quarterly and analyzed for BETX, chromium, nickel and vanadium using methods specified in the Order.

ZOI samples will be collected to verify levels of TPH and nutrients including pH levels. Nutrients in the form of inorganic fertilizer and liquid and solid cow manure will be added as needed to maximize degradation of oil in the soil.

By November 1, 1991, Texaco will install monitoring wells east of the temporary FLTF screened in the first aquifer.

Described above are the principle elements of the bioremediation plan. I will be happy to take you on a tour of the FLTF and show you the stockpiled oily soil. Also, I will be happy to answer any questions you have about the proposed bioremediation plan.

On behalf of Texaco and myself, I want to thank you for allowing Texaco to bioremediate the spoil from the shipping basin last Autumn. This treatment process worked very well, was protective of human health and the environment, and was cost effective. My professional opinion is that the bioremediation of the oily soil in the manner described above and in the enclosed Order, will also proceed to a satisfactory conclusion.

Please be assured that the bioremediation of the oily soil, including the monitoring described in the Order, will be conducted in a scientifically sound, and professional manner, supervised by K.W. Brown Environmental Services.

Sincerely,

William J. Hornby, M.S., CPSS

Northwest Regional Director

Enclosures: 2

cc: Larry Padgett

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910 Technology Boulevard, Suita 3

	910 Technology Bhulevard, Suir Buzeman, Montana 597
	DRAFT
Person: William Hornby	
Company: KWR	·
Telephone: FAX: 206-671-	<u>675</u> (
# Pages, including cover sheet: /2	·
Special Instructions:	
These are the rush reports for	
Texaco Oil Spill you requested	
- tan	
This FAX sent by: TOM Foubert Time: 1620 Date:	7/30/91

Inter-mountain Laboratories, Inc. 910 Technology Blvd., Suite B Bozeman, Montana 59715

Telephone: 1-800-828-1413

FAX: 1-800-828-3142

910 Technology Bouleverd, Suite 8 Bozeman, Montana 59715

DRAFT

TPH TOTAL PETROLEUM HYDROCARBONS

Client:	KW BROWN		
Sample ID:	NLTF #1	Report Date:	07/30/91
Project ID:		Date Sampled:	07/26/91
Laboratory ID:	B911643	Date Received:	07/27/91
Sample Matrix:	Soil	Date Extracted:	07/27/91
Preservative:	Cool	Date Analyzed:	07/29/91
Condition:	Intact		ע ע ייי בייי די די

Parameter	Analytical Result	Detection Limit	Units
TPH	5.8	2.00	mg/kg

ND - Parameter not detected at stated detection level.

Comments:

TPH:

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Inter Mountain Laboratories, Inc.

910 Tachnology Souleverd, Suite 8 Bozeman, Mantana 59715

TPH TOTAL PETROLEUM HYDROCARBONS

DRAFT

Client: Sample ID:	KW BROWN NLTF #2	Report Date:	07/30/91
Project ID:		Date Sampled:	07/26/91
Laboratory ID:	B911644	Date Received:	07/27/91
Sample Matrix:	Soil	Date Extracted:	07/27/91
Preservative:	Cool	Date Analyzed:	07/29/91
Condition:	Intact		01/43/31

Parameter	Analytical Result	Detection Limit	Units	
TPH	ND	2.00	mg/kg	

ND - Parameter not detected at stated detection level.

Comments:

TPH:

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Analyst

Inter-Mountain Laboratories, Inc.

910 Technology Bouleverd, Suite 8 Bazeman, Montana 59715

DRAFT

TPH TOTAL PETROLEUM HYDROCARBONS

Client: Sample ID:	KW BROWN NLTF #3	Report Date:	07/30/91
Project ID: Laboratory ID: Sample Matrix: Preservative: Condition:	B911645 Soil Cool Intact	Date Sampled: Date Received: Date Extracted: Date Analyzed:	07/26/91 07/27/91 07/27/91 07/29/91

Parameter	Analytical Result	Detection Limit	Units
TPH	4,9	2.00	mg/kg

ND - Parameter not detected at stated detection level.

Comments:

TPH:

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Analyst

910 Technology Boulevard, Suita 8 Bozeman, Montana 59715

DRAFT

TPH TOTAL PETROLEUM HYDROCARBONS

Client: Sample ID:	KW BROWN NLTF #4	Report Date:	07/30/91
Project ID: Laboratory ID: Sample Matrix: Preservative: Condition:	B911646 Soil Cool Intact	Date Sampled: Date Received: Date Extracted: Date Analyzed:	07/26/91 07/27/91 07/27/91 07/29/91

Parameter	Analytical Result	Detection Limit	Units	
TPH	12.	2.00	mg/kg	

ND - Parameter not detected at stated detection level.

Comments:

TPH:

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Analyst.

910 Technology Gouleverd, Suite 8

TPH TOTAL PETROLEUM HYDROCARBONS

Client: Sample ID:	KW BROWN NLTF #5	Report Date:	07/20/01
Project ID: Laboratory ID:	B911647	Date Sampled:	07/30/91 07/26/91
Sample Matrix:	Soil	Date Received: Date Extracted:	07/27/91 07/27/91
Preservative: Condition:	Cool Intact	Date Analyzed:	07/29/91

Parameter			Units
TPH	3.9	2.00	mg/kg

ND - Parameter not detected at stated detection level.

Comments:

TPH:

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Bozemen, Montana 59715

DRAFT

TOTAL PETROLEUM HYDROCARBONS

Client: Sample ID:	KW BROWN SLTF #6	7	
Project ID: Laboratory ID: Sample Matrix:	B911648 Soil	Report Date: Date Sampled: Date Received: Date Extracted:	07/30/91 07/26/91 07/27/91 07/27/91
Preservative: Condition:	Cool Intact	Date Analyzed:	07/29/91

Parameter	Analytical Result	Detection Limit	Units
TPH	40.	2.00	mg/kg

ND - Parameter not detected at stated detection level.

Comments:

TPH:

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Analyst

Inter-Mountain Laboratories, Inc.

910 Technology Bouleverd, Suite 8 Bozeman, Montana 59715

TPH TOTAL PETROLEUM HYDROCARBONS

DRAFT

Client:	KW BROWN		
Sample ID:	SLTF #7	Report Date:	07/30/91
Project ID:	~~~	Date Sampled:	07/26/91
Laboratory ID:	B911649	Date Received:	07/27/91
Sample Matrix:	Soil	Date Extracted:	07/27/91
Preservative:	Cool	Date Analyzed:	07/30/91
Condition:	Intact		01/30/31

Parameter	Analytical Result	Detection Limit	Units
TPH	260	2.00	mg/kg

ND - Parameter not detected at stated detection level.

Comments:

TPH:

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Analyst

910 Tachnology Rouldward, Suite 8 80zemen, Montana 59715

TPH TOTAL PETROLEUM HYDROCARBONS

DRAFT

Client:	KW BROWN		
Sample ID:	SLTF #8	Report Date:	07/30/91
Project ID:	. 	Date Sampled:	07/26/91
Laboratory ID:	B911650	Date Received:	07/27/91
Sample Matrix:	Soil	Date Extracted:	07/27/91
Preservative:	Cool	Date Analyzed:	07/30/91
Condition:	Intact		07730731

Parameter	Analytical Result	Detection Limit	Units
TPH	100	2.00	mg/kg

ND - Parameter not detected at stated detection level.

Comments:

TPH:

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Andlyst

910 Technology Boulevard, Suite 8 Bozemen, Montana 59715

DRAFT

TPH TOTAL PETROLEUM HYDROCARBONS

Client: Sample ID: Project ID:	KW BROWN SLTF #9	Report Date:	07/30/91
Laboratory ID:	B911651	Date Sampled: Date Received: Date Extracted: Date Analyzed:	07/26/91
Sample Matrix:	Soil		07/27/91
Preservative:	Cool		07/27/91
Condition:	Intact		07/30/91

Parameter	Analytical Result	Detection Limit	Units	
TPH	6.9	2.00	mg/kg	

ND - Parameter not detected at stated detection level.

Comments:

TPH:

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Analyst

910 Technology Boulevard, Suite &

TPH TOTAL PETROLEUM HYDROCARBONS

Client: Sample ID:	KW BROWN SLTF #10	Report Date:	07/30/91
Project ID: Laboratory ID: Sample Matrix: Preservative: Condition:	B911652	Date Sampled:	07/26/91
	Soil	Date Received:	07/27/91
	Cool	Date Extracted:	07/27/91
	Intact	Date Analyzed:	07/30/91

Parameter	Analytical Result		Units	
TPH	100	2.00	mg/kg	

ND - Parameter not detected at stated detection level.

Comments:

TPH:

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Inter Mountain Laboratories, Inc.

910 Technology Soulevard, Suite G Sozemen, Montane 59715

TPH TOTAL PETROLEUM HYDROCARBONS METHOD BLANK ANALYSIS

DRAFT

Client: KW BROWN		
Sample ID: Method Blank #40 Laboratory ID: MB46TS	***************************************	07/30/91
Sample Matrix: Sand	Date Sampled: Date Received:	N/A N/A
Preservative: N/A Condition: N/A	Date Extracted: Date Analyzed:	07/27/91 07/30/91

Parameter	Analytical Result	Detection Limit	Units	
TPH	ND	2.00	mg/kg	

ND - Parameter not detected at stated detection level.

Comments:
Baked sand

References:

TPH

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments. Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

Analyst

Inter-Mountain Laboratories, Inc.

910 Technology Boulevard, Suite 8 Bozoman, Montana 50716

TPH TOTAL PETROLEUM HYDROCARBONS MATRIX SPIKE SUMMARY

Client:

KW BROWN

Sample ID:

Blank Spike #39

Project ID:

N/A

Laboratory ID: BS39TS Sample Matrix: Baked Sand

Preservative:

Condition:

N/A N/A

Report Date:

07/30/91

Date Sampled:

N/A

Date Received: Date Extracted: 07/27/91

N/A

Date Analyzed:

07/29/91

Conc/dil:

10g/imL

Parameter	Initial Spike Recovery	Method Blank Recovery	Final Spike Recovery	Initial Spike Added	Percent Recovery
TPH	634.4	0.0	634.4	900	70 %

ND - Parameter not detected at stated detection level.

All values presented are total mass units of nanograms.

Comments:

TPH

Fuel oils, light, total recoverable, gas chromatographic, 0-3109-83, USGS, Methods for the Determination of Organic Substances in Water and Fluvial Sediments.

Leaking Underground Fuel Tank Field Manual, May 1988, State of California, Department of Health Services.

7. The cleanup standard for the interim action shall be Model Toxics control Act Chapter 173-340-720(2), -730(2), -740(2), and -750(2) or (3). The interim action shall spommance within two weeks of the effective data of this signed Order and be completed by December 31, 1991.

The second part of the remedial action required by this Order is to bigramediate stockpiled non-hazardous city soil that is found in the roadways between plots of the East land Treatment Field and on a storage pad south of the East land Treatment Field and on a storage pad south of the East land Treatment Field. The stockpiled material can be treated at the north and south plots of the temporary Flare land Treatment Field (FLTF) subject to the following conditions:

114 114

מני מסשוו ילישרה בואפדוגהבילדווף

- 1. Only non-herardous oily soil can be treated at the north and south temporary FLTF. The treatment fields are temporary and not permanent facilities. Prior to the application of oily soil the following shall be accomplished:
 - A. Taxaco; shall obtain nadessary local paraits and/or approvals for the land treatment plots.
 - B. Texaco shall install two lysimscars below the treatment zone in the north plot of the FLTF.
 - C. Texaco shall determine the current oil and grasse concentrations in the zone of incorporation (201) in the north and south plots of the FLTP.
- Oily soil shall be applied to the FLIF only when existing material on the field has less than 200 ppm TPH. Oily soil shall be applied each time in six inch lifts. The plots shall be tilled twice weekly with each tilling event consisting of at least two passes.
- 1. Lysimeters shall be monitored quarterly. Lysimeter sampled shall be analyzed for BETX using BPA Method 8240 and chromium, nickel, and vansdium shall be analyzed using BPA Method 6010.
- 201 sampling shall consist of one discrete sample per plot and one composite sample consisting of five random samples from each plot for a total of ten random samples. ZOI samples shall be collected quarterly. Soil amendments shall be made when analytical results indicate that pH should be adjusted or that the actual nitrogen or phosphorus levels are less than the desired amount. Specific amounts needed shall be delcuisted in accordance with Fermit Condition [II.B.], of the Taxano Dangerous Wasta Treatment Permit.
- 5. By November 1, 1991 Taxaco Marketing and Refining shell install one monitoring well east of each temporary plot of the FLTF. The walls shell be someoned in the first equifer.

d

Toler Comment

3.1.0 Replace failed pump with new pump with carbon steel casing meeting API standards.

Status: Item Closed, this milestone had been completed prior to the implementation of the consent decree and is illustrated as such within the decree.

3.2.0 Remove second pump from service. If replaced, replace with a pump with carbon steel casing meeting current API standards.

Status: Item Closed, this milestone had been completed prior to the implementation of the consent decree and is illustrated as such within the decree. This pump (22RG-3) has been permanently removed (see attached photo).



3.3.0 Install video camera at crude booster pumps to detect leaks or spills more quickly.

Status: The installation of the video camera at the Crude Booster Pump and A-Anchor location north of the Employee's Recreation Area was completed by December 31, 1993. See the enclosed bill of materials in Volume II "BM 5129 and BM 5129A and the attached photograph of the camera tower located at the Crude Booster Pump Area. An additional photo has been provided in Appendix B 3.4.0 showing the video monitor that is mounted at the operators console in the Receiving, Blending, and Shipping Control Room ie; Blending Plant.



3.3.1 Install video camera at manifold north of Texaco Employee's Recreation Area on oil transfer pipeline to detect leaks or spills more quickly.

Status: The installation of the video camera at the Crude Booster Pump and A-Anchor location north of the Employee's Recreation Area was completed by December 31, 1993. See the enclosed bill of materials "BM 5129 and BM 5129A in Appendix B 3.3.0. Attached is a photograph of the camera tower located at the A-Anchor "Employee's Recreational Area". An additional photo has been provided in Appendix B 3.4.0 showing the video monitor that is mounted at the operators console in the Receiving, Blending, and Shipping Control Room ie; Blending Plant.



3.4.0 Install viewing screens in Blending Plant for monitoring.

Status: Monitor installed prior to December 31, 1993. Monitor capable of viewing split screen for dual area monitoring. (A-Anchor and Crude Booster Pump). Remote radio controls allow for wide angle and zooming capabilities for each area, see attached photo.





Appendix B

3.5.0 Develop visual inspection program to include annual pressure testing by Texaco's inspection department, monthly visual inspection of pipelines over water by boat, and daily visual inspection of aboveground portion of pipeline, random visual inspection of underground portion of pipelines, and inspection of surrounding docks for oil sheen and evidence of spills or discharges.

Status: Active, see following Appendices 3.5.1 to 3.5.4

Appendix B

3.5.1 Monthly Visual inspection of pipelines over water by boat.

Status: See enclosed monthly piping inspection forms for section of pipeline leading from A-Anchor (shore) to the end of the wharf. The dock portion of the pipelines are currently being repainted at the this time.

To: CAG

ATTN:

INSPECTION DEPT

Date & time of Inspection with 18 1995 14:30

Status of Piping OK Problem

Status of Insulation OK Problem Shallow Pitting & Status of Paint OK Problem Problem Status of Paint OK Problem Status of Paint Repairs are currently under way.

Begun 2 wks ago.

NOTE: Inspection to be performed by boat from the water.

MONTHLY FACILITY INSPECTION SHEET

Return Completed Form to EH&S

Signature

To'Cha

ATTN:

INSPECTION DEPT

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspectio		29 1995 10 AM
	Month	Day Year Time
Status of Piping	OK_	Problem
Status of Insulation (if applicable)	OK_	Problem
Status of Paint	Fair	Problem Considerable Blistering
comments: Scheduled	for pair	nting Summer of 1995. To work has commenced
entract is out,	But, no	o work has commenced
NOTE: Inspection to be	LATE, performed 1	by boat from the water

Signature

Toing.

ATTN:

INSPECTION DEPT

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspectio	n 5 Month	23 1995 10 AM Day Year Time
Status of Piping	OK	Problem
Status of Insulation (if applicable)	OK	Problem
Status of Paint	0K	Problem Considerable Blistering
comments: Paint Cont	KACT 1	is scheduled for Summer
of 95.		

NOTE: Inspection to be performed by boat from the water.

Signature

ATTN: INSPECTION DEPT

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspection	nMonth	/9 95 Day Year		PM ime
Status of Piping	OK	Problem		
Status of Insulation (if applicable)	ok	Problem		
Status of Paint	ок	Problem F	Air, Ra	ndom Blisters
Comments: This 151 11 Walking lines	75p, ua	s done	by b	icat 4

NOTE: Inspection to be performed by boat from the water.

Signature

To: Gernet!

ATTN:

INSPECTION DEPT

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Da	4 _		TO PLANT	z E.T.	
υa	te & time of Inspect				
	Inspect	io 7			
	, , ,	.1011	16 95 Ny Year		
		Month	6 9		
Sta	tus of Piping	Da	ly vo	100	
	or Pipina		rear		
	* **9	0K ./		Time	
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(1.5	us of Insulation		Sprem_NO	/_ /	
(+ T	applicable)	072		Time Leaks obser	
	-anie)	Pro	1 2	005ec	110 0
C+ .		OK Pro	plem		J C (/
statu	s of Paint			_	
)		OK _	\wedge		
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TOTE:	Piping @ Blis			CORPORE	ζ.
	recuion to he			105/	27
	~e pe	Iform			

NOTE: Inspection to be performed by boat from the water.

Signature Z

To CRAIG (Gennet	noed Sor	ne bli	ank Forms	Sin Distriction of the Control of th	
	<i>/~</i>				
ATTN: EDEPT					
11 I					
MONTHL PI	Y FACILIT PING FROM	Y INSPEC	CTION SHEET D PLANT	_	
Date & time of Inspection	2	20	1995	ZPM	
	Month	Day	Year	Time	
Status of Piping	ok_/	Froble	5ome	CORR. To .05	" deep,
Status of Insulation (if applicable)	OK	Proble	iii		
			Bliste		
coments: 2011/15 count is count in	blisten	ed 111	5,0075	. WORSE FRE	: ·
	4 5 30	72 5	euth. 11	o between is	
Seffer, NOTE: Inspection to be p	performed	by boat	from the	water.	
This inspect	Tion a	ras 11	nade By	walking	
Lines with	a mi	LROR.	to ge	t a closer	
Mice Z. Sugar Signature	Look	e (Blister	5,	

Jo CRAIG GINNON

ATTN:

INSPECTION DEPT

Date & time of Inspection	n_//	17	94	11 AM
•	Month	Day	Year	Time
Status of Piping	OK_	Problem	1	
Status of Insulation (if applicable)	OK	Problem	1	
Status of Paint	OK Jack	Problem	E E	
Comments: Dint 15 Bent 690 Noeth	blistere	din	Spots.	WORSE FROM
Bent 690 North	× 530 ·	70 Se	with. In	between is
be Her. Conteact NOTE: Inspection to be	to pain	of wa	s haffed	For winter
ules done by	/	-		

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

CAG _ comments section.

ATTY: INSPECTION DEPT

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspection	n 3 Month	16 94 10 AM Day Year Time
Status of Piping	ок	Problem
Status of Insulation (if applicable)	ок	Problem
Status of Paint	OK_POOR	Problem Randona Blisters
comments: Lines Me paint. Bli	red Ka stered	ndom Blast & Touch up mostly on Bottom,
This inst	ection	was done with a king the lines.
Lick L. Sugg Signature	_	
Daharan Gamalaka 1 7	<i>'</i> ,	(UD# 940327Z COMP DATE 7/15/94)
Return Completed Form to	EH&S	

ATTN: INTERTOR

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspectio	Month Day Year Time
Status of Piping	OK Problem EXTERNAL GRRQSION.
Status of Insulation (if applicable)	OK V Problem 15 BLISTERED.
Status of Paint	OKProblem_005/1000 Age amount
Comments:	OF Blisteling. Recommend
	COINTING ASAP. Summer 1999
NOTE: Inspection to be p	erformed by boat from the water.

VLS-

INTEREST ON DEAT

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspectio	n /// Month	27 99 Day Ye		# /400 Time
Status of Piping	ok	Problem		
Status of Insulation (if applicable)	ок	Problem		
Status of Paint	ok	Problem	Cardon	Blistees
Comments: 3/15/CKS	Glowin,	16 51	ewly.	

NOTE: Inspection to be performed by boat from the water.

Signature

CAG_

ATTN:

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspection	n / Month	11 94 Day Year	230 PM
	MOITCH	Day Year	Time
Status of Piping	ок	Problem	
Status of Insulation (if applicable)	окХ	Problem	
Status of Paint	ок	Problem Kandom	BLISTERS
Comments: Blisters seem	n 40 c	he greawing s	lowly.

NOTE: Inspection to be performed by boat from the water.

Signature

VL5___

ATTN: JIM VALENTINE

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspection	n_// Month	<i>18 93 1400</i> Day Year Time
Status of Piping	OK	Problem
Status of Insulation (if applicable)	ок	Problem
Status of Paint	ok	Problem Random Blisters
Comments: FORSCAST	Touch-	up Summer OF 1994

NOTE: Inspection to be performed by boat from the water.

Signature

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspection	n Octobe Month	2 <i>R</i> /993 Day Year	/400
Status of Piping	ok	Problem	
Status of Insulation (if applicable)	OK_	Problem	
Status of Paint	ok	Problem	
Comments: A Few	Bliste	es, Random	Location

NOTE: Inspection to be performed by boat from the water.

Signature

Should these go to CAG?

-3.000X	DICOR	DIICC

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

TITION NOT BOOK TO PLANT			
Date & time of Inspectio	n <u>Sept</u> Month	None This Month, Day Year Time	
Status of Piping	0K	Problem	
Status of Insulation (if applicable)	OK	Problem	
Status of Paint	ok	Problem	
Comments: September	was	IXT Month	

NOTE: Inspection to be performed by boat from the water.

Signature

To: Joe Haley

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspectio	n <u>AVG UST</u> Month	Day Year Time
Status of Piping	OK	Problem
Status of Insulation (if applicable)	OK	Problem
Status of Paint	ок	Problem
Comments: Minor La	nolm bi	listering.

NOTE: Inspection to be performed by boat from the water.

Signature

1115

JOE HAPLY

ATTN:

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspection	Jane Wonth	29 1993 1400 Day Year Time
Status of Piping	ок	Problem
Status of Insulation (if applicable)	OK	Problem
Status of Paint	ок	Problem 5/ight B/steens
Comments:		

NOTE: Inspection to be performed by boat from the water.

Signature

JMH JM

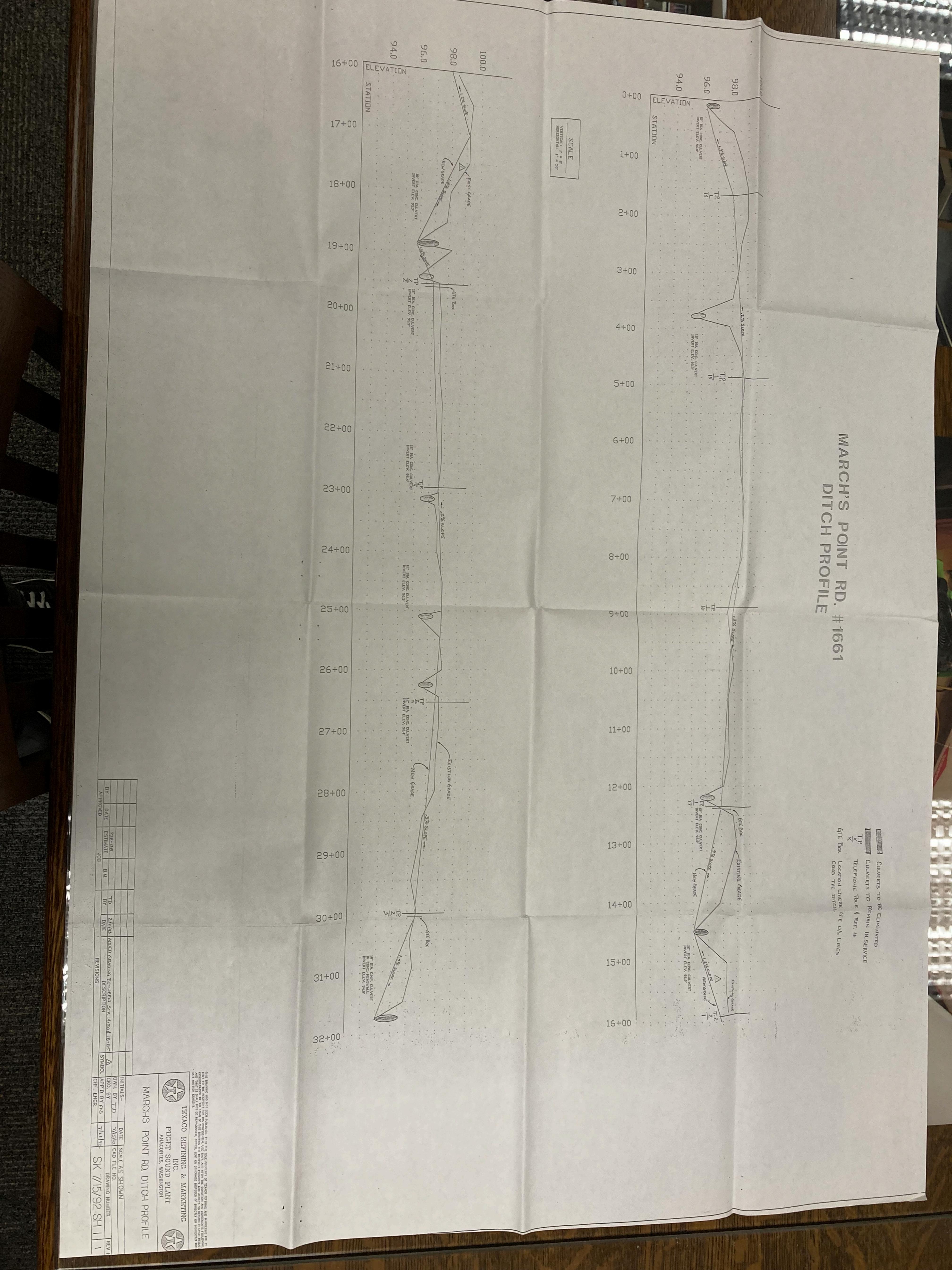
To: EHS

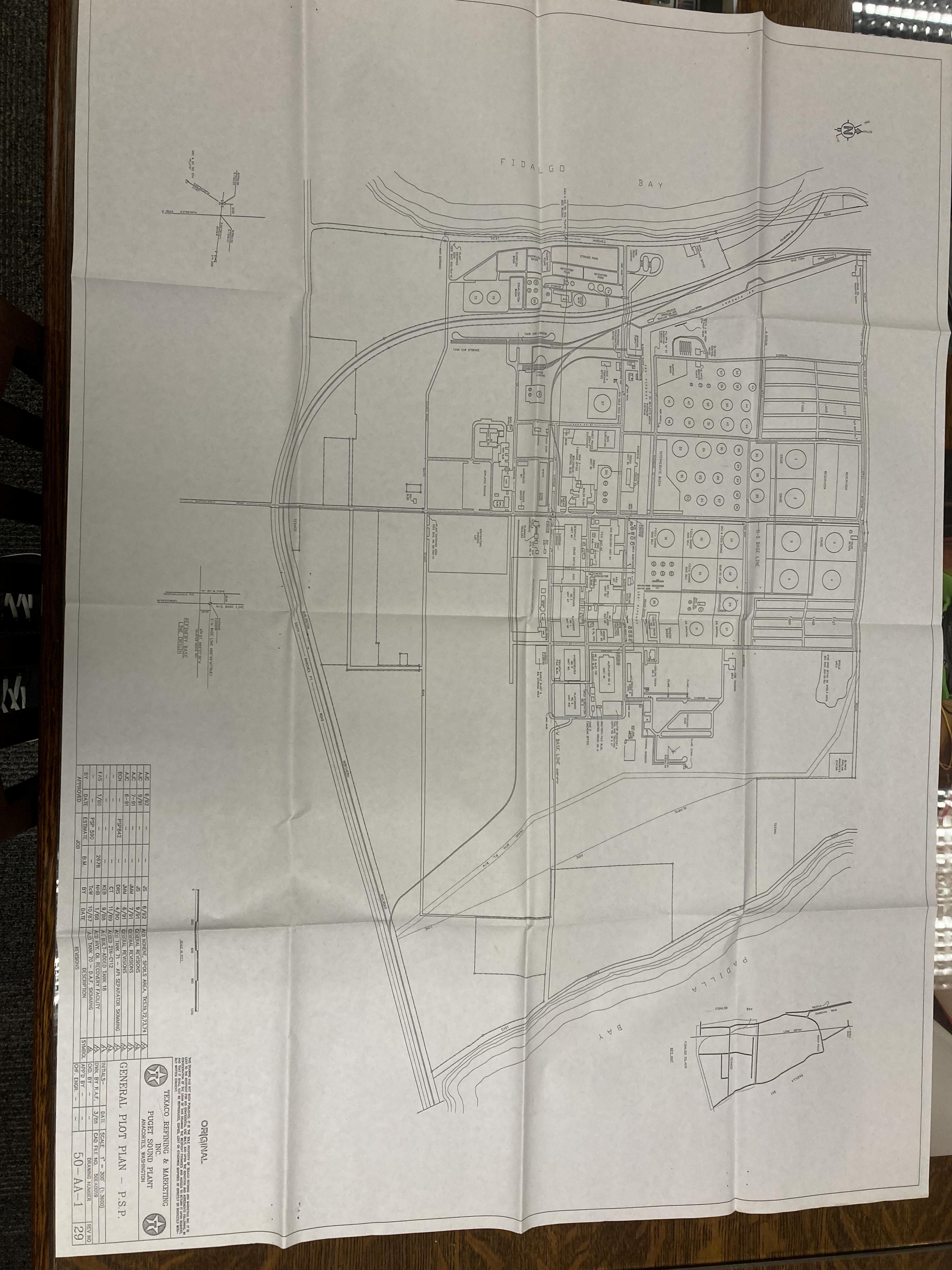
MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

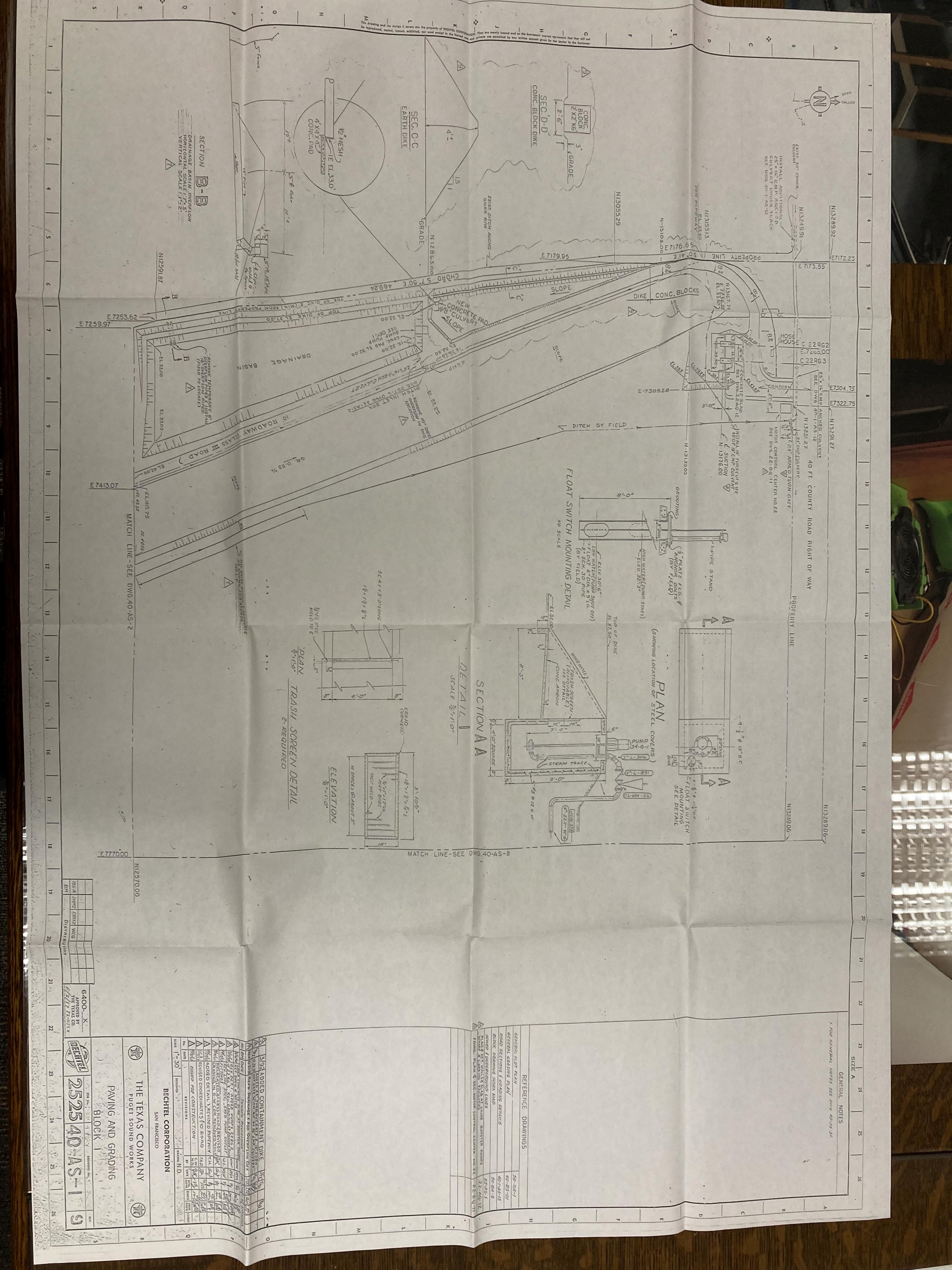
Date & time of	Inspection	n_MA9 Month	28 Day	/993 Year	2:30 PM Time
Status of Pipir	ıg	OK	Problem		
Status of Insul (if applicable		OK	Problem		
Status of Paint	:	OK	Problem	Slight .	Blistering
Comments: No	notica	able ch	ange ,	From las	T month

NOTE: Inspection to be performed by boat from the water.

	DIZTANCE	
VERTICAL: 1' = 2' VERTICAL: 1' = 2'		96
SCALE	EVAI	86
Z.TH2 SQ/21/1 X2 SMITZIA 2002 S		007
TOTALES OF THAT AND ENTERED DATE THAT AND SHARES SCALE AS NOTED THAT AND SHARES SCALE AS NOTED THAT AND SHARES SCALE AS NOTED	Dog And	
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TIXYED PLANT TOTAL		
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Sold of the state		86
		001
		102
	Taylid Language	
		96
NEW - NEW -		86
PAINTSINA GRADE		001
		102
	AD.	
		06
GeADE		70
30 30 BOWN		86
		100
	Taylord . Long and a second se	102
		96
52+00		96
NEW		
	CHOPENS.	
	National Property of the Prope	
30+06		96
NEWGENDE AND DELICIAL PROPERTY OF THE PROPERTY		86
	Substants.	001
	Gally .	705







JMHJak VLS

TO: EAS

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspection		30 1993 1400
	Month	Day Year Time
Status of Piping	ок	Problem
Status of Insulation (if applicable)	ok_X	Problem
Status of Paint	OK	Problem FAIR - SAMOR COS
Comments:	LAST	MONTH.

NOTE: Inspection to be performed by boat from the water.

To: EHSS

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspection	n MARCH Month	26 1993 1360 Day Year Time
Status of Piping	ок	Problem
Status of Insulation (if applicable)	ок	Problem
Status of Paint	OK FAIR	Problem ALL 10 LINES FOON LE WEST SIDE HAVE INTER LENT Blisters
Comments:	mih	Lent Blisters

NOTE: Inspection to be performed by boat from the water.

Signature

VL5__

ATT.	9100-0111

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspection	n <u>FEBRUARY</u> Month	<u>17 93 1400</u> Day Year Time
Status of Piping	ok_ <i>X</i>	Problem
Status of Insulation (if applicable)	ок_Х	Problem
Status of Paint	ок <u>х</u>	Problem Some Blistees,
Comments:		DO NOT APPEAR TO BE WORSE THAN LAST TIME

NOTE: Inspection to be performed by boat from the water.

Nick Z. Bugg
Signature

JMH ALLE VLS

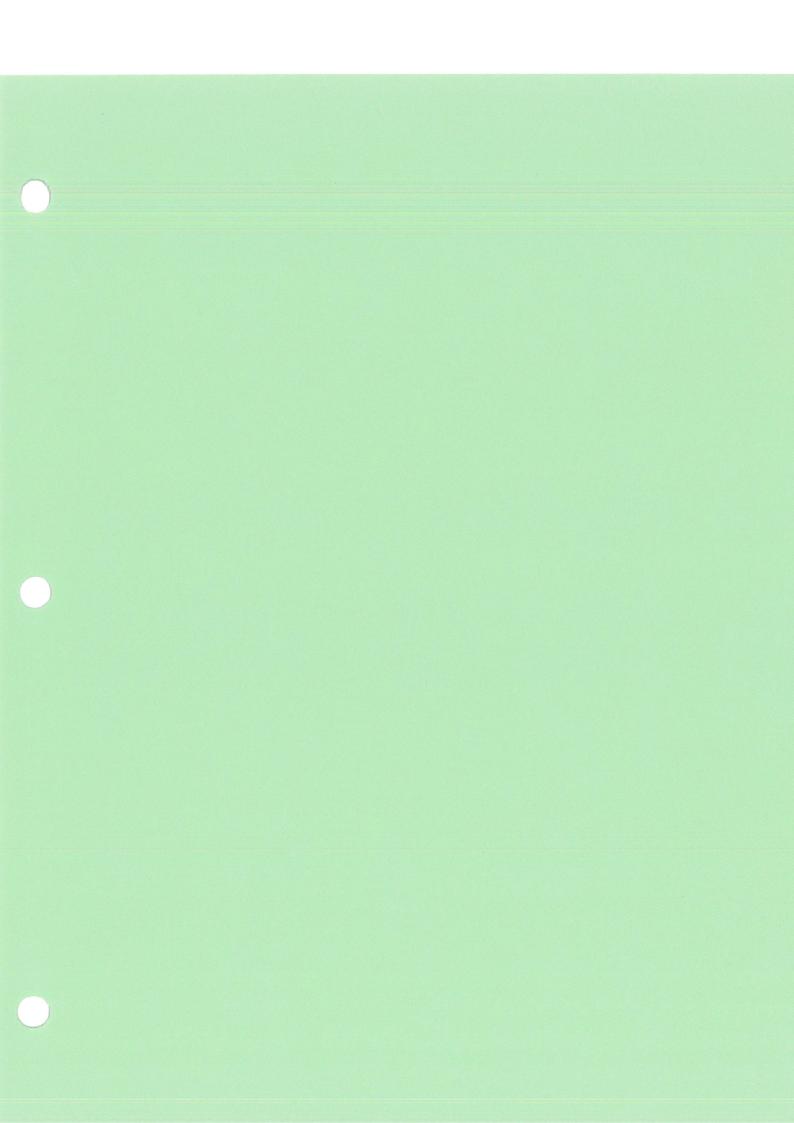
)	Δ
Azin:	totaldik Visidos

MONTHLY FACILITY INSPECTION SHEET PIPING FROM DOCK TO PLANT

Date & time of Inspection	n JANUARY Month	29 1993 10 AM Day Year Time
Status of Piping	ок	Problem
Status of Insulation (if applicable)	ok_ <u>X</u>	Problem
Status of Paint	OK FAIR	Problem Some Bisters
Comments		ON WEST MOST LINE.

NOTE: Inspection to be performed by boat from the water.

Signature



Appendix B

3.5.2 Daily visual inspection of aboveground pipeline.

Status: Active, Enclosed are the plant security force pipeline inspections that are completed daily and logged.

TEXACO'S PUGET SOUND PLANT CURITY DAILY CHECK OF PIPLE

May 15

They I			
Day	Time	Abnormalities Noted, If None So Indicate (you may continue on back)	S/O Signature
1 1	131.1	Inide - OK	77.1.
2	0900	INSIDE OK	K. Rain
3	0835	Dillido -01(77/1/1/
4	1253 10 5 0	50 to 1 de . 0/(7 /w/ /
5	0353	Fither . It	T. A.
6	1015	INSIDE - OK	Pmo
7	C820	1825, DE - OIC	i'cm han the
8	1300	Thirde-OK	
9	0173 10173	Juside - OK	7/1/1
10	1-13 ::	Triple of	D'All
11	6300	Inside -OK	7/11/11/11
12	1310	outside - Oll	11/4/
13	0925	OUTS:AE 1NS:106	At Mit
14	17:12	Outsion Outside	the Comment of the Co
15	0857	outside - 0/(17/1/1/1/
16	7555 O841	outside O/C	7. 1.
17	1235	October 1	D. hlwstill
18	1008	Cylide -0/(De Mary
19	ا زون	21, 1/c 0/C	77 KM //
20	0957	10410E - OK	fathurs.
21	1018	INSIDE - MC	and the second
22	0847	Justine -OK	7/1///
23	15-1 05)7	E-410 - 3/	19/2/1
24	24/3 1505	Capitale -Of	17. Mu. 1/
25	1307	chide - 01	2/1/1
26	1347	Initial - OK	Tillall.
27	0918	outside inside - OK	1341
28	0939	ONTSING - OK INSING - OK INSING - OK	11/1/1
29	1020	$(O \cap t) \cap O$	D. Mall
30	1247	ation of the state	1971
31	1300	Tripe of	57.11

Month Apr Year 95

rear			
Day			\$10.00
1	0123	Trainde of Motod, it Notice so indicate	S/O Signature
2	0915	atido - OK	W A
3	0847	abide - OK	- Committee of the comm
4	0854	outside. OK	
5	0840	100 10 10 10 10 10 10 10 10 10 10 10 10	16-16-19
6	1303	7. wide attild P - OK	1/16/
7	1303 0843		J. Huff
<u> </u>	0244	Octs de 0/C	The flat
8	0721	1NS105 - OK	Afril 1
9	21352	INSING - OK	And A
10	0837		I Jan
11	1208	103146	7 / 10
12	0838	Outside O/C Inside off	77/1/
13	0837	outside - ok	1 / 10/
14	0855		J. Haff
15	0723	Exterior	X. Raling
16	0732	EXTERIOR - OK EXTERIOR - OK EXTERIOR - OK EXTERIOR - OK	Company of
17	0732		Control of the second
18	0853	INSIDÉ	Mull
	0857 1312 13137	OUTSIDE OK	K. Raim
	0177	Detside - Oll	1.2.1
20	1340	Inside - 01	1) / (m/)
21	0845	outside - OK	77. 1/1/
22	0745	inside - OK	
23	1015	OUTS 10 % - OX	I want
	(367 0843	Odnie od	Jelji Filler
25	1313	Outide - 016	77 17.17
26	1337	Jan 10 - 010	11-1-11/2
0-1	1253	Fosige 01	12/60-6/
28	130-8	5-15-9x -011	11-/6/11
	085.2	Outs. of	11. /b-//
1 2	1058 0804 0750	ant sinz	Ath 1
ł	27.50	INSIDE OK	LA HALL
31			

Month F&B
Year 95

Year	95		
Day	Time	Abnormalities Noted, If None So Indicate	S/O Signature
1	0905	OUTSIDE OR	K. Rain
2	0909	INSIDE OUTSIDE OK	K. Rain
3	0905	INSIDE OUTSIDE OK	11 0 - ;
4	1006	Inside Oli	17 Kany
5	1250	Inside Ole	77/18/1
6	1303	Fije ok	7700097
7	1227	INSIDE OUTSIDE OK	1 2 2
8	0915	INSIDE OIL	R. Kairs
9	1019	INSIDE OUTSIDE OK	K. Kaum
10	1020		K- Kam
11	1243	OUTSIDE OK	7. Cam
12	1023	outside o/C	
13	1037	Enside OK	7. /
14	0844	11/6,06	// //w//
15	0908	OUTSIDE OK OUTSIDE OK	R. Cam
16	1120	INSIDE OUTSIDE OK	1 00)
17	0929	INSIDE OUTSIDE OIK	R. Kauss
18	0940	Ectside OK	K. Kain
19	0100	totside - OK	13 mm
20	0840	inside > whaterfound oil spill N. of H. Brooker	5/1
21	0900	INSIDE OK ON SPILL NOT H. DOURK	FUMP // //
22	0910	INSIDE OK	K. Ram
23	0910 1041 0913 1037 0858	OUTSIDE OK INSIDE OUTSIDE OK INSIDE OUTSIDE OK	K. Kair
24	0858	INSIDE OR OUTSIDE OR	K. Ram
25	13:5	ofsite or	K. Kaun
26		Insuly CK	77 1
27	多さ	institute of	77 (11/1)
28	1450	INSIDE OK	11000
29	0 107	UVI SIDIN VI	K. Rain
30			
31	;		
	<u> </u>		,

Month JAn Year 95

Year	75		
Day	Time	Abpormalities Noted, If None So Indicate	S/O Signature
1	0843	Inside 10K	J7 -// Januare
2	0948	outside OK	7
3	0855	OUTSIDE OK	K. Rain
4	0843	OUTSIDE OK	N. Name
5	0840	OUTSIDE OK	R. Rau
6	1022	INSIDE OUTSIDE OK	V O C
7	1305	TASIA -OK	D. A.
8	1311	outside - OK	H. And
9	1858	FASIAN SIC	7711
10	0905	OUTSIDE OK	K. Rau
11	0900	INSIDE OK OUTSIDE OK	K. Raim
12	0906	INSIDE OUTSIDE OK	K. Rain
13	0903	INSIDE OK	K. Rains
14	0843	Fality outside OK	77:/a/11
15	1320	July 45	7. (1)
16	1308	Inside OK INSIDE	77./hull
17	0908	OUTSIDE OK INSIDE	K. Rain
18	1034	INSIDE OK	K. Rain
19	0924	OUTSIDE OK INSIDE	K. Rains
20	0848	OUTSIDE OK	K. Rains
21	1137	INSIDE OK TISIDE OK	K. Raj
22	0945	afide of	M. Muff
23	0940 1300 0904	Inside of	J. C. M.
24	1129 0	INSIDE OK INSIDE	K. Kains
25	1240	OUTSIDE OR	K. Rams
26	0848	INSIDE OK INSIDE OK	K-Rains
27	1024	Jajde 106	K. Ramy
28	1044	OUTSIA	71. W
29	1350	Fnille - 10 8	J. 12/1
30	1315	INSIDE OUTSIDE OF	K. Ram
31	1400	INSIDE BUTSIDE OK	K. Raine

Month <u>Dec</u> Year 94

Year	94		
Day	Time	Abnormalities Noted, If None So Indicate	S/O Signature
1	1035	Taside OK	MAD
2	1730	outside ok	YNU
3	1000	INSIDE OUTSIDE OK INSIDE OUTSIDE OK	K. Rain
4	0840	OUTSIDE OK	K. Rain
5	1030	OUTSIDE OR OUTSIDE OR	R. Ram
6	0917	To le out to the out considerate considerate	- Jilung
7	1216	Cullide of	The first
8	1025	INSIDE	K. Raine
9	1037	This ock Tryid= ok	1 / w/
10	084.4	103132	11-/w/
11	0754	INSIDE	K. Kain
12	1941	OUTSIDE OIL OUTSIDE OK Toside - UK	K. Kany
13	1238 FEE	cickide CC	1)/ Avfil
14	1755	Inside on Cutside ok	1 6 6
15	1330	Inside of	11. /g//
16	1340	outside ok	11. / Cv-//
17	1221	OUTSIDE OIL	Kenneth Kains
<u> </u>	0755	OUTSIDE OK	L. Rain
18	7047	OUTSIDE OK	K. Kam
19	1949	Fried OK	IT. floral
20	1126	outside 010	Mull
21	10,10	Inside - 3/	J7./[~//
22	1034	OUTSIDE OK Inside OK	K. Kainet
23	1305	Outside-OK	Tilland,
24	0830	OUTSIDE OK INSIDE	K. Rain
25	1000	OUTSIDE OK ININ OK	K- Rainy
26	0753	outside - OK	17 /lm///
27	0907	Inside jok outside ok inside	J. Cull
28	1113	OUTSIDE OK	K. Raim
29	0921	OUTSIDE OK	R. Rain?
30	0929	Faside - OK	77///
31	0830 1108	7.151d= 011 0-151d= 611	DI. CIV

Month	NOV
Year	794

r Cai	/_/		
Day	Time	Abnormalities Noted, If None So Indicate	S/Q, Signature
1	1227/1	outside ok	De di
2	1 / 166.5		27/hill
3	125	Dulside OK Finside COK Finside COK OCHSID - MEC	- 5 / by / /
4	1922	To dark to adequately check	Ment of
5	0833	INSIDA	11.11.6/
6	0755	1N51DE	K. Kains
7	0855	turiale -OK	K Kains
8	1238	Inside ok	shiff /
9	12:43	Inside ok	The Roll
	13:42	Toside - ok	7-16-6
10	1376	atside - OK	J Marth
11	137	actide . Oh	J7/1//
12	0909	OUTSIDE OK	K. Rains
13	1020	OUTSIDE OK INSIDE	K. Gain
14	0907	OUTSIDE OK	K. Ramy
15	1030	Juity ok Outside ok	7.11
16	1245	Fride of	21/1/
17		Inside - OK October - OK	97 11/
18	13/3	2011 - 0K 2011 - 0K CULCIE 0K	2/1/
19	0759	OUTSIDE OK	77. (()
20	0840	OUTSIDE OK	K. Kaund
21	1258	LOSIDE - F	K. Kamp
22	1355	Outside - o/C Inside - o/C Inside - o/C	77-16-61
23	/0788	-71, de - 0K	I'dlandy
24	1257	- 0 s. 1 s. de - 0/C	I fully
25	१००७ १०५५ इ.स.	TO TO TO	1/6/1/
26	0821	INSIDE CITECIA NOTER PES	Scholl
27	1////	INSIDE DUISIDE COMPLETED	Enewson-
	0947 0147	OUTSIDE UK'	Shuson
28	1470	outside our	1/16/
29	1303	OUTSIDE OUR TRIJE OK OUTSIDE OK OUTSIDE OK	7./w/
30	1258	Dutside-oic	J. Mall
31			

RMSS, CAG-

Maath	~ ×	SECURITY DAILY CHECK OF PIPLLINE	CHES
Year	Sept 1994		· ETI
Day	7ime	Abnormalities Noted, If None So Indicate	S/O Signature
1	1140	DIETSIDE OIC	Carles
2	0854	INSIDE-OR OUTSIDE-OR	100
3	1/226	CUTSINE CK	Property
4	1421	OUTSIDE/	for Marian
	1751	IN SIDE	that ramm
5	1004	INSIDE-OK PIPELINE	J. L. Gashill
6	1137	CUTSICKC-OK PIDELINE	2 michilli
7	US57	CUTSIDE - COXLST-HINLUIK 1910 203) CUTSIDE -OK PIPELINE	104,110
8	1117	INSING-OK	0014 111
9	1250	INSING-OK	Ji. Joespill
10	0725	OUTSIDE -OF	But Standy (
 	1010 CK39	INSIDE TOU	B. H. Kain
11	CX 39	Chitsipe	Joss vzanyma
12	1257	INSIDEL-CIR	004.1.11
13	8789	thought - ove	The distil
14	1111	CUTSIDE -OK	h hashed
15	0337	INSIDE-OK	J. Jashell
<u> </u>	0910	INSINE CIK. I PELINE	X Kishell
16	1238	OUTSIDE-OK Pileline	+ Reshell
17	1010	OUTSIDE OK DIDETINE	K. Raum
18	1005	OUTSIDE OR PIPELINE	K. Rain
19	1205	INSIGHT - CK	R. Kam
20	0355	1031de-02	J. K. CASKILL
21	11/3	NIESME-OK PIPELINE	All molecular
	1232	OUTSIDE PIPELINIT	forther
22	1805	OUTSIDEOR	Brewson
23	1143	OUTSIDE-OK PIPELINE	July Juh Ill
24	0953	OUTSIDE OK- DiPoling	1000
25	0738	OUTSIDE OK DIPOLIDE	K-Kauss
26	0907	1100100-08	R- Kan
27	0403	OUTSIDE - OK PIPELINE	Just !!
	1220	ANTENDO DE PORTO	4 Jashell
28	1251	overide or Preline	Il Justill
29	1237	LUTSIDE PIDOLINA	AD Shahlle
30	1240	INSIDE-OR PIPELINE	00111011
31		111 5 7111 5	Joseph
			<u></u>

Month <u>Jaky</u> Year <u>1994</u>

	rear		4.	managa atau ay atau ana atau atau atau atau atau atau	
A State	Day		Abnormalities Noted	d, If None So Indicate	
	1	1810			S/O Signature
	2	0838	TUSIDE OU	,	Lashell
	 '3	0933	INSIDE OK		SOM L
		1115	OUTSIDE OK		1000
	4	اللا	OUTSIDE OR	0001	The state of the s
	5	1248	DUTSIDE OK 1 W SIDE P (PIPE FIELD (3/4") 3 DUTSIDE OK	TWHMLORD WELLNO	J.K. Shall
	6	0846	INISIDE, ON	Pipolino	Il Sushell
	7	0826	INSIDE OK	Pipelinx	Jan Jaroll
\parallel		1049	outside OK	PIPELINE	4.0 H. Rie
-	8	1043	inside ox	£ 2001	12.10:00
	9	1135	TUSING OK		Jan
	10	1016	INSIDE - P/L SUPPORT AC CROSSIDE - OK BOMON TO FAIL	cause FM TK 16 C-STREET	1 Val
	11	0857	LUSIDE - OK	(MIC CHAPD)	ACCIOL
	12	1281	INSIDE - OK		1 Carlo
		0853	DUTSIDE-OIG		(Alla)
\parallel	13	0854	OCCT SIDE - OK		
]	14	1212	INSIDE-OK CLITSIPE-OK		()
	15	0854	INSIDE-OK OCTSIDE-OK		Jan Com
	16	0737	INSIDE - OK		(Olfera)
	1.7	0824	OUTSIDK-OK		K. Rain
-		0847	INSIDE - OK		Ka Kain
-	18	1141	OGTSIDE-OU		
	19	0854 1240	INSIDE-OK OCTSIDE-OK		(gelea)
	20	0844	DUTSIDE OK		(flegor)
	21	0853	LNSIDE-OK		(Jaken
	22	/126 0855	CITSIDE-OK		(acan)
		1236	OUTSIDE-OK INSDE-OK		
	23	1026	OUTSIDE OK		1 and
		0855 0855	INSIDE - OK		TX In
	25	1123	INSTRE-OK OCCTSOF-OK		1 chall
:	20 0	7842 1252	INSIDE-OK		Cres in S
	77 C	1852	OUTSIDE-OK INSIDE-OK		(Alkan)
	<u></u>	347	DUTSIDE-OK LUSIDE-OK		(Man)
1	-0-14	157	24.75/1X-0K		
2	9 /2	207	INSDE-OK OUTSIDE-OK		
3	10 0	723	EUSIDE-OK		Castion 1
3		10/2	WSIDE -OK		Allah
		<u> </u>	PUTSIDE OK		10 Part

Month Viene Year 1997

Day 1	1038	Abnormalities Noted, If None So Indicate	S/O Signature
	1216	CLOTSIDECK	
2	0853	LKSIDE OK	to and
		INSIDE OF	Gallan
3	13/259	COURT OF ONE	7
4	0930	INSIDE OK	Allen
	1129	- OUTSING OK	50000
5	09:40	DUSIGE OF	1 Chal
	1235	OLTSINE OK	10000 10
6	1257	CUTSIDE OK INSIDE OK	The state of the s
7	0855	INSIDE OF	1 Carles O
	11.51	DUTSIDE OR	
8	1215	INSIDE OK	T Caller
	1251	CCCTSIDE OK	
9	1202	INSIDE OK	Joseph Jo
10	0856	CUCTSIDE OK LNSIDE OK	(Jahren)
10	1348	OUTSIDEOR	1/11
11		THE OF OK	Calla
	1001	DUTSIDE OF	1000
12	1/00	INS DE CK OUTSINE OK	The min
13	0855	INSIDE OR	A (DA)
13	1-218	CKITSIDE OF	
14	0844	LKSIBE CIC	(faller)
	0905	OUTSIDE OK	1/20
15	1218	00751 dt 0x	ackson
16		INSIDE OC	7//Dashill
10	1224	007510502	101
17	0852	1103146.	16 Lashell
	0754,	1117510E OR	40.16.01
18	154	INSIDE OK	11 pessel
19	0931	INSIDE OK	All Mal
13.	1/53	DUTSIDE OK	1000 1
20	0900	INSIDE OK	HI /hr
	1205	OUTSLE OK	1/1/ M. Phy
21	1300 1	OUTS OF OK	Jan Janal
2	0826	INSING OK	2. 12 March 1
2 /	020	CUTSIDE OIL	2 2 1
3	2850	110010E OF	- 11 kshill
	120	outside or	1 adalili
4	1142	INSIDE OK	Kyparel
5		CUTSIDE OR THEIRE OR	16/2/-1
5	1200	2475125 OK	100
6	Sec. 1	TARIBE OU	11/4/
7		DUTE DE OK	1/200 1/
/ !		OUTSIDE OK	TO TO THE TOTAL TO
	1854	NSIDE OF	(Carlon)
2 1	2.7.5	DUTS DE OK	
	9553	INSIDE OK	(Allow)
	238 10	CUTSIDE OF	4///
	877	DSIDE OK	Corleson
1		CITSIDE OK	Corsser
			- winch

Month MIHY
Year 1994

Day	Time	Abnormalities Noted, If None So Indicate	S/O Cia
1	1100	1.12	S/O Signature
2	0845	INSIDE OF	1 dish
	1148	DUTSIDE OK	1200
3	1200	INSIDE OK OUTSIDE OK	The state of the s
4	0849	INSIDE OK	(Allen)
	1210	OUTSIDE OF	A Carlon
5	1255	INSIDE OK OUTSIDE OK	
6	0855	INSIDE OK	1 gallon
	180.5	DUSIDE OK	
7	1006	OUTSIDE OR	XXX n
8	1018.	THE DE CK	J.C. M.
	1242	CRITSIDE OK	ACK TWEET
9	1255	120SIDE OF	
10	0856	LIDSIDE OK	(Colored
11	0859	OUTSIDE OR	1 (deline)
11	1238	OCETSIDE OK	1/1/1
12	120G 125G	OUTSIDE OK INSIDE OK	Carles -
13	1102	INSIDE OK	(gelia
	1149	OUTSIDE OK	1 (alla)
14	0341	7851DE OK	10/20
15	0922	INSIDE OK	1 Josh
	1136	OUTSIDE OR	XUDIC
10	1252	TNSIDE OK	
17	1133	ENSIDE OK	Jack Con Contract of the Contr
10	1 <u>218</u> C357	CATSIDE OK	(dalla)
10	1237	CUTSIDE OF	11/2/10
	.0859 1033	INSIDE OK EUTSIDE OK	Carley Com
20	0853	ERSIDE OK	(and)
/	12 4 6 010	CUTSIDE OK	The second
י דני	97 <u>5</u> 9	INSIDE OK	VASA
22	/03/	INSIDE OK	40/0/
	<u> 1153</u> 9857	OXITSIDE OK	ACCION 10
23	1241	INSIDE OR CUTSIDE OK	
24	1156	CUTSIDE OK	(Con)
	1226	INSIDE OR	(Shown)
20 /	251	COSTSIDE CK	1/15.1
26 /		INSIDE OK CUTSIDE OK	- Comment of the Comm
77 6	2358	JUSIDE OK	La Car
	246	CUTSIDE ex	Carlow)
$\frac{1}{28}$	034 203	OUTSIDE OK	Vis. Su i
20	0859	DUSIDE OK	16/1/2/-
	1013	SUTSIDE OK	XCD 10
,0 /	110	ENSIDE OR OUTSIDE OK	
31	2903	LIUSIDE OF	1 milia
		OUTS IN OR	(alfon)

Month JAN Year 1994

rear	<u>_/777</u>		
Day	Time	Abnormalities Noted, If None So Indicate	S/O Signature
1	1430	1N517/2 OK	V R
2	1325	OUTSIDE OK	1 De
3	0854	INSIDE OK	K. Ka
	0848	QUISIDE OK IDSIDE OK	(delon)
4	1157	DUTSIDE OR	(Alexander
5	1215	INSIDE OK C	
6	0854 1236	INSIDE OK	Jaguar .
7	0858	SUTSIDE OK FOSIDE OK	1 (allien)
	0805	OUTSIDE OK	1 (alaa)
8	1240	INSIDA OK	K. Rain
9	0900	50 VTS 1DE OK	K. Rain
10	1405	INSIDE OR CKTODE OK	1/2/1
11	1153 1237	INSIDE CIC	Gellow
12	0847	TESIDE OR	Carlon
	1250 CS45	CRISIDE OK	My Car
13	1853	CCITSIBE OK	(estra)
14	1143	INSIDE OK.	1/4/10
15	1015 1015	INSIDE OK	11150
16	4253	INSIDE OF	all hours
17	0846	ENSIDE OF	(SABITED)
	0853	JUSIDE OK	1 (feller)
18	1220	CLETSINE OR JASINE OK	Myla)
19	1221	CUTSIDE OK.	
20	0847	INSIDEOK OUTSIDE OK	
21	0853	LUSIDE OK	1 College
22	0830	OUTSIDE OK	Kolya)
	0840	OUTSIDE OIL	K. Ram
23	0355	OUT SIDE OR	K- Koin
24	1255	INSIDE OK OUTSIDE OK	1(2/-)
25	0846	INSIDE ON	11/1
26	0852	INSIDE OR	(flam)
27	1058	DUSIDE OK	Aplan)
	1138	OUTSIDE OK	(glan)
28	0150	INSIDE OK	Callow
29	0932	OUTSIDE OR	K. Raine
30	1000	INSIDE OUTSIDE OK	16
31	0851	INSIDE OK OUTSIDE OK	- Jan
		L V W HID V W	(allyon)

Month DEC Year 1993

Day	Time	Abnormalities Noted, If None So Indicate	2/0 6:
1	0852	INSIDE UK	S/O Signature
<u> </u>	1200	OUTSIDE OK	Lachen)
2	1311	INSIDE PIPELINE / SECURE	10mg
3		INSIDE BYC	- Colon
3	0853	CLETSIDE CIK.	
4	1052	· · OK	
	0525	. 11	K. Kan
5	1023	1 OK	K. Kai
6	1221	INSIDE CK	
7	0852	TASIDE OK	A Collins
7	1/43	OUTSIDE OK	
8	0852	INSIDE OR	The same
ļ	0855	OUTSIDE OK	1 (Alfren)
9	1155	OUTSIDE OK	
10	0854	INSIDE OK	- Colleges
	0854	CUSTSIDE OK	Malbon
11	1033	OUTSIDE OK	K C.
12	0.830	INYIDE	1. Kaims
	0556	INSIDE OK	K. Kaun
13	1157	OUTSIDE OIL	
14	0355	INSIDE OK	1 (pelica)
	1276	OUTSIDE OK	(se bear)
15	1234	OUTSIDE OK	
16	0849	DISIDE CIK	The state of the s
	1213	THEOR OR	Marcha)
17	1209	OCCT SI DE CIC	
18	0350	1N71DE	1 (allen)
10	1026	OUTSIDE OK	K- Kam
19	0840	INSIDE OK	V 0
20	0355	FRIDE OR	1 ham
20	1134	CUTSIDE OK	History)
21	0852	INCIDE OK	
2.0	0357	CNOIDE OK	(al fire
22	1214	CREISIDE CIC	Calva
23	0855 1152	INSIDE OR OUTSIDE OK	
24	0915	INSIDE OK	(fleshion)
24	1137	OUTSIDE OK	A(1/2)
25	0850	BUTSIDE 1	1 1 2 1
00	0406	1N310K	K. Rain
26	1030	OUTSIDE OK	K. Rom
27	0854 1138	INSIDE OK	100
	075°	DUTSIDE OR	1 (faction)
40	1231	OUT SIDE OK	The Constant
	1147	OUTSIDE OF	The same
0.0	1127	INSIDE OF	(Collow)
30	1155	DETSILL OK	(a) a land
31	0830	INSIDE OK OUTSIDE OK	1100111111
			(aller)

Month NOV Year 1993

i Gai	<u> </u>		
Day	Time	Abnormalities Noted, If None So Indicate	S/O Signature
1	1210	OUTSIDE SAME	of o dignature
2	1220	OCCISIDE SAME	Allen
	1247	INSIDE OR	1 (mellon)
3	1215	OUTSIDE SAME	1///
4	0846	INSIDE OK	(Alfred)
5	0846	OUTSIDE SAME	1 (deform)
	0821	OCETSIDE SHIFE INSIDE PIPELINE	
6	1027	OUTSIDE PIPELINE ARE OK	Janes -
7	0837	18518E OK	1. Kain
	1136	OUTSIDE OK INSIDE OK	K. Rain
8	1213	DUTSIDE SAME	
9	0853	OUTSIDE SAME	Janes -
10	1228	OCETSIDE SAME	Malfan,
	1275 3107	IPSIDE OK	(ala)
11	1427	(C) 20,1377	2000
12	1922	INSIDE PIPELME OF	War C
13	2801	INSTACTORECINE CIL	1
13	1010	outside piper-ingered	JANESTI /
14	1315	OUTSULE PINELINE	MAD WILLIAM
15	2916	THIS DE ARCINE CHECK OK	J. Mashell
1.0	1150	OUTSIDE PIPELLET CHEEK OK INSIDE PIPELLAGE CHEEK OK	1 Me Take
16	1235	CONTRACT PRESIDE CONTRACTOR	LUTBAI
17	4555 7425	CLITICE PIPERING CHECK OR	11 min
18	1138	INSIDE OR	1 (1)
	1239	DUTSIDE SAME	X Aller
19	1216	OUTSIDE SAME	1/4/
20	1004	OUTSIDE ARE OK	May som
21	1/25	1861	X Kain
	0954	OUTSIDE ARK OK	K. Kar
22		INSIDE OK DUTSIDE SAME	1/21
23	12.14 1123 1203	INSIDE ON	1 de la constante de la consta
		OKITSIDE SAME INSIDE OK	(Allen)
24	1130	CKOTSIDE SAME	allan
25		IPSIDE OK CRITSIDE SAME	
26	0320	OUISIDE SAME	1 (at line)
	1054 6912	INSIDE OR ENSIDE PIPELINE V SECRE	To dellas
4/	1217	JU(S)() PIDET (SE IV TO	Lions
	- 120	- 2000 P	V10 m 1
29	0855	ENSIDE CK	Alled her begging
	1216	OUTSIDE SHAVE	Thates D
30	1228	CUTSIDE SAMÉ TUSIDE OK	Tollen)
31			1 Calledon
<u>_</u>			

Month <u>GeT</u> Year <u>1993</u>

year	1993		
Day	Time	Abnormalities Noted, If None So Indicate	2/0.6
1	0842	1031DE OR	S/O Signature
2	0830	INSIDE STEAM LEAK NTEXHERROAD	Carlon -
3	4833	OUTSIDE PIPELINE	Ert Grose
4	0858	OUTSIDE OR STEHMLOHK N. TENTS ROITD	All Jashell
5	0850	INSIDE STEAM LEAK N. TEXAS COAD	1 Caplan
	1232	OCCTSIDE SAME	Mallen
6	1256	OLETSIDE SAME.	Halley .
7	0852	OCTSIDE STEAM LEAR ITTELDS POR	A al
8	1222	INSIDE OK OUTSIDE SAME	Julian
9	Ug 20	JUSIDOOL /	Jan 1
10	0850 1037	OUESIDE SIAME FAMILE OK OUTSIDE OK	De Will Of
11	0801	INSIDE OK	J. E. M. Haughton
12	0.900	ONITSIDE SAME INSIDE OK	A gelia
13	0859	OCCITSIDE SAME	Malforen
	12/0	OUTSIDE SAME	I (Men)
14	1224	CUTSIDE SAME	/ Colen
15	1227	OLETSIDE SAME	- (asli-
16	0823 7030	INGIDE EK	Win I
17	102c	TARROSE OR	1000 A
18	0904	WSIDE OK OUTSIDE SAME	11 10
19	0855	INDSIDE OK	Alfa
20	0851	OUTSIDE SAME INSIDE OK DUTSIDE SAME	Mallan
21	0855	DUTSIDE SAME INSIDE OK	1 Corlean
	1236	OUTSIDE SAME	1 Alan
22	1141	OUTSIDE SAME THOUDE OK	Hallow !
23		OUTSIDE OF	15/ J. 6ASKILL
24	1241	TAXIC OK OUTSIDE	SICTAL
25	1213	INSIDE OK DUTSIDE SAME	Ilas Is
26	(1550	INSIDE OK	X/1/2/
27	0854	DUTSIDE OK DUTSIDE SAME	And C
28	1114	INSIDE Check OR	In Clure
29	0853	INSIDE OR	
30	ひかえて	OUTSIDE SAMÉ	Callen
	0956	OUTSIDE OK	K. Ram
31	1135	OUTSIDE OK	K. Kani

Month <u>SEPT</u> Year <u>1993</u>

rear	<u> </u>		
Day	Time	Abnormalities Noted, If None So Indicate	S/O Signature
1	0854	INSIDE OK CXETSIDE STEAM LEAK NTEXAS/WORKING A AM	
2	0848	110310E OK	Jelson -
3	0849	DUTSIDE STEAM LEAK DIENAS WORKED A ANDROS	A Con
4	6963	NOTSIDE STEAM LEAR NTENAS MAKEUR A ANCHOR	Alson
	0942	OUTSIDE STEAM LEAK IN TEXAS/WORKING A ANCHOR	7. With
5	1133	OUTSIDE STEAM LEAK NITEMS / WORKWA & ANCHOR	is J. Www.
6	1324	INSIDE OK	Toladelin
7	0855	CUTSIDE STEAM LEAK DIEXAS / WORKING A ANCHOR	Haller)
8	1059	THE OR	a contract of the contract of
9	0848	INSIDE OK	Collec
10	0854	INSIDE STEAM LEAK NTEXAS/WOOKING A ANCHON	T (Julian)
	1245	MSIDE STEAM LEAK / COORILING A ANCHOR	Harla
11	1250	OVTSIPE STEAM LEAK /WERKING A ANCHOR	J. WWh.=
12	1410	OUTSIDE STEAM (EXK/WORKING A ANCHOR	7.1/2
13	1217	OUTSIDE STEAM LEAK DIENDS/WORKING A ANONE	-1/20
14	1206	TRIBE OK	John John Marie Land
15	1130	DUTSIDE STEAM LEAK NTEXAS/WORKING A ANCHOR	Alexan
16	0847	MOSIDE STEAM LEAK NIEKAS/WYRKING A ANCHOR	/ Alexan
	0903	OUTSIDE STEAM LEAK NEEKAS WORKING A ANCHOR	1 Allen
17	1 4 34 3	CUTSIDE STEAM LEAK NIEXAS/WORKING A ANCHOR	Y alson
18	085/	OUTSIDESTERMLEND N TOXINDDINAL AND WIL	a Rhybill
19	0835	Prison Aug Ac ARMID	S. A DARAG
20	0858	INSIDE OR	
21	0853	OXETSIDE STEAM LEAK IN TREMS/WARKING A ANCHON	1 affear
22	1111	DUTSIDE SAME =	1 Affen
	1216	OUTSIDE SAME INSIDE OK	Helion)
23		OUTSIDE SAME INSIDE OK	1/allow
24	1149	OUTSIDE SAME	Talan)
25	0722	outside Inside	E Groze
26	0435	Cutsine Ck Churchted Ch	MERRECOG
27	0851	INSIDE OR COMPLETED - CIC	TORKE CY
28	0854	OUTSIDE SAME INSIDE OK	1 (Molion)
	0846	DUTSIDE SAME	(plan
29		OCTSIDE SAME	Marken .
30	1 . 1 . 2	INSIDÉ OK OCOTALDE SAME	1 selecu
31			

Month AV6UST Year 1993

Day	Time	Abnormalities Noted, If None So Indicate	S/O Signature
1	1352	WHILE OR A ANCHOR I STEAM LEHE VA TEVOR	T. With
2		IDSIDE OK	
3	1212	LOSIDE STEAMLEAK PTEHAS/WARKING A ANCHOR	allow .
3	0858	INSIDE OR ANCHOR	1 show
4	1136	OUTSIDE STEAM LEAK NIEVAS/AMERING A ANDHOR	To los
5	1157	DUTSIDE OK DUTSIDE STEAMLEAK NIEXAS/WORKING A ANCHER	
6	0854	THE SE	All son
7	0821	NOTOLE OK LEAK NO TEXAS WORKING A ANGHOR	[Collson
	/335 0352	OUTSIDE STEAM LEAK N. TEXAS / WORK AT A ANCHOR	T. Water
8	1303	OUTSIDE STEAM LEAK N. TEXAS/ WOICK AT A ANCHOR	J. War
9	1700	CUTSIDES TOULS AT A HUMEN	Jet Jarlill
10	1203	The SIDE CK	
11	0834	INSIDEOR	1 Callen
12	1211	OUTSIDE STEAM LEAK DIEVAS/WORKING A ANCHOR	A (gellen)
	1233	INSIDE OK.	1 (gilson)
13	1207	ECITSIDE STEAM LEAK NITEXAS /WORKING A ANCHOR	A Carlina
14	1240	OUTSIDE STEAM CEAK N. TEXAS WIRK A ANCHORS	J. Water
15	1202	OUTSIDE OF LEAR NOTENAS I WORK A ANCHOR	4 11/6-
16	0905	CUTSICIA CV	J. Water
17	0858	INSIDE OIC	SN Mallen
	1210 0857	INSIDE STEAM LEAK DIEMS/WORKING A ANCHOC	Jelia
18	1216	OUTSIDE STEAM LEAK DTEXAS/CDOCKING A AVENOR	/ (alean)
19	1153	XLTSIDE STERM LENKI) TEKUS / 12 AT U. A AURULA	Alachar)
20	0358	OVISIDE STEXM LIC N. TEXAS / WORKING A ANCHOR	Thur An
. 21	0931	INSIDE OK	7. With
22	1344	1.VSIDE STEAM CK N LENS / WORKING A ANCHOR	el. Walter
	0852	INSIDE OR CIC NITEXAS/WORKING A ANCHUR	7. With
23	1145 0	OUTSIDE STEAM LEAK NITEXAS / 12 DOKNING A AND	A delan
24	1708	Inside Fine	S. Packer
25	0855	INSIDE OR OUTSIDESTEAM LEAK PTEXASLUDERING A ANCHOR	- Maril
26	0350	INSIDE OK	1 Collings
27		WITSID STEAM LEAK WTEXAS/WORKING A ANCHOR	I delican
			J. Wirth
28	1345	OUTSIDE OR LEXIC N TEXTS/WORCHUM ANCHUM	7. WW.S.
29	0855	(
30		INSIDE OR	1/1
		UTSIDE STEAM LINK NTEVAS/WORKING A ANCHOR	To show
	110-1	OTITS) do ME SN	Modern

Month Jaky Year 1993

TEXACO'S PUGET SOUND PLAN. SECURITY DAILY CHECK OF PIPELINE

Day	Time	Abnormalities noted, if none so indicate	0.10.01
1	0901	THISTDE OR	S/O Signature
- -	1215	OUTSIDE STEAM LEAK NTEXAS/CUORKING A AUCH	
2	0853	" SIDEUX	
	0755	WSIDE OF LEAR NEEDS / WARRING A ANCHE	
3	0905		1 / June 200
	074/	INSIDE OK Steam Leak N TEXAL	1 / Comment
4	0838	TOTAL TO STANK IS AND IS	4
5	0958	INSIDE EXC	Com
3	1117	DUTSIDE STEHMINEAR NITEXAS/WORKING A ANGHOR	
6	0858	INSIDE OK	11 alle
ļ	1/43	OCCTSIDE STEAM LEAK DIEKAS MOCKING AHACHE	A lack
7	0900	INSIDE OIL	Jan
	0900	NOTTEDE STIFAM LIFAK NTAKAS LEDRIKING A AWGUE	All allens
8	12/2	1,02,02	
	0857	INSIDE OK ATEAM LEAK DIEXAS / WASKING A ADONE	Marley
9	1/33		7//
10	05856	1WSRUE OR	1 dellar
10	1021	CUTSIDE STRUMING HITTHING HOLDEN	(104. Min)
11	1/00/	The Line Line	To sistell
	0830	INSIDE OF PIDE LINE	E. H. Such
12	1.704	,	7
	1653	OUTS, ON OK	Maller
13	1809	Inside ou	
4.4	0912	INSIDE OK	2. danho
14	1240	State of the state	1//1/
15	0858	INSIDE DIC.	(Aldon
15	1255	DESTSIDE STEAM LEAK & TERAS WORKING A ANGIOR	-1/2.1
16	1453	Wayte of	1 (Allen
	2500	INSIDE STEAM LEAV N. TEXAS/A ANGLE	J. Wut
17	15/25		
4.0	0784	INSIDE DIPE LIVE after Complete	2/3/1
18	0835	CUTSIDE Ping has a land	100
19	09/3	IDSIDE OK	Margu
13	1652	OUTSIDE OK STEAM WEAK DIEXAS / A ANCHOR	
20	0855	INSIDE OK	all war
	1201	INSTITE STEAM LEAK NTEXAS / WOLLING A ANTHON	Malan 1
21	1145	110310E OR	allen !
	0849	OUTSIDE JOHN WORKING A ANDHOD	* Obline
22	11/4/2	DUTSIDE STEAM LEAK NTEXAS / WOLKING & ANGULOW	1//
23	0850	PNSIDE OIC	College -
۷٥	1245	MILITS IDE SAME STEAM 15-14	
24	10 (50)	123100 08	Alleon
4 - T	0853	CURDE PORLINE	1
25	08/2	INSIDE OR	THE WAY TO THE THE PARTY OF THE
	0852	INSIDE OF PIDELINE Check	fasen Jores
26	1	a	1000
07	0904	INSIDE OU STEAM LEAK N TEXAS MORKING A ANDRONE	Mallon
27	أومسسنوها	CHTSIDE ATEAM LEAK N TERMS LUNGER A ANGUAR	
28	0859	INSIDE OK	Allen
40	1201	CUTSIDE STEAM HEAR A TENDE	
29	0835	MISIDE OK	1 signer
	1130	CUETSIDESTEAM LEAK NIEXAS (WOLKING A ARCHOR	A sibility
30	0855	THIS TOR OR	The same of the sa
	0430	IN THE OK AREAK NTERAS NORKING A ANCHOR	The Con
31	- 1 i	CUTSIDE OX	7
			d, h/a/m

Month Year

June 1993

TE. (ACO'S PUGET SOUND PLANT SECURITY DAILY CHECK OF PIPLINE

1	Time		
ау	Inne	Abnormalities Noted, If None So Indicate (you may continue on back)	S/O Signature
	0849	INSIDE OK	17
1	1121		
	0856	DUTSIDE STEAM LEAK NIEXAS / WOLKING A ANCHOR	Allen
2	11.38	·	
		OUTSIDE STEAM LEAK DTEXAS/ WORKING A ANCHOR	A Selece
3	1143	DETSIDE STEAM LEAK DIEWAS/ WORKING A ANCHOR	
	12/7	11 PO 10 E O K	Mallon
4	0857	INSIDE OK	
	1249	DOTSIDE STEAM LEAK DIEKAS/ WORKING & ANCHOR	1/2/
5	0731	1/200106 07	113
<u> </u>	0848	OUTSIDE STEAM LEAK N TEXAS	litour
~	0755	INSIDE OK	July Jon
6	0846	OUTSIDE STEAM LEAK N TEXAS	Alan
	0959	INSIDE OK	+) LOGSON
7	1205		
		OCCUTSIDE STEAM LEAK NITEKAS/ WORKING A ANGHOR	Aller-
8	0858	INSIDE OK	
	1139	OUTSIDE STEAM LEAK WITEXAS/ WORKING A ANCHOR	Al helen
9	0849	The life of	
	1130	OUTSIDE STEAM LEAK WITEKAS WORKING A ANCHER	18/2.
10	12 45	THE SIDE STETTED TO TEXAS TOUR PROPERTY OF	The state of the s
-10	1300	INSIDE OK	1/2/
11	1227	INSIDE OK	J. Gelfor
11	1254		1///
	0737	INSIDE OF AMERICAN DIEXAS / WORKING A ADCHOR	Jellen .
12	ossi		
	0230	OUTSIDE Steamhal U FEXAS	7//000
13	1	77310C 03	
	0849	INSIDE OIL	1/ Scoren
4	0844	7.00.02	
	1243	COTSIDE STEAM LEAK WIEYAS WACKING A ANCHE	7/1/201/200
15	0857	I THE OR	
10	1200	COTSIDE STEAM LEAK NO TEXAS / MORENCE A ANOHOR	-161
4.0	1455	INSIDEOK A ANCHOR	Millon
16	1514	1	
	0904	INSIDE STEAM LEAK DIEXAS/ LOOKKING A ANCHOR	Allen
17	1248	1 -	
		DUTS TOE STEAM LEAK NITEXAS/ WORKING A ANCHOR	Cash
18	0844	INSTITUTE CA	
	1229	OUTSIDE STEAM LEAK NIEWS/ WORKING A ADOHOL	
19	0837	1 2010 6 01	- Carrier
! 3	0831	OUTSIDE STEAM LOAK N TEXAS	
00	0739	INSIDE OK	The open
20	0837	OUTSIDE STEAM LAX TO TEXAS	1 4 9)
	0847	INSIDE OK	1/6000
21	12-44		1///-
	0849	INSIDE STEAM LEAK DIEKAS / WOCKING A ANCHOR	1 allon
22			
	1248	DUTSIDE STEAM LEAK NTEXAS / WORKING A ANOTH	el allen
23	0853	INSIDEOK	
	1297	WITSIDE STEAM LEAK NIEKAS/WORKING A ANCHO	e della
24	0859	INSIDE OK	
24	1115	DUTSION STEAM LEAK NTEXAS / WORKING A ANCHO	
0 =	0851	INSIDE OK	To geffer
25	1258		
	0741	INSIDE STEAM LEAK NTEMAS/ LOOSKING A ANCHON	The state of the s
26	0852	(
	0740	OUTSIDE OF SIEZE LESS N TEXAS	for an
27	0853		1300
		OUTSIDE Strain leak N TEXAS	1 100000000
28	1511	INSIDE OIL TEL	1 11/2
	1051	& USTI de	
)29	0900	INSIDE OK	Hallon
149	1217	OUTSIDE STEAMLEAK N TENDS / MORKING A AND	
22	0905	15IDE OK STEAM LEAK N TENAS / WORK ING A ANCO	of the sellow
30	1130		
		DUTSIDE STEAMLEAK OTEXAS/ WORKING A ANCHO	e (Selow
		7	- PULOU
31			- Callon

TEXACO'S PUGET SOUND PLANT CURITY DAILY CHECK OF PIPLINE

	<u> </u>		
Day	Time	Abnormalities Noted, If None So Indicate	S/O Signature
		(you may continue on back)	
h 7	0727	INSIDE PIDELINE	
	of 35	EUTS, QE PIDELINE OK	Jasem free
2	0738	MSIDE PIPELINE	A Abril Fred
ļ 	0830	INSIDE OK	Jaser Toren
3		/ `.]	
1	0857	INSIDE STEAM LEAK D. TEXAS / WARKING A ANCHOR	Molon
4	1	1	
	1053	INSIDE STEAM LEAK N. TEVAS / WORKING A ANCHOR	May loon
5	1 . 1 - 5		
6	0847	DUISIDE STEAM LEAK DITEXAS/BOKKING A ANGHOR	Callyon
6	1139	CLETSIDE STEAM LEAK DITEXAS/WOICKING A ANCHOR	della.
7	0857	INSIDE OK	The state of the s
<u>'</u>	1140	OUTSIDE STEAM LEAK N. TEXAS/ WORKING A ANCHOR	Milla
8	0720	OUTSIDE OK	1/2/
	376	10000	1 Closer
9	413	(511) CF	to Clarence
10		INSIDE OK	19/1
10	1233	CLITSIDE STEAM LEAK D. TEXAS/ WORKING A ANCHOR	Al hellen
11	0843	INSIDE OIL	- Comment
	1215	OUTSIDE STEAM LEAR D. TEXAS/WOCKING A ANCHOR	A dellar
12	0843	INDIVE BIC	
	1157	INSIDE OF	Callen
13	1107	· ·	
1 1	0903	INSIDE STEAM LEAK N. TEXAS/ WORKING A ANCHOR	1- Golfon
14	1144	OLUTSIDE STEAM LEAK D. TEXAS/WORKING A ANCHOR	Alasto
15	12	TO THE THE PAST WORKING IT MACHOR	alla,
. 15	2 1 / 7	The second state of the	Today Many
16	9/12		
1	7	And and take by Texas	130 11 20 21
17	0907	INSIDE OK	1//2
<u>·</u>	1209	INSIDE STEAM LEAK N. TEXAS / WOLKING A ANCHOR	Mellia
18	1253		
	1248/174	OUTSIDE STEAMLEAR D. TEXAS / WORKING A ANCHOR	Maffee
19	2305	INSIDE OF	11.1
20	0854	INSIDEOK	alla
20	1230	OUTSIDE STEAM LEAK NTEXAS/WARRING A ANDINE	Hal.
21	1140	INSIDE OK	grica
21	1234	OUTSIDE STEAM NEAR NIEWAS/ WORKING A ANCHOR	1 selem
22	6730 0857	INSIDE OF	Lin
	0851	OUTSIDE Steam LEAK N TEXA:	Masen Kosch
23	0903	Wiside of	17
	0902	OVENDE SKAMLEAK N TEXAS	1/20 m/com
24	1441		
	0859	INSIDE OK	Affen
25	1146	OUTSIDE STEAM LEAK NIEWS/ WORKING A ANCHOR	Hal.
2.0	1127	INSIDE OK	1 College
26	11.50	OUTSIDE STEAM LEAK NTEXAS / INDEXING A ANCHOR	Hall.
27	1123	INSIDEOK	The state of the s
1 4/	1201	OUTSIDE STEAM LEAK NTEXAS/ WORKING A ANCHOR	allow
" 28	0853	INSIDE OIC	
	0741	INDIDE OK AKAIR NITTERS WORKING A ANCHOR	Mallon
29	0880		
2.0	0743	LUGICE OK STAM LEAK N LEXAS	ason Sorus
30	2. 6. 461	Co Sige Steam weak A TEXAS	A. 1970.
31	1257	OUTSIDE STEAM LEAK NTEXAS/WORKING A ANCHOL	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
31	1357	INSIDE OF	The state of the s
7			- Color

Month Year APRIL 1993

TEXACO'S PUGET SOUND PLANT CURITY DAILY CHECK OF PIPLI.

CHES JMHJM

			
Day	Time	Abnormalities Noted, If None So Indicate (you may continue on back)	S/O Signature
, 1	0840	INSIDEOR	11
	0853	INSIDE OK WORKING AT A. ANCHOR.	affer
2	1226	OUTSIDE OK WORKING AT A ANCHOR	Maller
3	0831	105108 012	
	0936	OUTSIDE OF WORKING AT A ANCHOR	Jan Jashill
4	0903	OUTSIDE OK	E. Luge
5	1222	OUTSIDE OK WORKING AT A. ANCHOR.	
6	1047	INSIDE OIC	afflow.
	0851	DUTSIDE OK WORKING AT A ANCHOR	Malin
7	1202	OUTSIDE OK WORKING AT A. ANCHOR	A sell
8	1147	10310E OK	The state of the s
	0912	DOTSIDE OK WILKING AT A ANCHOR	Allen
9	1138	MITSIDE OK WORKING AT A ANCHOR	Kalbon .
10	0756	Outside ok	
11	0758	INSINE OK	The soul for the soul of the s
<u> </u>	0915	OUTSIDE OK	form Koger
12.	1215	DUTSIDE OK WORKING AT A ANCHOR	(Silver
13	1209	DUTSIDE DIS WORKING AT A ANCHOR	
, 14	0851	IDSIDE OR	Jelen -
) 	0854	OUTSIDE OR WORKINGA AT A ANCHOR	I appear
. 15	1137	DUTSIDE OK WORKING AT A ANCHOR	The section
16	0855	ONTARE OK WORKING AT A ANCHOR	
17	0720	INSIDE DIPELINE OF	1 Callion
	0910	OUTSIDE PICELINE OK	Alben Losus
18	0342	DUTSIDE PIPELINE OK	A TOTAL OF THE STATE OF THE STA
19	0859	INSIDE OR	1 050M/16/51N
	1155	DUTSIDE OK WORKING AT A ANCHOR	John
20	1129	CUTSIDE OK WOKKING AT A ANCHOR	Allen
21	0906	OUTSIDE OK WORKING AT A ANCHOR	Ma. I
22	1131	INSIDE OK	Allen .
1	0738	OLETSIDE OK WORK ING AT A ANCHOR	Allen
23	1153	NUTSIDE STEAM LEAK NITEKAS ROAD	Celler
24	0830	OUTSIDE OK	10
25	274/	1NS108 CK	1 (Jan 19)
25	0847	INSIDE OK	1 1/61gry
26	1217	OUTSIDE STEAM LEAR N. TEXAS / WORKING A ANCHOR	Alalan
27	1234	INSIDE OR	1/211.
28	0853	INSIDE OK STEAM LEAK NITERAS SWOKING A ANCHOR	H Caller
)	0855	INSIDE STEAM & KAK N. TEXAS / WORKING A ANCHOR	Mayon
29	1158	OUTSIDE STEAM DEAK NITEXAS/ WORKING A ANCHOR	Resign
30	0854	INSIDE OR	
31	11.00	WORKING A. ANCHOR	MAST (MCAGE)

TEXACO'S PUGET SOUND PLA SECURITY DAILY CHECK OF PIPLII IE

Mc ... Year <u>/Y/// 1993</u>

Day ———	Time	Abnormalities Noted, If None So Ind (you may continue on back)	icate	S/O Sign.
1	1153	TRATIVE OK		
	0858	INSIDE LEUX PIPELINE	CHECK	The state of the s
2	1 1	5.0		The state of the s
3	0851	INSIDE OK PIPE LINE	CHECK	Cala
<u> </u>	1132	QUISIDE OK PIPE LINE	CHECK	
4	1151	103IDE OK	CITE /	Allen
	0848	INSIDE OK PIPE LINE	CHECK /	1 Julian
5	113 P	DUTTION OIL PIPELINE		Junior.
6	1034	INSINE UK	CHECK	Milla
	0841	DUTSIDE OR PIPELINE	CHERT	11/4
7	0803	INSIDA		7/6
	0859	INSIDE OK	11 //	E. Shore
8	1257	OLETSIDE OK PIPE LINE	Quen:	11/1/1
9	0840	INSIDE OR	CHECK	Tollar.
	0840	DUTSIDE OK PIPE LINE	CHECK	Wallen.
10	1154	OUTSIDE OK PIPELINE		1
11	0854	INSIDE OK	CHECK	Collec
1 1	1150	OCATSIDE OK DIDE I IN =	CHECK	
12	1054	THE OIL		E gelow.
	0838	INSTROK PIPE LINE	CHECK	Maller
13	1011	OUTSIDE PIPELING	AL	774
14	0803	80 FS / D A	Check	J XXXXXX
	0543	* NS IDA	1/	& Spor
15	1106	OUTSIDE OK PIPFLINE CHEOK		7
4.0	0851	OUTSIDE OK PIPELINE CHECK		Malla.
16	1133	OUTSIDE OR PIPELINE CHECK		_ 2
17	0839	NOSIDE OR		Mellin
	0849	DISTOROIC PIPELINE CHECK		Malle
18	1051	DUTSIDE OF DIDIT I WILL DUMBLE		
1 ()	0851	INSIDE OK		Place C
19	1149	OUTSIDE OK PIPE LING OUGH		1/2/
20	9915	1 ~ 5 100 c		(Alfa
	0830	1451de ORDIPELINE CHECK		Machel
21	1300	OUTSIDE PIPELINE	0	c h
22	0854	INSIDE OK		E . Trose
~ <u>~</u>	1248	OUTSIDE OK PIPELINE CHECK		Markon
23	0854	TOSIDE OK	-	- Constant
24	0854	IDSIDE OK DE LINE CHECK		X Allion
24	1139	OUTSIDE OK PIPELINE CHEPK		1/2.11
25	0848	NOSIDE OK VINCE		A GREEKE
	1210	OUTSIDE OK PIPELINE CHECK		Alle.
26	1271	ONTSIDE OK PIPELINE CHECK		101
77	0839	INSIDER PIPELINE CHECK		to alle
27	1036	passas or VIPELINE Check		Jelan.
28	8830	OUTSIDE PIPELINE	//	1 100 bull
20	0851	INSIDE OK		Can Lows
29	1200	OUTSIDE OR PIPELINE CHECK	•	1//10
30	1227	INCINE OF		1 Godon
		ONTSIDEOK PIPELINE CHECK		Callon
31	1246	10.00	-	Just
		OUTSIDE ON PIPELINE CHECK		11 All rest

TEXACO'S PUGET SOUND PLANT.

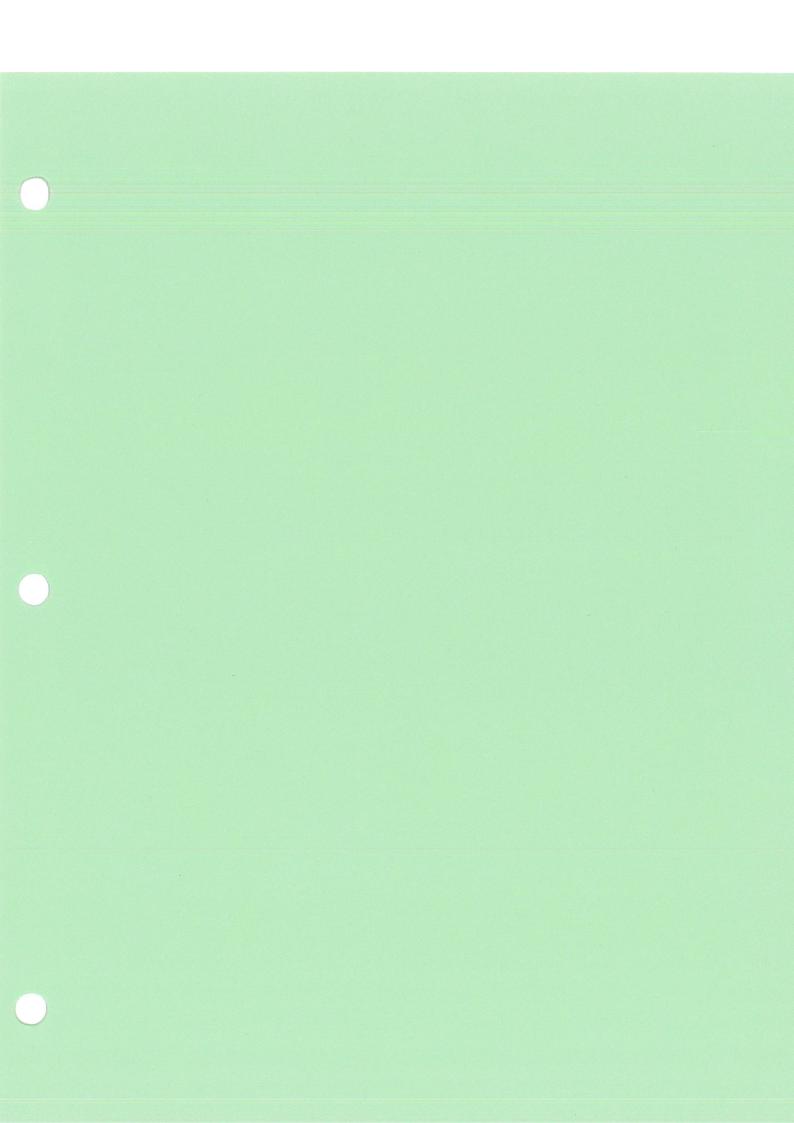
CURITY DAILY CHECK OF PIPLI.

Month Year Feb. 1993

FU)	1719		
Day	Time	Abnormalities Noted, If None So Indicate (you may continue on back)	S/O Signature
1	0848	OUTSIDE OK PIPELINE CHECK	Markey
2	1108	OUTSIDE OK PIPELINE CHECK	Mallen
3	1223	OUTSIDE OK PIPELINE OHECK	Talla.
4	0850	OUTSIDE OK PIPFLINE CHECK	Allen
5	0840	OUTSIDE OK PIPELINE CHECK	Maller 1
6	0852	MENTE OIL PIPELINE AHEOM	In Jashe
7	0130	OUNSIDE PIPELINE	It in wold
8	1255	OUTSIDE OF PIPELINE CHECK	Mailian
9	1202	INSIDE OK PIPELINE CHECK	Mala
10	1226	OUTSIDE OK PIPELINE CHECK	Hollow
11	0916	OUTSIDE OR PIPELINE CHECK	Lallan
12	13/3	OUTSIDE OK PIPELINE CHECK	Haller
13	1048	INSIDE PIPELINE CHECKS	J. Mishell
) 14	0945	WEIDE OIL	
15	0843	INSIDE OR PIPELINE CHECK	Makon
16	1228	INSIDE OK PIPELINE CHECK	Malla
17	0857	MUSIDE OK PIPELINE CITECK	1 Colin
18	1204	INSIDE OR PIPELINE CHECK	1 Colion
19	114.3	OUTSIDE OK PIPELINE CHEEK	Malyny
20	0815	IN SIDE OK PIPELINE CHECK	Jashell .
21	0857	INSIDE OK PIPE HUNE CHECK	V Winfolt.
23	1247	INSIDE BASE VALLE	Affin
23	0844	1105101E OK	Mayhar
25	0852	OUTSIDE OK PIPELINE CHECK	Allen
26	0852	INSIDE OK PIPELINE CHECK	Markon
27	1126	DUTSIDE OK PIPE LINE CHECK	Malion
28	0847	*NOINE PIPIELINE OR	
29	68/1	OUTSIDE II	E. Grove
30			
31			
<u></u>			

TEXACO'S PUGET SOUND PL AT Month Year SECURITY DAILY CHECK OF PIPLINE Time Day Abnormalities Noted, If None So Indicate S/O Signature (you may continue on back) OUTSIDE 0925 OK 1 PIPELINE 1100 INSIDE OK CHECK 1220 in side Pipelines 2 Dutide IN SIDE check alc 0/5 3 1100 out SIDE 0858 INSIDE OK 4 PIPELINE CHECK 1125 OUTSIDE OK 1104 INSIDE OK 5 PIPELINE CHECK OUTSIDE 00 1127 INSIDE 010 6 1154 IPE LINE OUTS IDE OK. CHECK 1125 INSIDE OK 7 1154 IPELINE OUTSIDE OK CHECK 0844 INSIDE OK 8 OUTSIDE OK 1121 CHECK 132 280 INSING OK 9 DIPELINE CHECK 14 846 H 0831 OCETSIDE OK 10 1655 1119 INSIDE OK 11 PIPELINE 1227 OUTSIDE OK 1114 INSIDE OK 12 OUTSIDE OK 1100 INSIDE OK 13 1126 OUTSIDE OK 1102 INSIDE OK 14 1124 DUTSIDE OIS 0854 INSIDE OK 15 10.58 OUTSIDE OK 10211 INSIDE OK 16 0901 WYSIDE OU 0900 IMSIAF OK 17 PIPELINE 1280 OUT SIGK 1121 INSIDE OK 18 PELINE 1141 CHECK OUTSIDE OK 1222 OUTSIDE OK 19 PIPELINE CHECK 1259 INSIDE OK 1052 INSIDE OK 20 111 ビスノルご CHEC OUTSIDE OK 1055 INSIDE OK 21 PELINE 1118 CHECK OUTSIDE OK 0842 INSIDE OK 22 ELINF III3CHECK OUTSIDE OK 0956 INGIDE OK 23 0935 OUTSIDE OR 164NE 0846 INC SUPE BIBEVINE 24

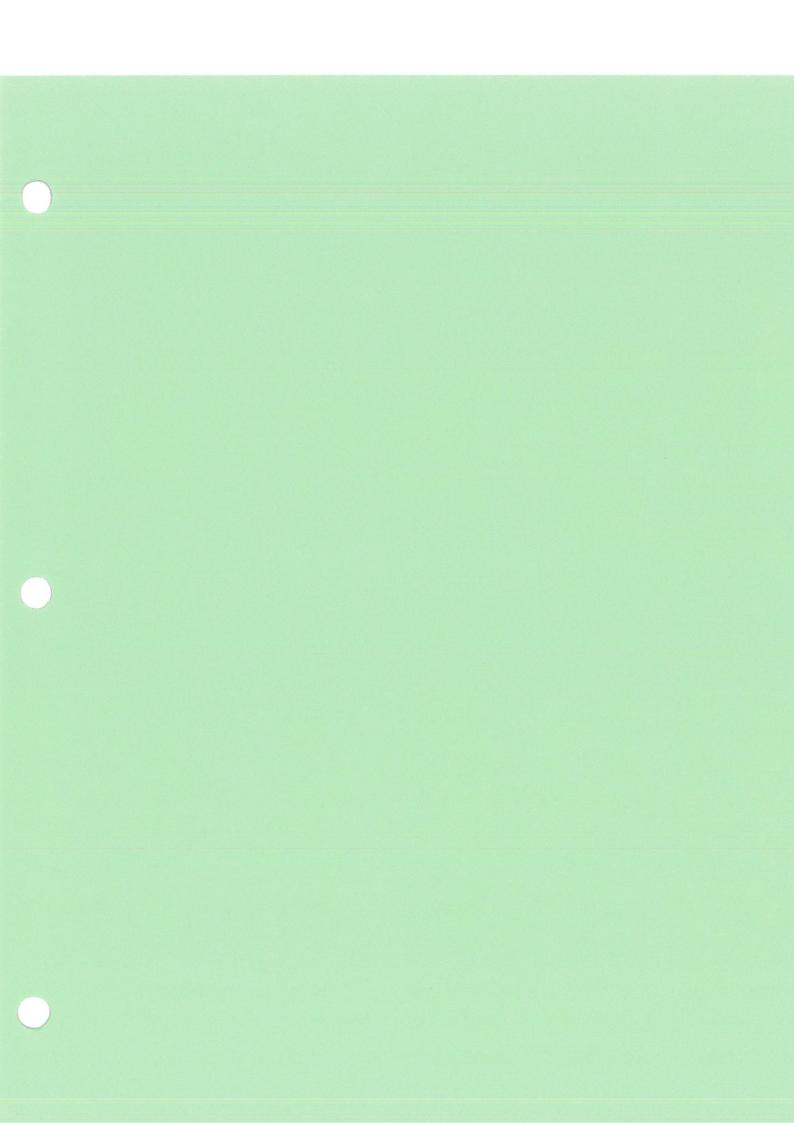
INSIDE OK 1141 25 PIPELINE 1240 OUTSIDE OK 2 HECK INSIDE 1120 OK 26 PIPELINE 1144 OUTSIDE OK 0845 INSIDE OK 1236 27 PIPELINE OUTSIDE QK 1155 1245 INSIDE 28 ΦK PIPE LINE DUTSIDE OK 0842 INSIDE 29 OK PIPE LINE OUTSIDE OK 1532 outside 010 30 RIPE LINE 173 3 10 HO PIC 31 1 0915 INSIDE 010



Appendix B

3.5.3 Random visual inspection of underground portion of pipelines.

Status: Active, See Appendix 3.14.0 Underground Line Excavation and Inspection, and Backfill Procedure. The underground lines going to the dock were exposed at three locations to check for corrosion on March 2, 1992. The first location was at the location of a previous leak that occurred in the Bunker line - the lines were in good condition. The second location was at the corner of North Texas Road and West Marchs Point Road - The lines were in good condition. The third location was across the West Marchs Point Road from Tera - the lines were in good condition. The lines were UT calipered and radiographed (X - rayed) at all locations with no problems noted.



Appendix B

3.5.4 Inspection of waters surrounding dock for oil sheen or evidence of spill or discharges.

Status: Active. Enclosed are the Dock Area and Surrounding Waters inspection forms that are completed daily and logged by operations personnel.

MONTH: JULY YEAR: 95

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	1014	σμ	-A-
2	0904	ok	-Dr.
3	0700		7n- K K K K
<u></u>	0800		1/22
- 5	0730		R
6	0800		W.
7	(189)	#1 TheNE LINE OS. (REPARED) PROBLEM NO W/ There & BROTH Z	
8	0130	OX	3
9	0920	CK-	
10	1000		
11	24 : 12	- OK.	755
12	1000	o K	725
13	1000	nr nr	V2J
14	0800	CIL .	Cián (
15	0900	OK	E
	0800	OK .	BN
	7900	OK.	MUL
18	0900	OV-	NON
19	0900	OK	more
20	10900	-B-2 MLA#1 0.0.5	nor
21	0830	K.I.C.	کټک 📗
22	1000	Oh	253
23	0930	OK .	700
24	1000	&	EH
25	1000	<u>01</u>	37
26	1000	OF Sheen Due to outfail	BH
27	0700	ON Sheen So. OF Dar Due 40 outfall	BH BH
28	0700	40 CK M(44/ 8-2 005.	DC
29	p 8/5	OK 11	OL
30	080-		DC
31	0900	OK '	RM

MONTH: MAY YEAR: 45

1 55.77	1 mm	Abnormalities Noted, If None 8	o Indicate	Initial
DAY	USCO	Abnormalities Noted, If None 8	O INGICATE	BIT
	(2000	r.K.		211
3	2800	Ck.		BAY -
4	0230	ČK.		BH
5	0800	OK .		01
6	0770	5-K		0/
7.	0700			
8	0700	016-		7)
9	1 07 EU 1	7 /L		1
10	0750	816		コ く
11	2700	81C		31
12	0700	3K		13
1.3	200	0K		100
14	0760	OK		5m
15	1035	OK		
16	916	NONE		JM .
+ 17	1003	None		Jul
18	1327	OK		Jam
19	1000	05		
20	1000	012		
21	1000	01		
22	0900	& NOTIFIED CLEM OF LIGHTING WORK T	HAT HASN'T BEEN COMPLETED	Jeg
23	0930	OK .		JER .
24	0820	OK.		JKB
25	0700	OF		123
26	0900	OK		1997
27	0900	<u> </u>		1 m
28	المراح	OF		
29	0900	0/C		
30	1000	OK.		
31	0930	OCC		(5/26)

MONTH: APRIL YEAR: 95

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	0100	OU	
2	V		
3	0930	OK,	1500
4	0900	OK	KW
5	1:00	The state of the s	KM
6	1030	DK	ISM
7	1100	68	Km
8	1200	0(1<14
9	1100	o K	1CN
10	0800	OK	- Lung
11	0900	06	25
12	0900	OL-	4
13	0300	OK	INB
14	0700	DK.	MEB
15	0900	DK.	PAS
116	0800	OK .	AB THE
17	1000	OK	RR
18	1000	OK .	RB
19	1100	OK	
20	1030	OK	<u> </u>
21	0900	OK	
22	1000	OK	30
23	1030	OK	MIR
24	0900	CK	mon
25	0900	014	MIN
26	0900	016	102
27	0900	UK	30
28	0800	OK	<u>G</u>
29	900	Οίζ	<u> </u>
30	093C	OK	
31			

MONTH: MARCH YEAR: 1995

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1			
2			
3	1300		
4	0900	JISKART NOT HUMBION HI FLITTO PHINPOUT PUT DIM SHEEN (SHINTOUN)	ai
5	0900	DISKOUT RUNNING ON MANUAL	
6	1030	<u>ok</u>	KM
7	100	OK.	1571
8	1100	OK	XM
9	10.30	GK	Krh
10	1000		73
11	1000	o C	75
1.2	1130		O TS
13	1130	Jukoot in manual	203
1.4	0730	Pauce out All DAY for ELECTI WORK - USE SANDPIPER for Sump	273
1.5	0715	power of til 1430 - AIR Bleener Open	<u> </u>
<u>† 16</u>	0800	OR AIR GIERNER OPEN	SIS
17	0400	OK	MOR
18	1000		MYR
19	0930	ol(MILE
20	0900	A11 1755 O.K.	01
21	0900		01
22	0830	All OK	2/
23	0730	All DK	0/
24	0800	OK_	BH
25	0800	OK_	1 5H
26	0830		SH
27	0900	<u> </u>	
28			-
29			
30	1,		100
31	10900		10-

MONTH: 02 YEAR: 95

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1			
2			
3	0830	CAS38,39+41 NOT WORKING ALLPINE CHE	£15
4	10900	OK Want of the American School and American Sc	5.7.2
5	1400	Ov()	273
6	1000	Ox Except D	9>
7	6000		
8	1000	Checks Tomover	1 1
9	1000		<u> </u>
10	0730	OK notice A still removed	12
11	0800	OK (1	01
12	0800	OR Le	0.25
13	0500	O X	136
14	030	8/6	1 Jr.
15	ठक्ल		<u> </u>
16	0500		
17	0800	6 V	131
18	0880	A.	p#
<u> 19</u>	28/34	6C	Let _
20	0000		
21	0900		133
22	0940	EX.	80=
23	1000		KIII
24	09(0	<u> </u>	KIII
25	1000	ÖK CR	Ku.
26		<i>y</i> -	123
27	8900		77.73
28 29	0900	O K	1
30			
31	<u> </u>		

MONTH: 0/ YEAR: 95

DAY	TIME	Abnormalities	Noted,	Ιf	None	So Inc	licate		Initial
1	1000	OK							八男子
2	1100	of							大きん
3	1000	04							14 (11-
4	1000	OK							KIW
5	0 900	6-1-4							- †
6	0900	01L							7.
7	8986	OK							<u> </u>
8	0900	<u>GY</u>							<u>QL</u>
9	1000	BC							4
10	1000	16							J.
11	1100	02							\
12	1300	0/2							
13	1000	OK	 						70
14	1114	OK.							The
<u>' 15</u>	0900	gk-							700
16	1000	014							
17	1000	ÖK.							
18	1000	OK.							as
19	1000	JK.							
20	1000	<u> </u>							178
21	1000	2			·				1.
22	1000	4							
23	1000						7 5 /		
24	1000			~/~.	D.		Disch	Line ??	20: DB
25	0830	East + West	of of	-Sice	Drip	Pars	Phageo	(Line) ??	
26	0900	oK			······				BD
27	0830	OK							30
28	0800	CK_							
29	1000	014							WITH
30	1000	6"1C							Non
31	0800	OC							MOR

MONTH: DEC YEAR: 94

1 7371.32	TIME	Abnormalities Noted, If None So Indicate	Initial
DAY 1	1100	Apholmaticles Noted, if None Bo indicate	0/2
2	1000	COD 1/0 Dranses	
3,	0930	COO H2O Street	82
4	1000	CON HO DETLAD & RECIRCULATIVE BOY	4.
5	1200	Cold Hip Drawed & Roccinating	6 5
6	1000	ald Punging out (Not Recursulation) The Division	CT7-2
1 7	1000	Live Chapting and Chapting	03
8	1000		SE
9	1000	OK EXCEPT JISKOT. T.U.	(A).
10	1000	OK EXCEPT JISKOT T.U.	
11	1000	OK EYCERT SISKOUT TIME	
12	illoc.	CK. W. C.	54
13	1200	OK HAD MOCK OIL SPILL DRILL	18 P
14	1100	OK.	13/
15	1100	<u> </u>	J
16	0830	All DK	1)2
17	C830	All CK	01
18	0900	All OK	1 25
19	0800	ALL OK - SOME DIAG BRACIUG LOOSE, etc.	347
20	1030	AII OK	272
21	0930	Air or	
22	1000	ALLOK	GIS
23	1000	22 HS 38 proposed winter all Et a Kynin	L
24	1000	All Suthannalings OK	th
25	100:	of ent for mach	193
26	1000	See 37 1884 72 18 38	1777
. 27	1000	0 (1745
28	1000	OK	
29	1000	I OK	+7x> B1+
30	1000	OK	
31	1000	OK	BA

MONTH: NOV. YEAR: 94

DAY	TIME	Abnormalities	Noted,	If None	So Indicate		Initial
1	1100	0 K				-	-RB
2	1100	Dumped out	DRIP OF	Atici zur	SANDDIPER	(OK)	LB L
3	1130	1 0%	'		· · · · · · · · · · · · · · · · · · ·		·
4	0900	OK					BD
5	0830	OK					BD
6	0800	oK					BD
7	1000	OX					MIR
8	1000	0 K					MIR
9	1000	OK					MIR
10	1000	カビ					MIR
11	0800	ÖK					575
12	0900	01					2.55
13	0930	OK					223
14	1000	OR					B14
15	0900	OK					BIL
116	0800	OK					814
17	0900	OK					765
18	0800	0/C					t-5
19	0900	OK		···			745
20	0900	OK					75
21	Ogor	016					7,5
22	10400		4				
23	Daro						
24	0900	(A, A, A)					V 20.
25	1100	97				·	V 76/2/
26	0300	OF					May
27	0900	OR					X.
28	0930	OK.					
29	0930	OK'					
30	0930	OK				 	1
31							

MONTH:

YEAR: 94

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1 1			
2	<u> </u>		
3	1000	0K	TG.5
4	100	014	725
5	1000	0 🖔	7250
6	1000		77-1
7	0800		R.H
8	<u> </u>	o L	34
9	<u>0900</u>	O.F.	BA
	0800	64	Kw
11	0900	Off	Kw
12	1000	OK	RWW
13	<u>0800</u>		TL
14	1000		- (
15	1000	915	7
16	1100		
17	1000	5K	KM
18	1100	$\alpha \zeta$	Km
19	1030	OK	Km
20	1100	FOUND BERTH 2 HI ARM-Product comming From ARM Bleefer /Tighten MANIFOLD	KM
21	1000	CK-I gress I BANT BE A HERO	Im
22	11.03	OK-I Find Things And JUST CORRECT NOT LOOKING TO BE A HERO	ofer
23	1300	CITEATING ANGIE (THE) GOT JISKUT WICKING WE ARE HERO'S NOW	Jun
24	100	OK EXCEPT GLARIN C BIRTH 1 005	/ AD
2.5	1000	HYDROLL PUMP & SAMPLER PAMP JACKED OUT FOR REPAIRS	B
26	1000	OK.	
27	1000	OF _	iii)
28	10=1230	OX fine system chark OX	(A)
29	10 00		950 .
30	1000	Ø.	W.S
31	ill5	OK Jiskoot Running in MANUAL	JAN .

MONTH: SOPT. YEAR: 94

DAY	TIME	Abnormalities Noted, If None So Indicate	/Initial
1	0900	O K	Luce
2	0930	OK .	Www.
3	1000	OK .	Hive o
4	1130	OK	TO (A)
5	0000	OK.	R. BOE
6	1000	OK	R. BOE
7	1130	ŎĶ,	Ribe
8	11160	OK	RBoe
9	1230	OK	KM
10	1100	οK ,	Kim
11	11:30	oK	RM
12	1100		Se
13	1030	0<	
14	1030	0 (4) (4)	253
15	100	of Jest 084 Prip paw beaking (fix Towers	
116	1000	OK AREPARED	
17	0900	0 K	
18	1000	ÔK.	in
19	0900	OK .	BD
20	0800	o K	20
21	0800	OK MACHINISTS WORKING ON MEA #2 @ B2	ED
22	1000	OK 11 11 11 11 11	ED
23	0800	<u>ok</u>	DL
24	0800	○ K	177
25	1050	OK	1 Km
26	1030	OK .	ICIM
27	1100	0K	KM
28	0400	015'	RM
29	1100	OK / FAST AND FILTER LEAKING AFTER A DATA TRAP DOL	
30		KUPAT BIENDENG: (MORRISON TO)	SOUT
31			\

NOTIFY PUMPER AND FOREMAN IF ANY ABNORMALITIES

RETURN TO RP&S OFFICE AT END OF MONTH

- Andrewson or the second

MONTH: AUGUST YEAR: 95

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	0950	Money	EAR
2	0930		
3	0830	(/	611
44	0800	1	6363
5	© 900	//	
6	0100	-1	973
7	5900	<i>)</i> `	53
8	0800	O.K.	04
9	0800	O, K.	0(
10	0700	D, K	DZ.
11	0700	D, K	DZ
12	0800	OK	(<u>a</u>
13	700	Q.K.	
14	(RCO	<u>O</u> L	151>
15	0830	øκ	ME
16	0820	<u> </u>	ML
17	0900		MR
18	0745		MR
19	0745	OK	273
20	0930	O R	435
21	0900	OK	253
22	1000	OK	BH
23	0900	OK	BH
24	0900	OK	BH
25	0900	('	75
26	09110	. (1
27	0800	11	7.5
28	0900	((ts
29	0300		34
30	090) Syl	7 -
31	1100	OK.	TL

MONTH: July YEAR: 1994

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
11	0800	All O.K.	nittiai O/
2	0730	A11 O.K.	01
3	0745	A11 O.K.	04
4	1330	OK	£12
5	1130	OK	512
6	<u> </u> @730	OK	£22
7	1030	OK	573
8	1000	1	Mrce.
9	1000		KIR
10	1000		MAS
11	1300	DK	ΓM.
12	1200	1X	
13	(000)	OK*	KM
14	100	OK	Tun
15	1030	OK_	B.H.
16	1000	OK	B.H.
_ 17	0900	OK	80
18	0900	((P
19	1100		RW RW
20	1200		12 W
21	1300		7 1
22	1200		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
23	12 50	014	9500
24	0930	1)	7100
25	1600	<i>y</i> '	18:
26	1630	SPILLBOAT # 2 005.	
27	0840	OK BOAT 2 RACK.	1000
28		the state of the s	
29	7.351	# 2 2 1 12 7	711
30	0900		- 111
31	0900	"(- Di
	·		- Acres

MONTH: JUNE YEAR: 94

DAY	mrace	The second libited which a record	
DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	1100	NONE	1211
2	1000	Mone	BA
3	0400	None	YS
4	1 50	Ναλε	7.S.
55	6700	WORL	TC.
6		06	
7	1000		
8	1000		W. T.
9	1500	378	7
10	1100	6K	ok (1)
11	1100	OK C	Rw
12	1100	04	1 W
1.3	1130	OK	1613
14	1300	OK	RB RB
15	1000	NONE	TRB
16	1100	NONE	Ish
, 17	:09:00	# 2 MANIFORN & BERTH # 1 005.	-C_
18	0900	4 ((18.
19	7890U	1, 4	(D)
20	1030	H 2 MANGEL & SAME	W.C.
21	1330	# 7 SAME = 2 DRID PARIS CULL REPLACED MARKINE DIMAN down	(Tic.
22	1030	# 2 SAME = 2 DRIP PANS FULL RepLACEN WALVE (AIRLINE) Punged down Value Replaced @ Bath 1 # 2 DSZ Solant Punpaithe	M (TiC.
23	1000	# 2 tola Line Nort Tacked not!	KOZ.
24	1200	SAME	
25	12-00	SAME	20
26	1200	sime concurr at birth long	no
27	0900	SAME GANGWAY REPAIRED	50
28	0960	5AME	120
29	2900	#2 DSL LINE PACKED	BIS
30	0900	#3, MLAC BI COS	68
31			

MONTH: MAY YEAR: 1994

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	0930	25	JC
2	CADO	DR	KM
3	1000	OK	Km
4	1100	DΚ	in
5	1100	7/5	15
6	0053	ok	-Jn1
7	0947	OK	Ale
8	1008	Swell	
9	0900	DK (DO NOT USE ARMS 2 8.3 @ BIRTH 1)	750
10	0900	# 3 005	
11	0900	#3 308.	
12	0900	#3 003 (
13	6900	# 1+3 Orayad To use Berth 1	92
14	0900		
15	0900	\mathcal{A}	\mathcal{B}
16	1300	/JK	1760
17	1 900	OK	ICM
18	1000	OK .	KM
19	1000	\sim \sim \sim \sim	RM
20	0900	ck	BD
21	1000	<u>ok</u>	30
22	0800	<u> </u>	as
23	1000	OK.	NEM
24	1000	OK	won_
25	1000	OK	
26	1000	PRU 0958 LEAKY	mar is
27	0930	Uskot Puna Blocked.	mar is
28	1030	OK '	27.2
29	0830	OK OK	222
30	1000	OK	BH
31	1000	OK.	BA

MONTH: FAR: 94

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	0%00	all O.K.	77
2	0000	ali O.V.	50
3	0400		-77
4	0800	OK .	BD
5	0830	OK .	(81)
6	0800	C)K,	(12)
7	0900	CK	30
88	0800	411 OK.	01
9	0730	A// bx	06
10	0700	All OK.	S. S
11	0900	WORK URDERED DRIP PAN FIRM'S DUS	
12	Crivo	SAME -1	
13	0700	SAME -	3
14	0900	S/MVE	3
15	1000	OVC - SANAPIRENTED DELLA PAN AT AJ FITHENTI	
) 16	0930	OK U U U H U OS ON	512
17	1030	OK (, , , , , , , , , , , , , , , , , ,	5.12
18	1000	OK 1 1 1	711
19	1000	ALOK (KRS,
20	1000	M 0 L //	72/0
21	1020	All DR Machinist Fixed sandpipols	7.65
22	1000	11 11	B.14.
23	0900	Allok	BA
24	0900	All ok	BH
25	1900	04	Howare
26	0000	of-	A ville
27	0900	05	Ruu
28	0900		156
29	5900	<u>on</u>	25
30	0900	OV.	ゴレ
31			

MONTH: MARCH YEAR: 94

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	0900	0/2	MIR
2	1000	OK.	WIN
3	1400	o K	141712
4	0900	0K	ω
5	0900	01C_	WITE CA
6	1000	· OK	1
7	,000	OK-	HS.
8	1000	Ŏĸ	8 14
9	1000	Ok (
10	1000	OK BAINST LINE 0.0.5."TAGGO OUT")	BH
11	0930	OK	77 (3.
12	0930	OK Crade have open (Trugged out)	7. C.
13	1000	OK J	75
14	0700	O'N CRUDE LINEOUS NO F.W.	ETS
15	0730	OK 4 4 4 4	822
16	0830	OK 11 11 N U 1	273
, 17	030	OK 11 11 11 11	273
18	1200	OK	/ Kave
19	1000	3K	YW Y
20			
21	2940		M
22	1011	T.K.	MI
23	0900	OK-	- Jan-
24	0957	<u>or</u>	- Spil
25			
26			
27			
28	0930	♂	₩ ₩
29	© 00° 10° 1		
30	しゅうかい		B
31	0930	<i>0</i> <	

DOCK AREA & SURROUNDING WATER'S INSPECTION FORM Daily Sign Off

MONTH: FEN YEAR: 94

DAY	TIME	Abnormalities Noted, If None So Indicate	
1	(t) and		Initial
2	1000	Sheen Notified Foreman	f. WU/
3	(000)	OF	Hy ii
4	0830	OK OK	EA CO.
5	1030	OK	<u> </u>
6	0830	02	555
7	1100	OR .	Km
8	1300	THE EAST A/T Filter VAINT Parking Marking Marking	
9	1300	DE EAST ALT FILTER VALVE PACKING LEUKING ONTO DOCK	KM
10	1370	OK	-yri
11	0905		- Mi
12	0500	GANGARIA FOR GA	7/2
13	08 OD	O.K.	Ju
14	130	Rust Elisa Water 12	3,
15	5900	OK	32
16			
17			
18	0830	oK ,	KM
19	1100	OK	Km
20	1000	ρK	KM
21	0800	OK .	02
22	0730	5K	02
23	0800	ひと	00
24	0700	OK .	1)2
25	0800	OK.	BD X
26	0400	OK	K
27	0830	OK_	
28			
29			
30			
31			

11:5

DOCK AREA & SURROUNDING WATER'S INSPECTION FORM Daily sign Off

MONTH: JAN. YEAR: 94

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1.	00 00	Drain Physiol a berth (THI CLAI
2	09,00	u	
3	1100	<i>j</i> ·	VB VB
4	G960	1) 11 ?	PR
5	O930	O/K	70
6	1000	δK	RB
7			
8			
9			
10	0900	οK	BD
11	C 830	11	<u>BD</u>
12	0900	V	BD
13	0900	Y	Bo
14	0745	OK .	AI.
15	2300	<i>0</i> ₹	25
16	0800	OK.	35
, 17	000	OK.	ريدا
18	0400	OF	
19	0800	OK	
20	10800	<i>bK</i>	1
21	1000	OK	MJR
22	1000	OK	MJR
23	1000	OK	MJR
24	0930	oK	なる
25	0930	o K	74.3
26	0930	OK.	775
27	1000	515	765
28	1000	OK	BA
29	1000	OK_	BO
30	1000	OK-	BA
31	1000	OM	dely

DOCK AREA & SURROUNDING WATER'S INSPECTION FORM Daily Sign Off

MONTH: Dec. YEAR: 93

DAY	TIME	Abnormalities Noted, If None So Indicate	
1	1 TMB	All CK	Initial
2	1830		
3	0900	OK DECEMBER AFORM OF DETER	BD
4	0380		120
5	0830		BD GB
6	1200	OK	PR
7	0945	ŎK -	PB PB
8	0930	OK-	23
9	(000)	DR.	123
10	0900	OK .	, (O)
11	7900	OL.	25
12	0900	OK.	(2)
13	0900	OK 1 POWER OUTAGE 0745-0915	15m
14	1100	BERTH 2 MANIFOLD IT I PRODUCT LEAKING THROUGH MANIFOLD VALUE & MOU	Km.
15	1000	l oK	KM
16	1100	οκ	KM
17	1030	OK	アら
18	1030	or	
19	1030	OK.	T.S
20	0845	OK.	EJS
21	0830	ÖK.	ETS
22	0910	OK	EJS
23	1030	CIK	トゴス
24	1030		1 61 6
25	1100		2 cum
26	1		
27	130_	OK .	RBoe
28	1230_	OK :	R.Boe
29	1315	OK.	R.Bor
30	1480	OK	R Bos
31	1500	of wet	0

DOCK AREA & SURROUNDING WATER'S INSPECTION FORM Daily Sign Off

MONTH: NOJ. YEAR: 93

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	1530	Newe	2.5
2	10 30	None	1
3	1000	None	121
4	1000	NOTE -	76-1
5	1000	Nove	BA
6	0900	Novie	8H
7	0900	NONE	BH BH
8	0900	Steam furned OFF/ROCKON	Level
9	1900	SPIL Boot #2 005.	LWW
10	0400	SPILL BOAT # 2 Back in service	LWW
11	09000	None	LWW
12	0830	None	555
13	1130	NONE PRV 1136 - Sys ? Relien (0730	522
14	1300	NONE	273
15	1000	NONE	Km
16	0930	BERTH I MAN. I, VALUE BLEED LEAKTING ON # 1 DSL LINE/TIGHTEN	TO STOP IT-1
17	1100	NONE,	15m
18	1000	NONE	15M
19	1027		AL
20	1046		
21	1436	rione,	7
22	0700	//	
23	0700	1	
24	0700		ļ
25	2700		
26	4700	1 (133
27	0700		233
28	07 00	4	1-23
29	TROS	All OK.	125
30	0900	All Diffe	Chh
31			

VIS

- Ch

DOCK AREA & SURROUNDING WATER'S INSPECTION FORM Daily Sign Off

MONTH: OCT. YEAR: 93

DAY	TIME	Abnormaliti	<u>es Noted,</u>	If Non	<u>e So Indi</u>	cate	Initial
1	10:00	OK					2WW
2	1000	0 K					LU.
3	1000	<u> </u>					<u> </u>
4	17.00	Ŏĸ.		····			KB2
5	1200	<u> </u>					$\rightarrow C$
6	1230	OK					
7	 	OK				·	J.B.
8	ijvo	C-1		· · · · · · · · · · · · · · · · · · ·			Sara
9	1000	SE					65
10	1100	<u> </u>		······································			
11	1000	OK	Except				S
12	1000	○ <	·^Cepy	\triangle		·	100
13	1000	<u> </u>		O Fa	St Symp	10 11 rs fi	92
14	1000	6.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		<u> </u>	Tikling !	
15	1-00	UK.					723
16	1100	OK		······			
17	1000	O.K					
18	120	01					90
19	0000	OK					(S)
20	0900	OK.					<u> উ</u> ঠ
21	0900	OK.					ড
22	0930	·K			VIII.		100
23	0700	ンベ					226
24	7.000	er/K					- 125
25	1000	OK	EAST MOST	AND WEST M	ST Sump Pum	15 CU3.	
26	0900	OK					6.00
27	0900	الم ت		*.			
28	2700	OK					
29	1000	OK_					Woo
30	17	OK					MSZ
31	1)	616					MON

DOCK AREA & SURROUNDING WATER'S INSPECTION FORM Daily Sign Off

MONTH: Sept. YEAR: 93

DAY	TIME	Abnormalities Noted, If None So Indicate	Initia
1	015	OK Hyl, 100 Leaking AT Flange (EAST of Office By TRAP	RA
2	930		RB RB
3	04 3/		5
4	1033	21	355
5	0800		
6	0800	11 11	0,2.
7	0745	41	122
8	7900	67 11 61 61	D.L.
9	09,	All et	06
10	0900	c) v	BD
11	0830	V 11	TED.
12	0900	IV H	
13	1000	1) 1'	KB .
14	1000), ,,	
15	1100	11 11 BERTH 1 MLA # 4 005	KB
) 16	1000	1, , , , , ,	RB
+ 17	1300	MLA #4 BIKTH #1 605	RB CS
18	0800	MLX AND MANUAL COUPLER DOS UNLESS WE CET O"LING	<u>40</u>
19	0300	BIFU GIFUG WIFT BIRITE C PUICES 0-17	B
20	1000	MUA #4 MANUAL COUPLET	
21	1000	1 1 1 1	·34
22			BH
23	0400	All 8F	BH
24	1200	1/ 1/	TKS
25			72-5
26	0900		725
27	2900	ALL OL (1600 Sheen from Pilings)	
28	0900		2
29	0900		5
30			
1 31			

DOCK AREA & SURROUNDING WATER'S INSPECTION FORM Daily Sign Off

MONTH: / YEAR: 73

	/		
DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	17820		115
2	0900	OKY DOKY	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
3	08:30	0K	and
4	0900	ô K-	
5	5940	ÓΚ	
6	1230	OK	mon
7	1100	ov.	MIR
8	1300	C1C	MOK
9	1100	0 K	75
10	1:30	M.C.	75
11	1100	o le	75
12	I O	1, .	, 7
13	1100	CALL OK	B.4.
14	1100	OK	BH
15	1000	0K	BH
16	1000	0 fc	Les 11.
.47	1000	0 K	1 to W
18	1000	₽ (\	LWW
19	3000	p HC	LWU
20	0930	OK-	્ ્ ્
21	0900	a) c	500
22	0730	OK - FRE MONITOR 100 TE PEARING OUT GOTTOM	5/10
23	1500	ALC BRAG	3
24	0800		
25	0950	11 11 - 1100 FIRE SYSTEM CK'L -OK	<u>'</u>
26	0940		Dan
27	0317	OK-1	SAM
28	0937	LOOKS good HYD # 100 is STILL LEAKING Bad OUT BOTTOM	spin
29	1104	LODKS LIKE Blown gasket / East of pig TRAP	~7h
30	1030	OK II II III III	PR
31	1100	OK 1. 41 1. 1.	RB

OCK AREA & SURROUNDING WI IR'S INSPECTION FORM Daily Sign Off

VL5 - OCK

TH: UULY YEAR: 1993

DAY	TIME	Abnormalities Noted, If None so Indicate	Initia
1	0700	014	728
2	1000	0/5	721,
3	1700	υ /C	711
4	0830	OK .	5740
5	1030	OK.	6
6	1030	OK	
7	0900	OK	EMZ
8	1130	02	5.00
9	1300	01	E 19
10	, , ,	11 Steph back on	Their ic
11	1000	013	18 Jan
12	200	GANGWAY STUCKUP IN the AIR O.K	R. Boe.
13	1100	BERTH 2 GANGWAY NOT WORKING, EVERYTHING else, O.K.	RRe
14	0945		RPPE
<u>15</u>	1030	OK	P. Bue
16		21 1/2/2011	100 L
<u> 17 </u>	082>	012 11 7	
18	5930	OK 11	Xx
19	0900	OX U Gargary Biz Back in Service	D ROPR
20	0900		-Ø3
	900	of Pumped wip pans else of	DB
22	0400		108
23	09.50	O C	1,75
$\frac{4}{5}$	0900	3 K	JA
26	0800		1612
	0930	ok .	あり
27 28	0800	<u>OK</u>	BD
	0300	9K	B
29	0930	ok	TS)
30	0730	CK	DO
31	0800	OK	DC.
1	0800		06

JCK AREA & SURROUNDING WAL R'S INSPECTION FORM Daily Sign Off

NTH: JUNE YEAR: 1993

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	ļ		
2	ļ		
3			
4			
5			
6			
7	0705-1900	PERIOTICEY CHECK DOLK MREA + FOURN NO PROBLEMS	ARK
8		SAME	2RB
9	V11	SAME	DRB
10	<u> </u>	//	ORB
11	<u> </u>	NOTIFIED THAT SHELL HAD A SMALL BYNKER SPILL	PRR.
12		Nelle	U DETS
13	1	(05
14	0930	none	1.2.
15	0800	None	2/2
16	W730	None	P. Z.
17	1283-	None	0.3.
18	0800	Nove	ET.
19	0830	None	RN
20	0300	NONE	<u> </u>
21	0700-1900		MTR
22		· · · · · · · · · · · · · · · · · · ·	Miss
23	~	V	MOC-
² 4	V	V	1-1-1-1-
<u>₹</u> 5	0900	#1 MLA MANUAL OPERATION #2 MLA OOS @ BIRTH 1	α
26	1300	# 1 MCA BACK IN NORMAL OPERATION #2 003 TILL INSPECTED.	رت
27	0900	V OK-	$\tilde{\omega}$
28	D900	# Z MLABELBEING WORKED ON / H Z MIN BETTH # 1 BAKEINSTOOD	34
29	0900	NONE /	84
30	1000	REPAIRING E. FINGER PIET CAPSTAN / COMPLETED (1530)	B. M.
31			

JCK AREA & SURROUNDING WAT 3'S INSPECTION FORM Daily Sign Off

TH: May YEAR: 53

<u>) </u>			
DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
11	0800		
2	0800		
3	1000	OK	P.B.
4	1030	FIRE WATER LINE BEING REPLACED SANDPIPER IN DRIP PAN BY BANGE EN	R.B.
5	1100	1) Outtail Value operate May, T	RB
66	1000		
7	1030	Pumpout shutdown One to oil in Line	12000
8	1000	Same as 5/4	Kiveir
9	0900	FIRE PROTECTION ON MANITORS OR HISES ON DECK (FIRE WATER LINE 005)	jii .
10	0900	1 (du k
11	0900	SAME	ii)
12	0900	SAME W/ OUTFALL VALVE OPERATIONS IN MITO	100
13	0900	SAME PUMPOUT PUIT OUT A SHEED COMET GHARD NOTIFIED	ins
14	1400	SAME	MJR
15	1000	SAME.	111512_
16	1100	SAME / OIL"CRUDE" IN PAIR PAN / PAN POPPING #1 ANTER LINE /	mre
17	1000	of 11 the was Papping - Pranhlen corrected	·
18	1100	ok "	74.5
19	1000	OK 1500 Small Sheen Const Gund Notitied	1725
20	1000	ak 1250 sheen on water outful	TK.S
21	,1100	CX FIRE WATER LINE DOS / MOSSES IN PLACE / PUMBUT 1/2 HOUR FOR RESAMPLE	B. H.
22	1100	OK II	ヌ. と・
23	1100	OK 11	B.H
4	0730	OK - Firewater Line 0.0.5. Temporary Fire Huser in place	D.L.
<u>5</u>	0930	OK. 1. L.	0.2.
26	1000	OK 11 le le	P. 2
27	0900	518 (c (c (c	1. h
28	0745	OK FW. line OOS -TEMPIN PLACE	1 8 3 1
29	0815	CK U A A II II II	8,14
30	0280	OK 11 11 11 11 11 11 11	81/13
31	1000	Y / " " C C C	
•			

OCK AREA & SURROUNDING WALR'S INSPECTION FORM Daily Sign Off

TH: APRIL YEAR: 1993

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
_1			
2			
3			
4			
_5			
6			
7			
8		4	
9	0930	looked good	70
10	1000	11 / 11	703
11	1000	(1)	74
12	0800	ALL OK - WEST TOWER (MONTOR) DOSN'T OPERATE	[E1X.
13	0730	OK 11 11 11 11 11	6,0
14	0830	ALC OK " " "	2 M
15	0800	BIC OK 11 (1 11 11 11	20
16 -	0830	All coal 11 11 11 11 11	1002
17	0830	"A" PK 11 11 11 11 11	
18			
19	0400	OK 11	Jun
20	0950	OK OUT FAIL PUKED OIL TO BAY (Cleaned up)	Lin
21	1000	OK 1)	
22	(000	2°	alex.
23	0900	o K	SIN SE
`4	0900	oK.	مرک کے
5	1/00	o K	Su io
26	1000	94	ex.
		~	63
28	0900 100 C	o x	1
29		01/	
30	0800	6/	8413
31			1 7 /3

JCK AREA & SURROUNDING WAT 1'S INSPECTION FORM Daily Sign Off

NTH: Feb. YEAR: 93

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
11		Water lank under profitive	u.i.
2	0900	Berth 2 Hrm 2 134Jan. 100K	louit.
3	0900	11 JUNGED LENK UNDER Pig trap	LR.
4	0930	\(\cdot\)	V
5	8900	SAME	m l
6	0900	SAME + DISKON NOT FUNCTIONING IN ANTO	20
7	0900	SAME	100
8	0900	SUMP PUMP REMOVED SEE LOW	124
9	09.00	SUMP PUMP SEE LOU	124
10	0900	SUMP PUMP SEE LOG	Jak.
11	5900		770
12	0800	11 11	71
13	0940	11 11 11 Ulsan Spirit put small shown out	718
14	2900		71
15	0900	SER LOG ASOUT SULVE OF REE	15/1
16	0930	11 14 to the second	5/10
17	0815	" (10 to to to to to	5 1/2
18	0910	10 (1 10 11 10 A 11	E.187
19	0900	11	02
20	0900	11	02
21	0800	//	02
22	0900		105
23	0615	()	iR
24	0700	<u>((</u>	B
<u>25</u>	1000		K/G3
26	1000	11 Pumped down ALL Drip Pans	KM.
27	1000	K (KAR
28	1000		KIM
29			
30			
31			

JCK AREA & SURROUNDING WAL R'S INSPECTION FORM Daily Sign Off

TH: JAN YEAR: 93

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
11	1000	LNONE	ISM
2	1000	NONE	Km
3	1000	NONE	Km
4	1000	NONE	LOB
5	1000	NONe	D3
6	1000	NONE	25 2
7	1000	NOONC	
8	1200		ブレ
9	1000		- Wi-
10	LITTO	N)002	13-
11	,,		- Committee
12			
13			
14			
15			
16			
17			
18			
19			
20			~~ <u> </u>
21			
22	1000	NONE	KR
23	0900	MLA 2 BERTH 2.	- W
4			
5	30000	the state of the same of the s	
26	0000		12/20
27	0900		124
28	200		Ž.
29	0900	N N N N N N N N N N N N N N N N N N N	3D
30	0900		TED T
31	0900	· · · · · · · · · · · · · · · · · · ·	BD

FOR detects 1/12 to 1/21 requested ops nake sure to fill out form. Dow to get F/c volve repaired 2/1-7.

NOTIFY PUMPER AND FOREMAN IF ANY ABNORMALITIES
RETURN TO RP&S OFFICE AT END OF MONTH

YEAR.

CK AREA & SURROUNDING WAT ..'S INSPECTION FORM Daily Sign Off

NTH: DEC. YEAR: 1992

DAY	TIME	Abnormalities Noted, If None So Indicate	Initial
1	0900	runder Leak	X Circ
2	5900	Whater leate	PACICI
3	8400		XV VI
4	0900	Now	
5	0900	"	12D
6	0900	"	30
7	0800	None	KC KC
8	0800	None	
9	0800	Non ie	LC LC
10	0900	Mone	LC.
11	0900	NONE	ŵ
12	2100	Nowe	Lucu
13	0900	Norie	hi
14	2100	Neve	Kuu
1.5	0900	NONE EXCEPT HYDROHCS ON MONITORS NOT FUNCTIONING	
16	1000	MONE HYDROLICS REPAIRED	B. HOPF
17))00	NONE	B. HOFF
18	0900	NONE	B. HOFF
20	1030	Non C	T Squibb
21	0930	None	TSkubb
22	0900	None NON 2	7 1/2 /2/
23	1200	NONE	1
34	0730	None	2
25	1230	None.	EAR
	1000	none	12/10/
20126	0900	n week	Differe Go
2724 7827			D. Jun Li
29 28	0901	1. P. M. M. M.	K/A
	0800	NONE	13
3130			 '\\'

Appendix B

3.6.0 Install motor operators (which have remote manual controls located in Blending Plant) on block valves at crude booster pumps.

Status: Closed, MOV's were installed and completed prior to December 31, 1993. Enclosed in Volume II are the BM's (Bill of Materials) for each of these projects. BM 4980 issued for Crude Booster Pump (MOV installation) and BM 5059 issued for Crude Booster Pump (MOV Control Installation). Photographs are provided exhibiting the installation of these items.







Appendix B

3.7.0 Complete study of continuous leak detection systems for dock transfer lines.

Status: Closed, This study was completed on December 2, 1991 and was represented as such in the consent decree as written. A copy of the study has been provided in this section.

TEXACO REFINING AND MARKETING INC. PUGET SOUND PLANT

INVESTIGATION OF CONTINUOUS LEAK DETECTION SYSTEMS FOR DOCK TRANSFER LINES

TEXACO REFINING AND MARKETING INC. PUGET SOUND PLANT

INVESTIGATION OF CONTINUOUS LEAK DETECTION SYSTEMS FOR DOCK TRANSFER LINES

Section	<u>on</u>	<u>Pac</u>	e
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	2.1	Hydrocarbon Sensing Cables	2
		2.1.2 Advantages, Disadvantages, and Cost	2 3 4 5
	2.2	Volume Balance, Mass Balance, and RTTM Systems	6
		2.2.2 Advantages, Disadvantages, and Cost 2.2.3 Flowmeter Options Available 2.2.4 Specific Vendor Products 1	6 7 9 0 4
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		2.3.2 Advantages, Disadvantages, and Cost	4 6 7 8
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		2.4.1 Description of Technology	1

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	2.5	Statistical Analysis of Static Pressure Signals	23
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	4.3	Optional Features for Additional Protection	32
	4.4	Budgetary Estimate of Cost for Leak Detection System	33
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APF	PENDIX		-
	*	Sketch Sk11-15-91, Overview of Dock Lines	·,
	*	Table 1, Summary of Advantages and Disadvantages of Detection Systems	Leak
	*	Dwg 21-EF-38, Pipeline Details	
	*	Typical Implementation Schedule	

1.0 GENERAL

1.1 Introduction

The purpose of this report is to discuss the feasibility of installing continuous leak detection systems on Puget Sound Plant's transfer lines which run between the dock and tankage. The report identifies various commercially available leak detection technologies and systems. It explores the advantages, disadvantages, and applicability of each. It provides some figures which indicate relative costs for the various systems. It should be noted that any costs appearing in this report are approximate and are strictly for budgetary and screening purposes (-30 to +50%).

The report provides customer survey information detailing what leak detection systems others have used, and what their experiences have been.

In conjunction with leak detection, the report also discusses the feasibility of automated shutoff of the transfer lines or segments of the lines in the event of a leak.

1.2 <u>Description of Dock Transfer Lines to be Protected</u>

There are twelve transfer lines that carry crude or finished product to or from the dock area. These include one 30" crude line, a 12" crude flush line, a 16" ballast line, and nine finished product lines varying in size from 8" to 14".

Refer to sketch SK11-15-91 in the Appendix for an overview of the layout of the dock lines in relation to the plant and surrounding area.

The crude line runs southeast from the dock to any one of six crude product tanks, the farthest of which is 3.3 miles away. The crude line runs 1.5 miles south from the dock, then underground for seven tenths of a mile along the east side of West March Point Road. The line goes above ground again just south of North Texas Road, where it is piped to a crude booster pump and it's spare. The two pumps are in parallel, but do not normally run at the same time. From the crude booster pump, the crude line runs south for a quarter of a mile, then east up the hill to the crude storage tanks. The crude tank elevation is approximately 150 feet higher than the elevation at the dock.

The crude line experiences pressure swings during certain stages of crude unloading. Generally this occurs when the ship's pumps lose suction while pumping out the bottom of a cargo hold (a process referred to as stripping). As will be discussed later, these pressure swings can present problems for some types of leak detection systems.

Existing instrumentation on the crude line consists of a pressure gauge and circular chart recorder monitoring the line pressure at the dock. Also there is a retractable type turbine flow meter which is used to operate the automatic sampler. A paddle type flow switch is used to operate the flow indicator lights at the dock. A white light indicates normal forward flow. A red light and an audible alarm indicate abnormal reverse flow. On the suction side of each crude booster pump there is a pressure switch and pressure gauge. The pressure switch shuts the pump down if the suction pressure drops below 8 psig.

The finished product lines originate at the shipping pumps west of the RP&S control room. They travel west, then north until they reach the crude booster pump area. From there, they follow the same route as the crude line. All of the lines are underground going under North Texas Road and the railroad tracks. After coming under the railroad tracks the bunker and crude flushing lines come above ground. Total length of the finished product lines is approximately 2.75 miles. The elevation of the shipping pumps is about 100 feet higher than the dock elevation.

Existing Instrumentation on the finished product lines consist only of pressure gauges on the shipping pump discharges.

2.0 <u>LEAK DETECTION TECHNOLOGY</u>

2.1 <u>Hydrocarbon Sensing Cables</u>

2.1.1 Description of Technology

While the specific operating method varies somewhat from product to product, hydrocarbon sensing cables generally operate on the principle that absorption of hydrocarbon by the cable causes a change in its electrical properties. Monitoring devices placed at intervals along the pipeline are able to detect the change in properties and generate an alarm. The electronic

monitoring portion of the system is able to notify personnel of the alarm and provide information as to the location of the leak.

2.1.2 Advantages, Disadvantages, and Cost

General advantages of the hydrocarbon sensing cable technology are as follows:

- (1.) It is capable of detecting small leaks, including pinhole leaks.
- (2.) It is capable of locating leaks accurately.
- (3.) It is independent of pipeline operations and is not affected by hydraulic disturbances caused by pumps and valves. Therefore, false alarms are minimized.
- (4.) It is not limited to a single opportunity to detect a leak, i.e. it is not trying to detect a single momentary event.

Disadvantages of hydrocarbon sensing cable technology are:

- (1.) The cable is relatively expensive.
- (2.) The time to detect leaks is relatively slow compared to other technologies. Generally, the heavier the product, the slower the response.
- (3.) After a leak occurs, the hydrocarbon soaked section of the cable must be replaced.
- (4.) Some types of cables do not work with some heavier crudes and products.
- (5.) The technology is more suitable for new installations than for retrofit on underground lines, since the entire pipeline would have to be excavated.
- (6.) It is not applicable for above ground pipelines unless a means of collecting the leaking hydrocarbon is installed.
- (7.) Hydrocarbon in the soil, water table, or from adjacent pipelines could come in contact with the cable, resulting in false alarms.

(8.) There is typically a depth limitation for cables installed on underground pipelines due to interference from ground water pressure.

Hydrocarbon sensing cables are expensive, ranging in cost from \$5 to \$12 per foot for the cable itself. The electronic hardware to monitor the cable costs between \$10,000 and \$20,000 for each 1500 feet of cable installed. There are significant installation costs associated with the cables if they are retrofitted to existing underground lines. Costs would also be significant for some sort of collection system if the cables were applied to aboveground lines or lines above the water.

2.1.3 Specific Vendor Hardware

The following is a discussion of some of the commercially available leak detection systems which use the hydrocarbon sensing cable technology.

(1.) Product Name: Tracetek 500

Technology: Hydrocarbon Sensing Cable - Resistance

Vendor:

Raychem Corporation 300 Constitution Drive Menlo Park, Ca 94025-1164

(800) 443-9692

Description: Tracetek is a four wire sensing cable which can detect and locate leaks. The core of the cable is constructed of two sensor wires, an alarm signal wire, and a continuity wire. The core is encased in a conductive fluoropolymer braid. Contact with hydrocarbon causes the polymer to swell inward, making contact with the sensor wire and creating a new electrical path. The resistance of the new path is different than the resistance of the original path. The difference in resistance is detected and used to declare that a leak exists. Response time varies from 15 to 60 minutes depending on the hydrocarbon. Only 2-3 linear inches of the cable must be covered with hydrocarbon in order to be detected.

The Tracetek cable must be used with an alarm module every 1500 feet. A multiple channel alarm module can monitor up to 12 sensing cables.

(2.) Product Name: Gore-Tex HC Detecting Cable with Leaklearn Detection System and Palcom Software

Technology: Hydrocarbon Sensing Cable - Capacitance

Vendor:

W. L. Gore & Associates, Inc 4747 East Beautiful Lane

P.O. Box 50699

Phoenix, Arizona 85076-0699

<u>Description</u>: Gore-tex cable has a polytetrafluoroethylene insulation which absorbs hydrocarbons but is impervious to water. Absorption of hydrocarbon by the insulation significantly alters the cable's capacitance, impedance, and propagation velocity. Approximately 15 feet of cable must be wetted in order for a leak to be detected.

A Leaklearn monitor must be connected to the cable every 8000 feet to provide leak detection and determination of the leak location. Multiple Leaklearn monitors can be connected to a computer (PC) using twisted pairs or modems. Palcom is a software package that is used to centrally monitor the Leaklearn systems and provide information to the operator.

2.1.4 Survey of Customers

(1.) <u>User</u>: Sundstrand Aerospace, Rockford, Illinois

Technology: Hydrocarbon sensing cable

System: Tracetek 500, Raychem

Application: 600 ft underground avjet line (double

walled pipe)

Installed: June, 1990.

Comments: In the space between the inner and outer pipe two Raychem cables were installed. One was for sensing hydrocarbon, and one was for sensing water. The hydrocarbon sensing cable was to detect a leak in the inner line and the water cable was to detect a leak in the outer line. In June of 1991 the hydrocarbon sensing cable detected a leak in the inner line. The line was excavated and a leak discovered at the location indicated by the cable.

2.2 Volume Balance, Mass Balance, and RTTM Systems

2.2.1 Description of Technology

Volume or mass balance leak detection systems are based on the fact that what flows into the pipeline should equal what flows out. This involves installing flow meters at both ends of the pipeline or at both ends of each segment to be protected. The leak detection performance of these systems is directly proportional to the reproducibility of the flowmeters used. Most vendors recommend custody transfer quality meters, but less reproducible meters can be used if degraded performance is acceptable. In order to provide correction to the flow for varying physical characteristics, linepack correction, and to determine leak location, additional pressure and temperature data must be obtained at locations along the length of the pipeline.

Most volume or mass balance systems are used in conjunction with a SCADA (Supervisory Control and Data Acquisition) system. The SCADA system brings the signals from the field instruments into the control room, and computes the volume or mass balance at predetermined intervals or cycles. An alarm limit is set which takes into account the normal amount of imbalance in the pipeline due to instrument inaccuracies, signal noise, etc. When the measured imbalance exceeds the alarm limit, a leak alarm is generated. Some systems use separate time periods of differing length in order to detect different size leaks. That is, shorter time periods are used to detect large leaks, and longer time periods are used to detect smaller leaks.

Another category of leak detection systems which are based largely on computer software and SCADA systems are the RTTM (Real Time Transient Model) systems. RTTM systems model or simulate the hydraulics of the pipeline under both static and dynamic conditions. The model takes into account the product properties and pipeline characteristics. The SCADA system is used to collect flow, temperature, and pressure data at each end of the pipeline, and pressure and sometimes temperature data along the length of the pipeline at certain points. The RTTM calculates the pressure profile of the flow based on the available data. When the data collected by the SCADA system deviates from the expected pressure profile, an alarm is generated along with a probability or confidence level that a leak actually exists. As with volume balance or mass balance systems, the leak detection performance of a RTTM system is very dependent on the reproducibility of the field instruments used.

A number of the commercially available leak detection systems combine RTTM with either volume balance or mass balance for added capability and reliability.

2.2.2 Advantages, Disadvantages, and Cost

Advantages of leak detection systems using volume balance, mass balance, or RTTM technology, or a combination of those technologies, are as follows:

- (1.) The systems are not limited to a single momentary event in order to detect a leak, i.e. there is more than one opportunity to detect a leak.
- (2.) The technology applies equally well to pipelines which are aboveground, underground, or underwater.
- (3.) Multiple pipelines can be monitored simultaneously by most of the software based systems.
- (4.) The systems can calculate the size of the leak and the leak location.
- (5.) The systems are capable of detecting small leaks if the appropriate flowmeters and detection cycles are used.

- (6.) For RTTM/SCADA systems, more data, more advanced software, and a combination approach to leak detection tends to minimize false alarms.
- (7.) Most of the SCADA or RTTM based systems have additional management information features which are useful in operation of the pipeline.

Disadvantages of the volume/mass balance and RTTM technologies are:

- (1.) Flow meters are required at each end of the pipeline or at each end of the pipeline segment to be protected. Custody transfer meters are recommended. These meters are generally very expensive and require periodic proving.
- (2.) Pressure and sometimes temperature readings are required at each end of the pipeline and at certain intervals along the pipeline.
- (3.) Leak detection performance is very dependant upon the reproducibility of the field instruments, especially the flowmeters.
- (4.) RTTM systems involve relatively high engineering, software, and commissioning costs.
- (5.) RTTM systems usually require a high level of technical support to operate.
- (6.) "Inferred" leak detection systems like volume balance, mass balance, or RTTM systems are subject to more false alarms from hydraulic disturbances than direct detection systems like gas detection.

Costs for these systems are relatively high. The software alone varies between \$80,000 and \$250,000. Also, there is usually a setup or installation charge associated with the software. All of these systems require extensive instrumentation to support them. The minimum would be a flowmeter at each end of the line. Depending on line size and type of flowmeter, the costs for the meter could range from \$8,000 to \$30,000. The cost of installing the meter could range from \$5,000 to \$30,000.

Since the systems are instrument intensive and require a high level of technical support, the cost to operate and maintain the system once it's installed would be higher than for other type systems.

2.2.3 Flowmeter Options Available

The most common type of flowmeter used with the volume balance, mass balance, or RTTM systems are the positive displacement meters and the ultrasonic flowmeters as described below.

Positive displacement meters are the most common type of custody transfer meter. Their principle of operation is that they transfer known volumes from the inlet to the outlet and count the number of transfers. They are mechanical meters in that one or more moving parts are located in the flow stream. Energy to drive these parts is extracted from the flow stream and shows up as pressure loss between the inlet and outlet of the meter. Some of the types of positive displacement flowmeters available are nutating disk, oscillating piston, reciprocating piston, and rotating lobe.

Advantages: The meters are characterized by high accuracy (+/-0.5% of flow), good repeatability (+/-0.1% of flow), and good rangeability (15 to 1). Their performance is unaffected by upstream or downstream piping configuration.

<u>Disadvantages</u>: They have very fine mechanical tolerances, therefore the metered fluid must be kept free of suspended solids. They are expensive in large line sizes and are not available above twelve inches. To meter lines above twelve inches may require use of parallel meters. Head loss is large. They can be damaged by overspeeding.

Ultrasonic flowmeters are of two different types. These are transit time flowmeters and doppler flowmeters. Transit time flowmeters, as the name implies, measure flow by measuring the time taken for ultrasonic energy to transverse a pipe section, both with and against the flow of the liquid within the pipe.

Advantages: Some manufacturers supply transducer assemblies capable of being mounted outside of an existing pipe, however the pipe material must be capable of conducting ultrasonic energy. Transit time flowmeters cause low head loss and have a high turndown of 10 to 1.

<u>Disadvantages</u>: Straight runs of piping are required both upstream and downstream of the meter. The flowing stream must contain less than 0.5% of entrained air or solids. Accuracy is typically 3% of span and repeatability is 1%.

For Doppler flowmeters, an ultrasonic wave is projected at an angle through the pipe wall into the liquid by a transmitting crystal in a transducer mounted outside the pipe. Part of the energy is reflected by bubbles or particles in the liquid, and is returned through the pipe wall to a receiving crystal. Since the reflections are travelling at the fluid velocity, the frequency of the reflected wave is shifted according to the Doppler principle.

Advantages: Most models are capable of being mounted outside of an existing pipe as long as the pipe material is capable of conducting ultrasonic energy. Some models can measure flow in either direction, but they only measure flow magnitude, not direction. Head loss is low.

<u>Disadvantages</u>: Straight runs of piping are required both upstream and downstream of the meters. The flow stream must contain a minimum amount of solids or bubbles. Accuracy is typically 5% of span and repeatability is 2%. Reliability is poor. Turndown is only about 4 to 1.

2.2.4 Specific Vendor Products

The following commercially available leak detection systems use volume balance, mass balance, RTTM, or some combination of those technologies:

(1.) Product Name: Leakwarn

Technology: Mass balance

Vendor:

Novacorp International Consulting Inc.

Pipeline Software Group

P.O. Box 2535, Postal Station M Calgary, Alberta, Canada T2P2N6

(403) 261-5200

<u>Description</u>: Leakwarn is a SCADA controlled multi-level mass balance leak detection system that computes mass balances in each pipeline sector every SCADA cycle and accumulates them over different time windows. The time windows range in length in order to detect leaks of varying size. Novacorp recommends using custody transfer quality flowmeters for optimum performance, however less reproducible flowmeters will work.

One Leakwarn software package can monitor up to 500 miles of pipeline simultaneously. If desired, this can be broken down into many individual pipeline segments.

Leakwarn requires pressure and flow data for each end of the pipeline segment and pressure data along the pipeline at certain intervals. A SCADA system is required to bring the signals back to the control room. A PC is generally adequate to run the Leakwarn software.

(2.) Product Name: Leakstop

Technology: RTTM with mass balance

<u>Vendor</u>: Novacorp International Consulting Inc.

same address as previously listed

<u>Description</u>: Leakstop is a SCADA controlled system which continuously executes a RTTM. Its leak detection algorithm is based on conservation of mass principles. Leakstop requires flow, pressure, and temperature data for each end of the pipeline segment, and pressure and temperature data along the pipeline at certain intervals. A SCADA system is required to gather signals from the field and bring them to the control room. The Leakstop software is run on a computer system whose size depends on the complexity of the pipeline modeled.

(3.) Product Name: Leakfinder

Technology: RTTM

Vendor: Stoner A

Stoner Associates Inc./Drem Inc. 5177 Richmond Avenue, #1075

Houston, Tx 77056-6736

(713) 626-9568

<u>Description</u>: Leakfinder is a RTTM based system which simulates the hydraulics of a pipeline network under static and dynamic conditions by calculating pressure profile of the flow based on available data. Leakfinder requires flow, temperature, and pressure data at each end of the pipeline, and pressure along the length of the pipeline at certain intervals. The Vendor requires a leak sensitivity to be performed for each pipeline before startup in order to determine the performance level of the system.

A SCADA system is used to bring the signals from the field to the control room. Also required is a computer with enough capacity to run the Leakfinder software.

The Vendor claims that Leakfinder can detect leaks of 5-10% of flow in 2-3 SCADA cycles. The leak location is estimated within a few minutes.

(4.) Product Name: Pipeline Monitor

Vendor:

Technology: RTTM with volume balance

Scientific Software-Intercomp Inc. 10333 Richmond Ave, Suite 1000

Houston, Texas 77042-4122

(800) 847-5791

<u>Description</u>: Pipeline Monitor uses a combination approach to leak detection. It uses a RTTM to detect discrepancies between the model and real time data. It also uses volume balance with two separate time periods in order to detect both small and large leaks.

Pipeline Monitor requires flow, pressure, and temperature data for each end of the pipeline segment, and pressure and temperature data along the pipeline at certain intervals. Other requirements are a SCADA system to bring in the data, and a computer system with enough capacity to handle Pipeline Monitor software. A 386 PC will usually suffice.

(5.) Product Name: Pipeline Leak Detection System (PLDS)

Technology: RTTM with volume balance

Vendor: Advanced Pipeline Technologies Inc.

11931 Wickchester Lane, Suite 401

Houston, Texas 77043

(713) 493-3666

Description: PLDS uses a RTTM as the heart of its system. The transient model uses a proprietary finite difference approach to solve the partial differential equations governing the pipeline flow. PLDS includes a data base consisting of the physical properties of the pipeline, parameters describing the fluid in the pipeline, real time data, and parameters which affect execution of the system, such as threshold levels, execution intervals, etc. PLDS also includes a tuning algorithm which takes into account known error sources in the instrumentation and pipeline operation.

Volume balance is performed on individual sections of the pipeline. Any number of volume balance sections may be defined, with a separate threshold limit set for each section. This feature allows the user to divide the pipeline into meaningful sections, and provide varying degrees of resolution depending on the particular pipeline conditions. A SCADA system brings the data back to the control room, where PLDS computes the pressure, temperature, and flow profiles of the pipeline. The system computes volume balances each SCADA cycle. When the volume imbalance exceeds the set threshhold, a leak alarm is generated.

Flow, pressure, and temperature data are required at

each end of the pipeline, and pressure and temperature data are required at both sides of devices like pumps or valves.

2.2.5 Survey of Customers

(1.) <u>User</u>: Agitgo Pipe Line, Tulsa, Oklahoma

<u>Technology</u>: Real time transient modeling with volume balance

System: Pipeline monitor, Scientific-Software Inc.

Application: 60 mile crude pipeline with volume balance

Installed: July 1988

<u>Comments</u>: With the line in steady state and the deviation limit set at 3%, very few spurious alarms occur. Smith positive displacement flow meters are used.

2.3 Gas Detection Systems

2.3.1 Description of Technology

One commercially available gas detection system, designed primarily to detect leaks in underground pipelines, is based on the principle of diffusion. The key component is a semipermeable sensor tube characterized by a high permeability for gas, but which is impervious to water. The tube is placed along the length of the pipeline or the area to be monitored. A dryer at the beginning of the tube insures that the tube is filled with clean dry air. The air in the tube is pumped at a controlled rate past a sensitive combustible gas detector which is located at the end of the tube. The sample is pumped either continuously or on some fixed cycle. A SCADA system is used to bring signals from the detectors to the control room and the operator interface, which is a personal computer. When the signals deviate from preset limits, or with respect to historical standard sample signals, a leak alarm is generated.

The system can be set up for two different modes. Detection of small or low level leaks requires a long diffusion time. This

is accomplished by letting the sensor tube sit idle with no air flow for some user defined length of time, say 12 hours. At the end of this time, the vapor contents of the entire length of sensor tube are moved past the detector. As each analog sample is received, it is compared to a historical standard sample that defines the characteristics of the sample vapor over that length of the tube. If the new sample deviates from the historical sample by more than a user defined amount, a leak alarm is generated. Since the air velocity is controlled and the length of the sensor tube is known, the location of the leak can be determined.

To detect larger leaks the system operates in the high level mode. Here the sample is pumped continuously past the gas detectors. Signals are averaged for a user defined time period and compared to data from a previous time period average. If there is a deviation which exceeds the alarm limit, and this happens a number of consecutive time periods, a leak alarm is generated. Since the air flow is continuous, the location of the leak cannot be determined.

In order to get the benefits of both modes, two sensor tubes can be used, with a means of switching first one sensor tube into the low level mode, and then the other.

Additional components of the system would be a test point where marker gas or test gas could be injected, and additional instrumentation which would indicate malfunction of the system. An example would be flow switches to indicate damage to the sample tube.

For above ground pipelines, it might be feasible to use a different but related technology. Combustible gas detectors could be used on a spot basis to detect leaks. The detectors would have to be strategically located to insure they would sense any gases or vapors coming off a liquid leak. Wind direction would have a definite effect on the ability of the sensors to detect a leak. The nature of the products in the line would also have to be taken into account as certain heavy crudes in cold weather may not generate enough vapors to be detected.

2.3.2 Advantages, Disadvantages, and Cost

Advantages of leak detection systems using gas detector technology are as follows:

- (1.) Gas detection is a more "direct" indication of a leak. That is, the leak itself is being detected, and not some condition caused by the leak such as pressure loss or volume imbalance.
- (2.) Gas detectors are not limited to a single opportunity to detect a leak or leak event.
- (3.) Gas detection is independent of pipeline operations and is not affected by hydraulic disturbances caused by pumps and valves. Therefore these types of false alarms are eliminated.
- (4.) Gas detectors with sensor tubes are capable of detecting small leaks, including pinhole leaks.

Disadvantages of this technology are as follows:

- (1.) Sensor tubes with gas detector technology is relatively expensive.
- (2.) The sensor tube type systems are better suited for new installations to avoid having to excavate. However, even on retrofit installations, it is not necessary to excavate to the depth of the pipeline.
- (3.) Leak detection for the sensor tube type systems is relatively slow, especially in the low level mode.
- (4.) Installation of the sensor tube is difficult as the tube is fragile and easily damaged during installation. The sensor tube is also difficult to splice.
- (5.) The sensor tube can be damaged by rodents if additional protection is not provided, such as stainless steel braiding or installing within a perforated pipe.
- (6.) For a sensor tube type system, after a leak occurs the contaminated soil must be replaced to avoid a high

residual signal that would affect leak detection sensitivity.

- (7.) Sensor tube type systems are not applicable to above ground pipelines.
- (8.) Above ground gas detectors may not be suitable for detecting vapors from leaks of heavier hydrocarbons during inclement weather.
- (9.) Above ground gas detectors would be affected by wind speed and direction and would have to be installed close together to be effective.

Costs associated with a diffusion tube/gas detector type system include about \$3 per foot for the sample tube, \$20,000 for the vacuum pump and gas detector, \$5,000 for the filter/dryer, and about \$5,000 for the personal computer. The number of detectors, pumps, and filters is dependant on the response time required. As with the hydrocarbon sensing cables, there are high installation costs associated with retrofitting these sample tubes to underground lines.

Standard gas detectors for monitoring aboveground lines range in cost from \$1,000 to \$2,500 depending on the manufacturer, model, and output required. Electronic hardware to monitor each input would cost about \$150 per input. To protect an aboveground pipeline solely with gas detectors would cost in the neighborhood of \$200,000 per mile of pipeline.

2.3.3 Specific Vendor Products

The following leak detection system uses gas detection technology as it's basis:

(1.) <u>Product Name</u>: Leakage Alarm System for Pollutants (LASP)

Technology: Diffusion tube/gas detector

Vendor:

Teledyne Geotech 3401 Shiloh Road P.O. Box 469007

Garland, Tx 75046-9007

(214) 271-2561

Description: A typical LASP system consists of a patented sensor tube (permanently installed near the leak source), a pump/detector unit and a filter/dryer unit installed at opposite ends of the tube, and a PC control unit linked to the pump detector unit. The filter/dryer unit, which is installed above ground at the end of the sensor tube consists of a carbon filter, silica gel dryer, and a means to generate a gas peak which is used to mark the end of the tube and monitor tube integrity at the start of each cycle. The pump/detector unit houses a vacuum pump, gas detectors, flow controllers, relays, power supplies, and communication devices to interface to the computer. The vacuum pump pulls the air column in the sensor tube past the detector at a controlled rate. If the voltage output of the detectors exceeds the threshold or set point voltage, the system alarms that a leak has occurred and pinpoints its location.

2.3.4 Survey of Customers

(1.) <u>User</u>: Chevron Pipeline Co. Point Arguello, California

Technology: Gas detection systems

System: Leak alarm system for pollutants (L.A.S.P.)

Vendor: Teledyne Geotech

Application: Ten mile underground segment of a

seventeen mile long crude oil pipeline

Installed: October, 1989

Comments: Chevron installed a total of twenty

independent systems to protect the ten mile section of pipe. The twenty systems were required in order to meet the thirty

minute response time specified by Chevron. Two tubes were installed along each section of pipe. One tube was continually monitored, and the other was used for leak location in the event of a leak being detected. Recently the system detected and located a diesel spill on top of the line. The diesel came from a tractor.

2.4 Wave Detection Systems

2.4.1 Description of Technology

A number of leak detection systems attempt to establish the presence of a leak by detecting waves generated by the leak.

When a hole forms in a pipeline, fluid escaping in the form of a high velocity jet produces a sudden pressure drop in the line at the leak site. This localized pressure drop creates a negative pressure "wave" that travels away from the leak in both directions. The wave travels at the speed of sound and shows little acoustic absorption or attenuation. The amplitude of the pressure wave is related to the size of the leak. Some leak detection systems use a series of pressure transducers along the length of the pipeline to detect this wave. The transducers are linked to a computer based system.

A leak alarm is generated only if the pressure wave is detected at more than one location. The location of the leak is determined by the difference in time it takes to arrive at the two locations. Also, comparing the amplitude of the signal at two different locations provides independent confirmation of the size of the leak.

Another wave detection type system attempts to detect mechanical waves rather than a negative pressure wave. At the site of a leak, mechanical waves are continuously generated due to the turbulence of the escaping fluid. These waves travel through the pipeline in both directions. Piezoelectric transducers are used to detect the waves and send out an electric signal. The sensors are attached to the outer surface of the pipeline with either adhesive or clamps, and are enclosed

in a protective magnetic housing. The signal from the sensor is brought back to a computer using coaxial cable.

A leak alarm is generated when the signal level exceeds a base limit or alarm limit. The alarm limit is determined based upon the normal process noise that exists in the pipeline. The system minimizes false alarms due to hydraulic disturbances from pumps and valves by requiring the signal level to stay above the alarm level for longer than it usually takes for these hydraulic disturbances to disappear.

The sensors must be spaced along the pipeline close enough together to insure wave signals do not attenuate excessively. This typically can vary from 100 to 500 feet depending on the pressure at which the pipeline operates. Higher pressure will cause more turbulence around the leak site, resulting in a stronger mechanical wave.

2.4.2 Advantages, Disadvantages, and Cost

Advantages of wave detection systems are as follows:

- (1.) Response time for pressure wave detection is very fast, limited only by the speed of sound in the fluid.
- (2.) Pressure wave detection systems are able to detect leak size and location.
- (3.) Pressure wave systems do not require extensive instrumentation.
- (4.) Pressure wave and mechanical wave systems require a low to medium level of technical expertise in order to operate.
- (5.) Mechanical wave detection systems are not limited to a single opportunity to detect a leak.
- (6.) Mechanical wave based systems do not require expensive flow, temperature, and pressure data.

Disadvantages of wave detection systems are as follows:

- (1.) The pressure wave system has a single opportunity to detect the leak. If it misses the initial pressure wave, then the leak cannot be detected unless a further change in the leak rate produces a second pressure wave.
- (2.) Pressure wave systems can produce false alarms due to disturbances from abnormal pipeline operations.
- (3.) Mechanical wave type systems require expensive coaxial cable to bring back signals from the processor.

For the systems described in Section 2.4.3, typical costs are as follows: Pressure transducers with preamplifiers cost about \$5,000 each. Depending on the system configuration chosen, each protected segment of line might require up to four transducers. The cost of the electronic hardware is also dependant on system configuration and can vary between \$100,000 to \$200,000 per protected segment of line. A host computer is required at a cost of about \$20,000. One host computer can protect up to four segments of line.

A system using piezoelectric transducers to detect mechanical waves, complete with software sufficient to protect three miles of pipeline would cost about \$40,000.

2.4.3 Specific Vendor Products

The following are commercially available leak detection systems using some form of wave detection technology:

(1.) Product Name: Wavealert

Technology: Acoustic wave detection

Vendor: Acoustic Systems Incorporated

P.O. Box 40039

5615 Northwest Central Drive

Building C, Suite 107 Houston, Texas 77092

(713) 690-0341

<u>Description</u>: The Wavealert Leak Detection System consists of diaphragm/strain gage pressure transducers with preamplifiers, leak processor assemblies, communication links, and a host computer. The Wavealert system detects the acoustic or negative pressure wave generated when a leak forms. The leak processors monitor changes in pressure signals and provide processed information to the host computer via a two-way communication link.

Operational noise in the pipeline due to pumps, valves, or other sources are filtered using dual transducers in directional arrays.

Leak location is determined by the difference, in the arrival of acoustic signals at two or more monitors at different locations.

(2.) Product Name: Leak Tek

Technology: Acoustic emissions

Vendor: Physical Acoustics Corporation

P.O. Box 3135

Princeton, N.J. 08543-3135

(609) 896-2255

<u>Description</u>: Leak Tek uses piezoelectric transducers to detect the mechanical waves generated by the turbulence of fluid escaping at a leak site. A standard Leak Tek system can handle up to 32 sensors. Distance between sensors varies from 100 to 500 feet, therefore a standard system can protect about 3 miles of pipeline. The systems can, however, be customized to handle more than 32 sensors, and can therefore protect more than 3 miles of pipeline with modifications.

Sensors are attached to the pipe surface using clamps or adhesives, and are protected by a magnetically attached housing.

Signals from the sensors are brought back to the host computer via coaxial cable.

2.4.4 Survey of Customers

(1.) <u>User</u>: Monsanto Chemical Company, Texas

Technology: Pressure wave detection system

System: Wavealert, Acoustic Systems Inc.

Application: 23 mile, four inch, liquid ammonia pipeline

Installed: March, 1990

Comments: When tested it provided very accurate

determination of the leak location. A lot of problems have been experienced with their radio telemetry equipment which was

provided by Motorola.

(2.) <u>User</u>: TVA, Knoxville, Tennessee

Technology: Pressure wave detection

System: Leak Tek, Physical Acoustics Corporation

Application: Safety valves in a nuclear reactor

Installed: Currently being tested

Comments: So far, the performance of the system has

been good. It has proven that it can detect very small seat leaks in safety and

gate valves.

2.5 <u>Statistical Analysis of Static Pressure Signals</u>

2.5.1 Description of Technology

Statistical analysis of static pressure signals is based on the realization that the statistical properties of a series of pressure or velocity measurements taken on a pipeline before and after

a leak occurs are different. Leak detection systems based on this technology continually extract raw data from standard instruments on the pipeline. Each cycle the oldest data is discarded and the newest data is added. Based on this pool of data, the system is able to assess what normal operation looks like. It then makes a comparison of the current trend in the data to normal operation. When the two differ significantly, there may be evidence that a leak has occurred. Tests are then made to see if the leak-like event has resulted from known or usual events. If no such events are known, the probability a leak has occurred is reported to the operator.

Leak detection response using this technology is relatively fast. How fast depends on the speed of sound in the fluid, the data scan cycle time, the size of the leak, and pipeline configuration. Large leaks can be detected in seconds, while small leaks can take from a few seconds to a few minutes. Since there is no way to predict what size of leak will occur, the systems contain a series of filters, each of which is optimized for a certain size leak.

Systems using statistical analysis of pressure signals use a relatively small amount of standard field instrumentation, sometimes as little as a single transmitter per pipeline.

2.5.2 Advantages, Disadvantages, and Cost

Advantages of systems using statistical analysis of pressure measurements are as follows:

- (1.) The technology applies equally well to pipelines which are underground, aboveground, or underwater.
- (2.) The technology can be used to detect leaks in static and flowing lines.
- (3.) Statistical analysis of pressure measurement is one of the least expensive commercially available pipeline leak detection systems.
- (4.) The system does not require flowmeters or extensive instrumentation.

- (5.) A low level of technical expertise is required to support operation of the system.
- (6.) Response time for leak detection is relatively fast.

Disadvantages of this type of technology are as follows:

- (1.) False alarms can be generated due to normal pipeline operations such as pump start/stops and valve opening/closings.
- (2.) There is but a single opportunity to detect leaks.
- (3.) At present the system is not able to detect leak size or location, however a new algorithm is expected soon which will make that possible.
- (4.) The systems cannot perform leak detection on low pressure pipelines (less than 5-10 psig).

Costs for the systems described above can range from about \$55,000 up to \$140,000 depending on size and features of the system. This would include the computer, software, training, and system setup. In addition, a minimum of one standard process control type pressure transmitter would be required on each line at a cost of about \$800 each. If mass balance was included in the system, flowmeters would be required at each end of the line. Hardware and installation costs for these flowmeters would be similar to the costs given in Section 2.2.2.

2.5.3 Specific Vendor Products

The following commercially available leak detection system uses statistical analysis of pressure measurements as it's basis:

(1.) Product Name: Pressure Point Analysis (PPA)

<u>Technology</u>: Statistical analysis of pressure measurements

Vendor:

Ed Farmer & Associates, Inc.

1611 20th Street

Sacramento, CA 95814

(916) 443-8842

<u>Description</u>: As described above, PPA looks statistically at the behavior of line fluid pressure or velocity at a monitored point as it transitions from one steady state to another. The time it takes for this change to become complete is typically minutes to tens of minutes.

A PPA system includes the computer, the software, and all peripheral devices necessary to interface to an existing SCADA system or directly to field instruments. Special instruments are not required. PPA was designed to work with ordinary process control instrumentation.

Each PPA system can monitor up to ten pressure or flow points. A pressure or flow point is recommended every 25 to 35 miles.

(2.) Product Name: Leaknet

Technology: Pressure point analysis with mass balance

Vendor:

Ed Farmer & Associates

Same address as previously listed

<u>Description</u>: Leaknet is designed for larger, more complex pipelines. It is similar to the PPA system described above except it can handle more points, and includes mass balance leak detection with line pack compensation. The mass balance portion of the system is called MassPack, and can be configured around ten pipeline segments with up to 24 meters per segment.

2.5.4 Survey of Customers

(1.)User: Conoco Inc., Hartford, Illinois

Technology: Statistical analysis of static

pressure signals

System:

Pressure Point Analysis, Ed Farmer &

Associates Inc.

Application: Eight transfer lines, 3 miles long

Installed:

June 1991

Comments: Three of the eight lines experience wide pressure transients. These three lines are susceptible to false alarms. The other five lines do not experience such wide variations in pressure and do not false alarm. System performance is such that if an operator opens a sample valve on any of the lines and leaves it open for more than two minutes, an alarm is generated.

(2.)User: Chevron Pipeline Co. Point Arguella, California

Technology:

Statistical analysis of static pressure

signals

System:

Pressure Point Analysis, Ed Farmer &

Associates Inc.

Application: Two lines 25 miles long. One is natural gas,

and the other is crude.

Installed:

August, 1988

Comments: Chevron is currently running the crude line at twenty percent of design flow rate, and are experiencing some pressure transients. PPA generates false alarms when these transients are experienced. Chevron hopes to reduce the number of false alarms when

they start running closer to one hundred percent of design flow rate. No problems have been experienced with the system installed on the natural gas line.

(3.) <u>User</u>: Chevron, El Segundo, California

Technology: Statistical analysis of static pressure signal

System: Pressure Point Analysis, Ed Farmer & Associates.

Application: Two mile crude line from a ship unloading station to storage tanks. Approximately half of it is underwater. There is a booster pump located where the line comes on land.

Installed: Currently being installed

<u>Comments</u>: Prior to purchase of the system, tests were run on a temporary installation, with satisfactory results.

The system detected leaks as small as one percent of total flow rate in flowing lines. It was able to detect leaks 95% of the time ships were unloading. However, during the 5% of the time stripping was being done it generated false alarms. A procedure is being implemented which instructs an operator to ignore the alarm if he/she can associate it with a known event. Consequently any leak that occurs during stripping or simultaneously with a known event would be ignored.

On blocked in lines, over a twenty four hour period, with a wide ambient temperature swing, the system was able to detect leaks as small as 0.0001 % of the total line volume.

2.6 Summary of Technologies

The technologies and systems described in the previous sections are the major ones which we are aware of at this point in the investigation. No doubt there are others which exist that have not been included in this report.

Each technology has distinct advantages and disadvantages which are summarized in Table 1 in the Appendix.

While all the leak detection systems appear capable of detecting leaks under a certain set of circumstances, none of the systems by themselves seem to be the entire solution for our application. Since the pipelines are partially above ground, partially underground, partially over the water, and subject to hydraulic transients at times, the application is a difficult one. It appears that a combination approach may be necessary to provide adequate protection. If a leak detection system were to be installed today, it would most likely consist of equipment which would provide basic coverage under most situations, with some additional equipment that would provide increased protection and reliability on a spot basis.

It appears the three biggest problem areas for leak detection systems are:

- (1.) They are expensive to install.
- (2.) They require a considerable level of technical support.
- (3.) They are subject to false alarms under certain circumstances, which can tend to erode operator confidence in the system.

3.0 AUTOMATED SHUTOFF OF DOCK LINES

3.1 General

An area of spill prevention that should be considered along with leak detection is shutoff of the lines and pumps in the event a leak occurs. Due to the large volume of crude and products in the lines, and the elevation differences between tankage and the dock, the lines or

sections of the lines should be blocked in as quickly as possible.

One method of shutoff would be to use motor operated valves and remote pump shutoffs that were operable from the control house, which is manned 24 hours per day. The system would need to be designed with enough delay so that shutoff valves would not slam shut, and so that a ship which was unloading could be notified to shut down their system.

3.2 Automatic Shutoff versus Operator Initiated Shutoff

Since all leak detection systems are prone to some level of false alarms, it is not recommended that motor operated valves and pump stops be set up to shut down automatically in the event, a leak detection system generates an alarm. It would be preferable to have a system where the leak detection system notifies the operator of a suspected leak, the operator rules out a false alarm, notifies any ship of his intentions, and then initiates remote shutoff of the proper motor operated valves and pumps.

3.3 Costs for shutoff systems.

Based on the configuration of the dock transfer lines in the plant, a possible approach might be to install motor operators on the gate valves that presently exist. This would provide automated shutoff at both ends of each line, and would provide at least one intermediate shutoff location on each line.

A rough estimate of the cost of installing such a system is presented below. It is emphasized that this does not represent a plan at this point, but is only being included to show what the cost of a typical automated shutoff system might be.

36 motor operators @ \$7000.00 each	\$250,000
2 PLC'c with enclosures	55,000
Electrical Distribution Panels	5,000
Conduit and wire	230,000
Installation labor	250,000
Engineering and Documentation	160,000
Subtotal	950,000
Contingency @ 20%	190,000
Tax @ 7.5%	60,000
Total	\$1,200,000

4.0 POSSIBLE APPROACH FOR DOCK LINE LEAK DETECTION AT PUGET SOUND PLANT

4.1 General

This report has looked at leak detection on a somewhat general basis. If any conclusions can be drawn, it would be that more detailed investigation will be required to determine what system or combination of systems would ultimately provide the best leak detection for Puget Sound Plant.

Included in the following sections is a description of a system which it is believed, at this point in the investigation, would be feasible to install, and would provide good overall leak detection capabilities. It is emphasized that this is not a plan, but is merely representative of the type of system envisioned. A rough estimate of what it would cost to install the system is also provided. Refer to drawing 21-EJ-38 in the Appendix for a visual representation of the system as it is described below.

4.2 Basic Leak Detection System

Based on the advantages seen in the system, and based on the fact that others with comparable systems have had success using the technology, the Leaknet system by Ed Farmer & Associates is a leading candidate for use by Puget Sound Plant at this point. The fact that it uses a minimal amount of standard instrumentation for the pressure point analysis portion of the system makes it desirable from a reliability and maintenance standpoint. The fact that its software allows for the later addition of mass or volume balance is beneficial. It is estimated Leaknet would provide reliable leak detection 98% of the time on the finished product lines, and from 90-95% of the time on the crude line.

4.3 Optional Features for Additional Protection

In order to supplement the leak detection protection offered by the Leaknet system, it might be feasible to apply certain other technologies on a selective basis. Optional equipment might include the following:

- (1.) Remote controlled video cameras with monitors in the control room may be beneficial for supplemental monitoring of certain locations. By placing cameras at locations where leaks were most likely to occur, such as at pumps, valves, or flanges, the operator would have an opportunity to verify that a leak had occurred if he received an alarm from the Leaknet system. It would also provide an additional opportunity to discover a leak in the event the leaknet system failed to detect it.
- (2.) Gas detectors placed at selective locations along the pipelines would serve as an additional means of detecting a leak.
- (3.) In diked areas, where hydrocarbon would accumulate, it might be feasible to install float type level switches or ultrasonic level switches whose sensitivity was tuned to hydrocarbons as a backup method of detecting major leaks.

4.4 Budgetary Estimate of Cost for Leak Detection System

A rough estimate of the costs involved in installing a leak detection system as described above, with the optional items, is as follows:

Ed Farmer Leaknet leak detection system with mass balance software	\$	140,000
Rosemount pressure transmitters (24 ea) Tubing and valves High level alarm system for diked area Gas detectors Camera systems Conduit and wire Engineering and Documentation Installation Labor		16,000 10,000 25,000 30,000 35,000 100,000 110,000 200,000
Contingency @ 20% Tax @ 7.5%	_	666,000 132,000
Total		42,000

4.5 Typical Project Schedule for Implementation

Refer to the Appendix for a bar graph schedule representing the typical time it would take to engineer and install the hypothetical system described in the previous section.

APPENDIX



PADILLA BAY

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ESTIMATE

CC-473

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APPROVED

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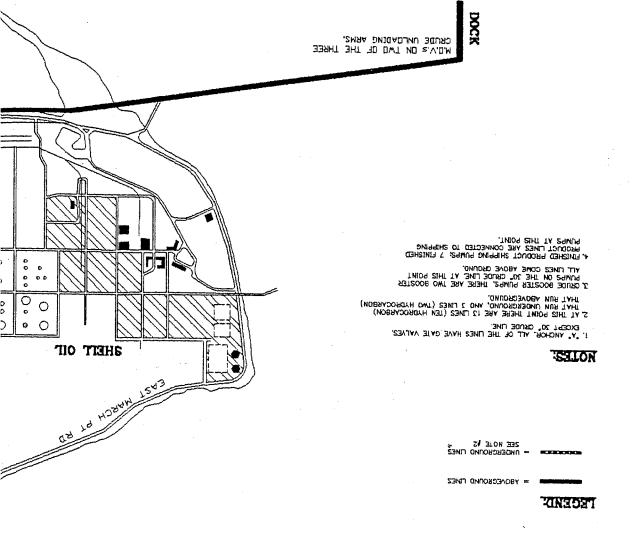


TABLE 1 SUMMARY - LEAK DETECTION TECHNOLOGIES STRENGTHS & WEAKNESSES

	Hydrocarbon Sensing Cable	Volume Balance, Mass Balance, RTTM	Gas Detection Systems	Wave Detection Systems	· Statistical Analysis of Static Pressure Signals
Can it detect leaks on <u>static</u> lines?	Yes	Yes - RTTM	Yes	Yes	Yes
Can it detect leaks on flowing lines?	Yes	Yes	Yes	Yes	Yes
Can it detect leaks on <u>abovearouind</u> lines?	Yes	Yes	Some	Yes	Yes
Can It detect leaks on <u>underaround</u> lines?	Yes	Yes	Yes	Yes	Yes
Can it estimate jeak jecation?	Yes	Some	Yes	Yes	No
Can it estimate l <u>eak size</u> ?	No	Some	Tes	Yes	. ON
Susceptibility to Ealse Alarms due to translents.	Low	Med - High	Low	Low - Med	High
Response time - small leaks.	2 - 60 Min.	4 Hrs.	12 Hrs.	< / Mln.	0 - 30 Sec.
Response time • large leaks,	2 - 60 Min.	3 Min.	30 Min.	< / Mln.	0 - 5 Sec. ·
Level of <u>instrumentation</u> required.	Low	High .	Med.	High	Low
Level of technical expertise required for support.	Low	High	Med.	Med	Low
is system <u>re-usable</u> after leak occurs?	No	Yes	Мауре	Yes	Yes
Relative cost, of system.	High	Hlgh	Med.	Med.	Low
Is there a sinnie opportunity to detect. a leek?	No	No	No	Yes - Some	Yes

TYPICAL PROJECT SCHEDULE FOR IMPLEMENTATION OF LEAK DETECTION AND AUTOMATED SHUTOFF DECISION ON THE EXTENT OF THE SHUTOFF SYSTEM SELECTION OF MAIN LEAK DETECTION SYSTEM PREPARE CONSTRUCTION BID PACKAGE HIGH LEVEL ALARM SYSTEM DELIVERY SELECTION OF ADDITIONAL FEATURES MAIN LEAK DETECTION DELIVERY AWARD CONSTRUCTION CONTRACT ENGINEERING DWGS. & DOCUMEN. LONG LEAD ITEM SPECIFICATION RELEASE PACKAGE FOR BID GAS DETECTORS DELIVERY CAMERA SYSTEM DELLVERY COMISSIONING AND SETUP ADD/TIONAL FEATURES DETAIL ENGINEERING CONSTRUCTION REVIEW BIDS ENGINEERING

Appendix B

3.8.0 By June 30, 1993, or six months after receipt of permit from Skagit County (whichever is later), install a system of gated valves along west Marchs Point Road to prevent the flow of oil through culverts. All modifications to West Marchs Point Road, its ditches and its culverts shall be approved by Skagit County.

Status: Closed, Complete installation of the culverts along West Marchs Point Road was on May 31, 1993. Pictures have been attached to this section displaying the installation of each of the culverts. Also enclosed is the Franchise Agreement between Skagit County and Texaco Refining and Marketing, Inc. signed on May 3, 1993 and associated drawings.

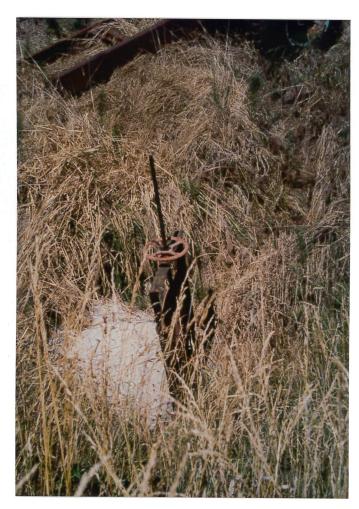












BEFORE THE BOARD OF COUNTY COMMISSIONERS OF SKAGIT COUNTY, WASHINGTON

IN THE MATTER OF THE APPLICATION OF)

TEXACO REFINING AND MARKETING INC.)

FOR A FRANCHISE OVER CERTAIN ROADS)

Texaco Refining and Marketing Inc. (hereinafter referred to as the "Grantee") has applied for a twenty-five (25) year permit to construct, alter and maintain an Oil Containment Facility System across and along certain County roads in Skagit County, Washington. Said application has been made to the Board of County Commissioners (the "Board") on the 30 day of 1993. The Board, having considered said permit application, determines that it is in the public interest to grant a permit to Grantee.

The permit is for and is limited to the Oil Containment Facility System described in the attached Exhibit "A".

NOW, THEREFORE, IT IS HEREBY AGREED that the right, privilege, authority and non-exclusive permit be, and the same are hereby given and granted to the Grantee for a period of twenty five (25) years from and after the date of entry of this order.

This permit is granted upon the following expressed terms and conditions, to- wit:

I. Grantee Given Franchise:

Grantee shall have the right and authority to enter upon the above mentioned County roads and Rights-of-Way as described herein for the purpose of construction and maintenance of the Oil Containment Facility System.

II. Construction Approved by County Engineer:

All construction, installation and maintenance work along or across the above-mentioned County roads or Rights-of-Way shall be subject to the approval and pass the inspection of the County Engineer, and shall conform to all applicable State and Federal minimum standards, codes, or regulations, and the County expressly reserves the right to prescribe how and where the Oil Containment Facility System shall be installed and may from time to time upon reasonable notice require the removal or relocation at the sole expense of the Grantee and performed with due diligence by the Grantee.

III. Plans, Specifications, and Maps and Operations:

Prior to beginning of work of said Oil Containment Facility System, the Grantee shall first file with the County Engineer its application for such work, together with plans and specifications showing the position and location of said Oil Containment Facility System in its relative position to existing County roads and Rights-of-Ways. Plans and specifications shall be attached to this permit.

IV. <u>Maintenance:</u>

Grantee agrees to perform all maintenance required to keep the Oil Containment Facility System clean and functional. This will include, but not be limited to, cleaning, weeding, litter control, grading as required, annual testing of all valves, and any and all required work to insure that the system will function as designed.

It is understood that this permit is for the benefit of Grantee and is a condition of specific permits and mitigation measures. Grantee will take full responsibility for the maintenance and operation of the Oil Containment Facility System to ensure that it is functional and operational at all times. Skagit County takes no responsibility for the design, operation or maintenance of the Oil Containment Facility System.

V. <u>Utility Location Preference:</u>

All construction of said Oil Containment Facility System and appurtenances, service, repair, or relocation of the same, performed along or across the County roads and/or rights-of-way subject to the permit, shall be done in a manner neither to interfere unreasonably with the construction and maintenance of other utilities, lines, public or private, drainage ditches and structures, irrigation ditches and structures, located therein, nor with the grading or improvement of such County roads, rights-of-way, or other County property. The owners of all utilities, public or private, installed in such County roads and/or rights-of-way prior in time to the Oil Containment Facility System and facilities of the Grantee shall have preference as to the positioning and location of such utilities so installed with respect to the Grantee. Such preference shall continue in the event of the necessity of relocating or changing the grade of any such County road or rights-of-way.

VI. Minimum Interference with Public Travel:

All work done under this permit shall be done in a thorough and workmanlike manner. In the installation of the Oil Containment facility System and the opening of trenches and the tunneling under County roads and/or rights-of-way, the Grantee shall leave such trenches, ditches and tunnels in such a way as to interfere as little as possible with public travel and shall take all due and necessary precautions to guard the same, so that damage or injury shall not occur or arise by reason of such work.

In the event of an emergency requiring immediate action by Grantee for the protection of its facilities or the persons or property, Grantee may take such action upon such notice to the County Engineer's office or the County Sheriff's office as is reasonable and practicable under the circumstances.

VII. County May Change and Improve Roads Without Liability:

Skagit County, in granting this permit, does not waive any rights which it now has or may hereafter acquire with respect to County roads and/or rights-of-way and this permit shall not be construed to deprive the County of any powers, rights or privileges which it now has, or may hereafter acquires, to regulate the use or control of any County roads and/or rights-of-way covered by this permit.

The laying, construction, operation and maintenance of the Grantee's Oil Containment Facility System and facilities authorized by this permit shall not preclude Skagit County, its agents or its contractors from blasting, grading, excavating, or doing other necessary work contiguous to the said system facilities of the Grantee, provided that the Grantee shall be given fortyeight (48) hours notice of said blasting or other work in order that the Grantee may protect its lines and facilities.

VIII. Relocation of Utility:

If at any time Skagit County shall improve or change any County road and/or rights-of-way subject to this permit by grading or regrading, planking or paving the same, changing the grade, altering, changing, repairing or relocating the same or by constructing drainage facilities, or in the event that such County roads and/or rights-of-way subject to this permit shall become a primary state highway as provided by law, the Grantee, upon written notice from the County Engineer or the Director of Highways, shall, at its sole expenses and with due diligence, change the location or adjust the Oil Containment Facility System so that the same shall not interfere with such County work and so that said Oil Containment Facility System and appurtenances shall conform to such new grades or routes as may be established.

All work to be performed by the Grantee under this section shall be under the direction and approval, and shall pass the inspection of, the County Engineer. The Grantee shall pay all costs of and expenses incurred in the examination, inspection and approval of such work.

IX. Location of Grantee:

The address of the Grantee is:
Texaco Refining and Marketing Inc.
P.O. Box 622
Anacortes, WA 98221-0622

Any notification required to be given to the Grantee may be given to the address above stated, provided that the Grantee may from time to time notify said County in writing of a change of address to which notifications are to be sent.

X. Reference Monuments and Markers:

Before any work is performed under this permit which may affect any existing monuments or markers of any nature relating to subdivisions, plats, roads and all other surveys, the Grantee shall reference all such monuments and markers. The reference points shall be so located that they will not be disturbed during the Grantee's operations under this permit. The method of referencing these monuments or other points to be referenced shall be approved by the County Engineer. The replacement of all such monuments or markers disturbed during construction shall be made as expeditiously as conditions permit and as directed by the County Road Engineer. The cost of monuments or other markers lost, destroyed or disturbed, and the expense of replacement by approved monuments, shall be borne by the Grantee.

A complete set of reference notes for monuments and markers shall be filed with the County Engineer's office.

XI. Vacation of County Roads:

If, at any time, Skagit County shall vacate any County road and/or rights-of-way which are subject to the rights granted by this permit and said vacation shall be for the purpose of acquiring the fee or other property interest in said roads and/or rights-of-way for the use of Skagit County, in either its proprietary or governmental capacity, then the Board of County Commissioners may, at its option and by giving thirty (30) days written notice to the Grantee, terminate this permit with reference to such County road and/or rights-of-way so vacated, and Skagit County shall not be liable for any damages or loss to the Grantee by reason of such termination.

XII. Grantee to Hold Harmless and Defend County:

The Grantee, by acceptance of the privileges granted hereunder, does hereby agree to protect and save harmless Skagit County from all claims, actions or damages of every kind and description which may occur to or be suffered by any person or persons, corporation or property by reason of the construction, operation and maintenance of Grantee's said oil containment system and appurtenances. In case that suit or action is brought against Skagit County for damages arising out of or by reason of the abovementioned causes, the Grantee will upon notice to it of the commencement of said action defend the same at its sole cost and expense and will have the right to appeal any judgment rendered therein. The Grantee will fully satisfy and pay any judgment rendered against Skagit County for which it has agreed to protect and save Skagit County harmless hereunder within ninety (90) days after said action or suit shall have been finally terminated.

Acceptance by the County of any work performed by the Grantee at the time of completion shall not be grounds for avoidance of this covenant.

XIII. Franchise Not Exclusive:

This franchise shall not be deemed to be an exclusive franchise. It shall in no manner prohibit Skagit County from granting other franchises of a like nature or franchises for other public or private utilities under, along, across, over and upon any of the County roads and/or rights-of-way subject to this franchise, and shall in no way prevent or prohibit Skagit County from constructing, altering, maintaining, using or vacating any of said roads and/or rights-of-way, drainage structures or facilities, irrigation structures or facilities, or any other County property, or affect its jurisdiction over them or any part of them with full power to make all necessary changes, relocations, repairs, maintenance, etc., the same as the County may deem fit.

XIV. Provisions Bind Successors:

All the provisions, conditions, regulations and requirements herein contained shall be binding upon the successors and assigns of the Grantee, and all privileges, as well as all obligations and liabilities of the Grantee shall insure to its successors and assigns equally as if they were specifically mentioned wherever the Grantee is mentioned.

XV. Consent of County Prior to Transfer:

Neither this permit nor any interest herein shall be sold, transferred or assigned without the previous consent in writing of the Board of County Commissioners of Skagit County. However, such notice is not required in regard to any mortgage by Grantee to the trustee for its bond holders under its first mortgage indenture. Any sale, transfer or assignment of this permit in violation of this section shall automatically terminate said permit.

XVI. Roads Transferred to Cities:

Whenever any of the County roads and/or rights-of-way as designated in this franchise by reason of the subsequent incorporation of any town or city, or extension of the limits of any town or city, shall continue in force and effect as to all County roads and/or rights-of-way not so included in city or town limits.

XVII. Use of County Standards:

In preparing plans and specifications for the installation of said Oil Containment Facility System along or across County roads and rights-of-way, the Grantee shall use as a guide the standards and specifications established by the County Engineer.

XVIII. Revocation for Non-Compliance:

If the Grantee shall willfully violate or fail, through willful or unreasonable neglect, to comply with any of the provisions of this permit for thirty (30) days after receipt of written notice of such wilful violation or failure from the Board of County Commissioners, then said Board shall have the right to declare Grantee's forfeiture of all rights hereunder and to declare this permit terminated and no further force of effect thereafter.

XIX. Modifications:

Skagit County reserves for itself the right at any time upon thirty (30) days written notice to the Grantee, to change, amend, modify, or amplify any of the provisions or conditions herein enumerated to conform to any state statute or departmental order or County regulation, relating to the public welfare, health, safety or highway regulation, as may hereafter be enacted, adopted or promulgated.

XX. <u>Insurance:</u>

At the time of granting this franchise, Grantee shall furnish to Skagit County a Certificate of Insurance naming the County as an additional insured and which provides that Skagit County shall be given ten day's written notice prior to cancellation, expiration or any material changes of the insuring policies and that such policies provide the following coverage limits:

Bodily Injury Liability \$5,000,000.00
Including Automobile Liability each occurrence

Property Damage Liability \$1,000,000.00 Including Automobile Property Damage each occurrence

The specified coverages are the minimum acceptable unless the nature and extent of the Oil Containment Facility System warrants different limits. Factors considered in modifying the limits include, but are not limited to, the nature of facilities to be placed in the rights-of-way, and the consequences of an accident or failure involving the utility.

XXI. Payment:

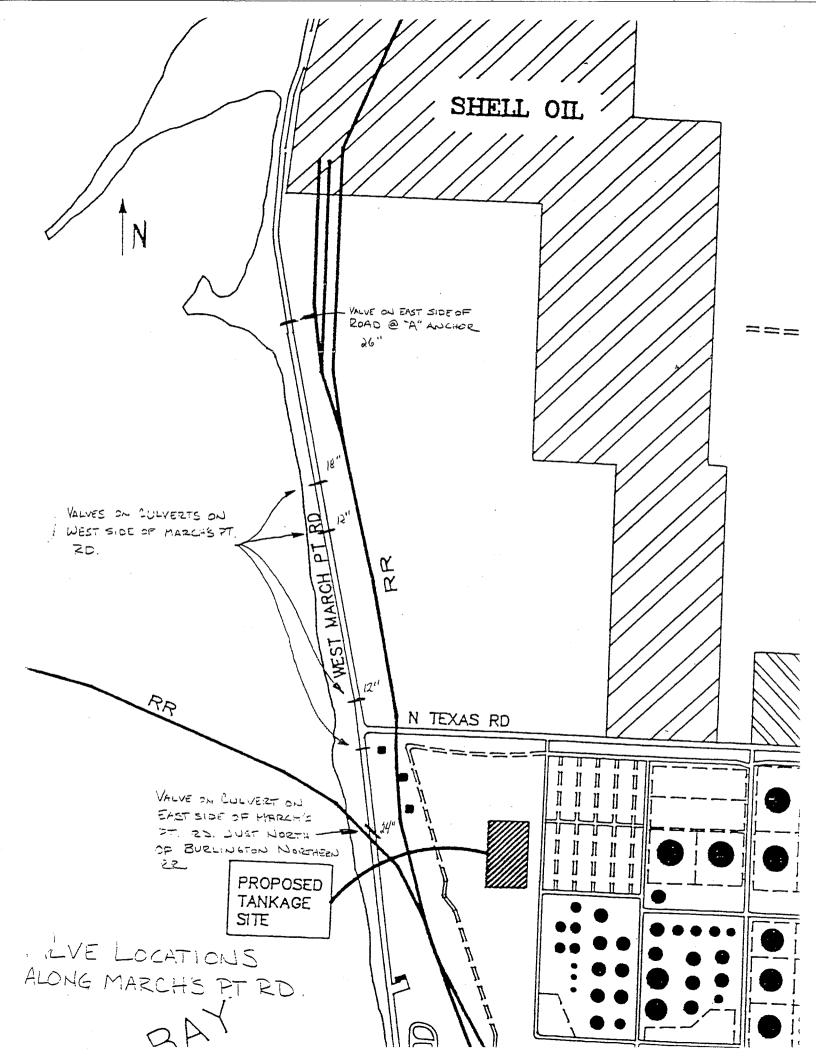
No privileges or rights granted hereunder shall exempt Grantee from any future uniform rent, license, tax, charge, or import which may hereafter be required by the Grantor for revenue or as reimbursement for use and occupancy of public ways, and failure to timely remit any sums properly due thereby shall be cause for forfeiture of rights hereunder, according to the procedure specified in provision XVIII of this franchise.

XXII. Grantee to File Acceptance:

Grantee's written acceptance of this permit and all its terms and conditions shall, within thirty (30) days from the date of execution by the Skagit County Board of Commissioners, be filed with the Clerk of the Board of County Commissioners of said County. Such filing shall be a condition precedent to the effectiveness of this permit and, unless the permit is accepted within such time, this grant shall be null and void.

DATED at Mashington this

DATEN at	MILLION, KM	non	, Washington, this
3′	day or	e_may	, 19 <u>7</u>].
	BOARD SKAGIT	() OF COUNTY COMN COUNTY, WASHI	IISSIONERS
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	Chairm	an Har	
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	Commis	sioners	
ATTEST: OWN	ie and the clerk of the	Board	
APPROVED AS TO FOR	M:		
By: Shull	Morroll		
JOHN R. MOFFAT	, Chief civil	Deputy	
Skagit County I	Prosecuting At	torney	
ADDDOUGD AG MO TUDE			
APPROVED AS TO INDE	MNIFICATION L	ANGUAGE	
Skagit County Risk	M		
bragit county kisk	manager		
The undersigne of the above gra conditions, stipula	nted Franchi	se subject t	ghts and privileges all the terms, ined herein.
	TEXACO REFINI	ING AND MARKERI	ING INC.
	GRANT	TEE	
	BY: Claul	- O. Higg	
	Tma A	3	
		IT PLANT MANAG	
DATE this TENTH	day of MAR	-it , 19 <u>93</u>	<u>5</u> .
ENTERED and EXECUTED of	copy delivere	ed to the Grant	ee this day
	CONNIE CARTER	, Clerk of the	Board



MAG,

CHARGE PSP-138

PLEASE MAKE (8) COPIES OF THESE DWGS. FOLDED.

EXHIBIT "C"

TAANKS,

LIST OF DRAWINGS AND SKETCHES

D

PSP-MW-1443

MARCH'S PT. ROAD DRAINAGE DITCH MODIFICATIONS

Attached hereto and made a part of agreement No. PSP-MW-1443 dated ______, are the following drawings and sketches:

<u>Title</u>
Location Plan
Plugging of Culverts to be Eliminated
March's Pt. Rd. #1661 Ditch Profile
Existing Ditch Sections
Valve Attachment Details
Erosion Control of Ditch
Cathodic Protection Underground Wharf Lines
Beveled End Sections
Ditch Sections
General Plot Plan - P.S.P.
Solid Waste Management

The drawings or other documents processed in relation to this contract, and the information therein contained, are the property of Texaco Refining and Marketing Inc. which has furnished them in confidence upon the understanding and condition that all persons, firms or corporations receiving such drawings and information shall make no copy, duplication, disclosure or use whatsoever of all or any part thereof except as expressly authorized in writing by Texaco Refining and Marketing Inc.; not to give, lend or otherwise dispose of such drawings or documents; and to return same promptly upon request.

Each party of this agreement acknowledges that it has a copy of each drawing listed above in its possession and that said drawings are a part of this agreement.

FORM ENG-4				TEX	ACO 1		
CATION 7	5P				1	EST. NO	<u> PSP-138</u>
вјест _ Р	0061MG	OF C	JLYERTS.	TO BE	ELIMI	NATED	
65							
NAZCH'S PT.	PPZOX. C			PROX & GTE O/G LINE	€D172H		
	* To			APPROX U/G	9		
<i>≈5</i>	′(1)						

CULVERT TO BE CUT & PLUGGED

@ THIS LOCATION PER DOT STANDARD 7-02,3(5)

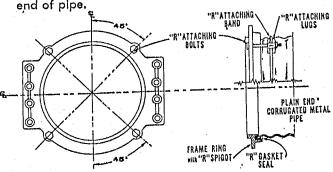
THEN BACKFILL DITCH TO NEWPROFILE WITH
GRANEL BASE, (DOT SPEC 9-03.10 \$ SK, COUNTY REVISION)

(1) CONTRACTOR SHALL HAND DIG TO LOCATE OUT POINT AND ENSURE AVOIDING GTE LINES,

SCALE | "= Z'

INSTALLING GATE WITH "R" SEAL SPIGOT, AND LUGS BOLTED TO PIPE (For Light Duty C-10 Gates Only, 6" to 24")

- Place "R-Seal" gasket over end of annular corrugated metal pipe.
- 2. Place "R" attaching bolts in special frame holes, place lugs on bolts and align.
- 3. Using lugs as jig, drill holes in pipe with 13/32" or 7/16" drill and bolt lugs to pipe with 3/8" bolts.
- 4. Place nuts on "R" attaching bolts and tighten, drawing spigot tightly against "R" seal gasket and



NOTE: Attaching Lug may be held in place by boiling or riveting to the pipe (normal factory installation), or may be banded into the pipe valley with optional attaching band (normal field installation - see drawing).

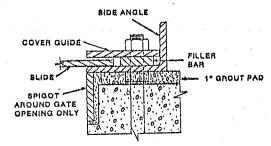
Figure 6

INSTALLING GATE WITH "R" SEAL SPIGOT

- Place "R-Seal" gasket over end of annular corrugated metal pipe.
- 2. Place band with attaching lugs in position over pipe.
- 3. Place "R" attaching bolts in special frame holes, rotating lugs to align with bolts and start nuts on attaching bolts.
- 4. Tighten "R-Seal Band" with wrenches.
- Tighten "R" attaching bolts and nuts drawing spigot tightly against "R" seal gasket and end of pipe.

both legs are parallel and plumb. At this time the need for shims or sealant will be apparent. The wall-mounted guide frame must be set plumb and straight regardless of the condition of the vertical concrete wall on which it is to be mounted. Do not induce warping during final tightening of the bolts.

NSTALLATION OF SPIGOT BACK GATES TO CONCRETE WALL



SPIGOT BACK SEAT TOP VIEW

Spigot back gates are installed in the same manner as latback gates specified above, with the following additions:

- When setting the anchor bolts in the form, form a blockout for spigot to dimensions specified in drawing.
- 2. After gate is installed, and nuts tightened on bolts, grout in voids around spigot back with a dry pack concrete mix or a non-shrink grout.

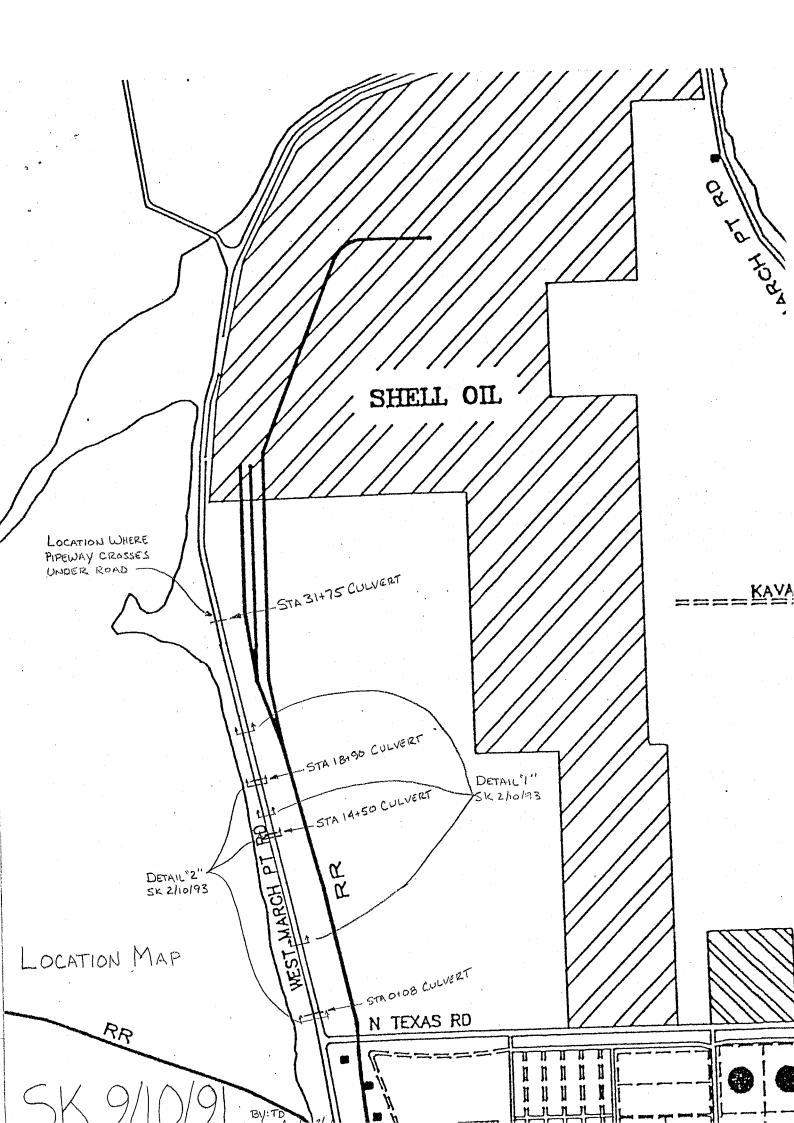
NSTALLATION OF SLIDE GATES WITH I-BULB SEALS

Follow same procedure as for spigotback or flatback gates as described above, with the following additions:

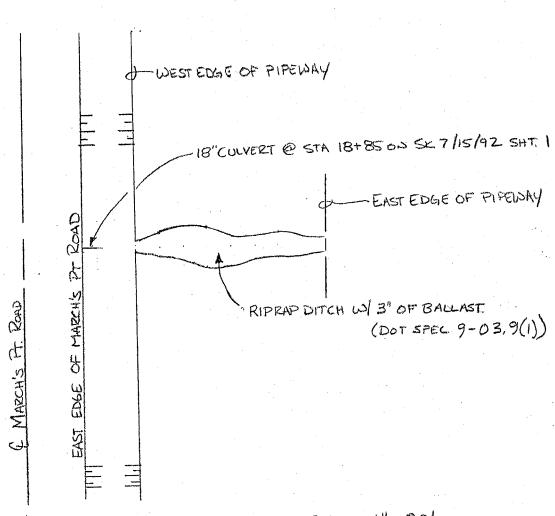
Check clearance between seal and slide following instalation with a .002 inch feeler guage. Guage should not pass at any point around seal perimeter with gate in fully closed position. If adjustment of seal is necessary, refer to page 11 of his manual, "Procedure for replacing and adjusting J-bulb seals for fabricated slide gates." All gates with "J" seals will have "Q" seals unless the gate is a downward opening weir ype. Start the checking process across the "Q" seal - then proceed to sides and top.

٠4

By: TJD APPID, FAS/RW 4/1/40



FORM ENG-4	CO INC.	PSP 138	SHEET I	10. 1/1 7/18/92 TD
SUBJECT EROSION CONTROL OF DITCH			C'K'D APP'D	FAS/BW3/



SCALE 1"= 20'

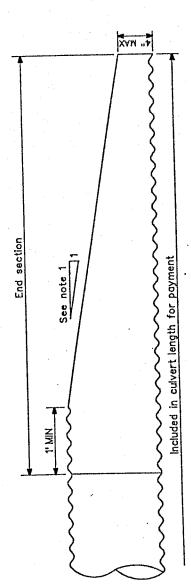
-Groove end always laid upgrade

1. The cuivert ends shall be beveled to match the side slope. Field cut of culvert ends is permitted, when approved by the Engineer.

2. All field cut culvert pipe shall be treated with treatment as shown in the Standard Specifications or General Special Provisions.

XVM ... See note 1 Included in culvert length for payment End section ELEVATION PLAN

CONCRETE PIPE



BEVELED END SECTIONS NAMES OF INMESSIONS OF INMESSIONS STANDARD PLAN B-7a APPROVED March 29, 1962

> METAL PIPE ELEVATION

8-17-90 Revised 4" MAX dimension on Concrete Pipe 9-29-89 Remove 1 MIN dimension from Concrete Pipe 8-12-88 Revised note 1, added note 2 12-4-86 Revised bevel, title block & notes DATE REVISION DATE

TEXACO INC.

SHEET NO. 1/1

DATE 2/11/93

LOCATION MARCH'S Pt. ROAD

SUBJECT DITCH SECTIONS

SHEET NO. 1/1

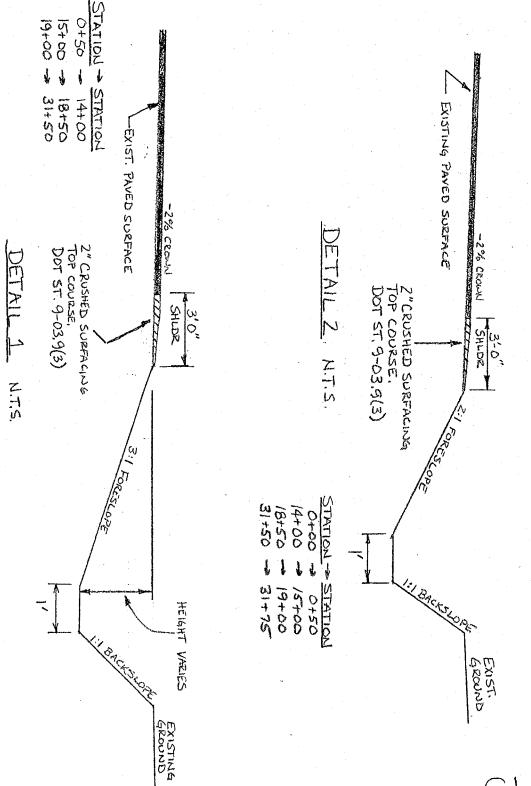
DATE 2/11/93

EST. NO. PSP-138

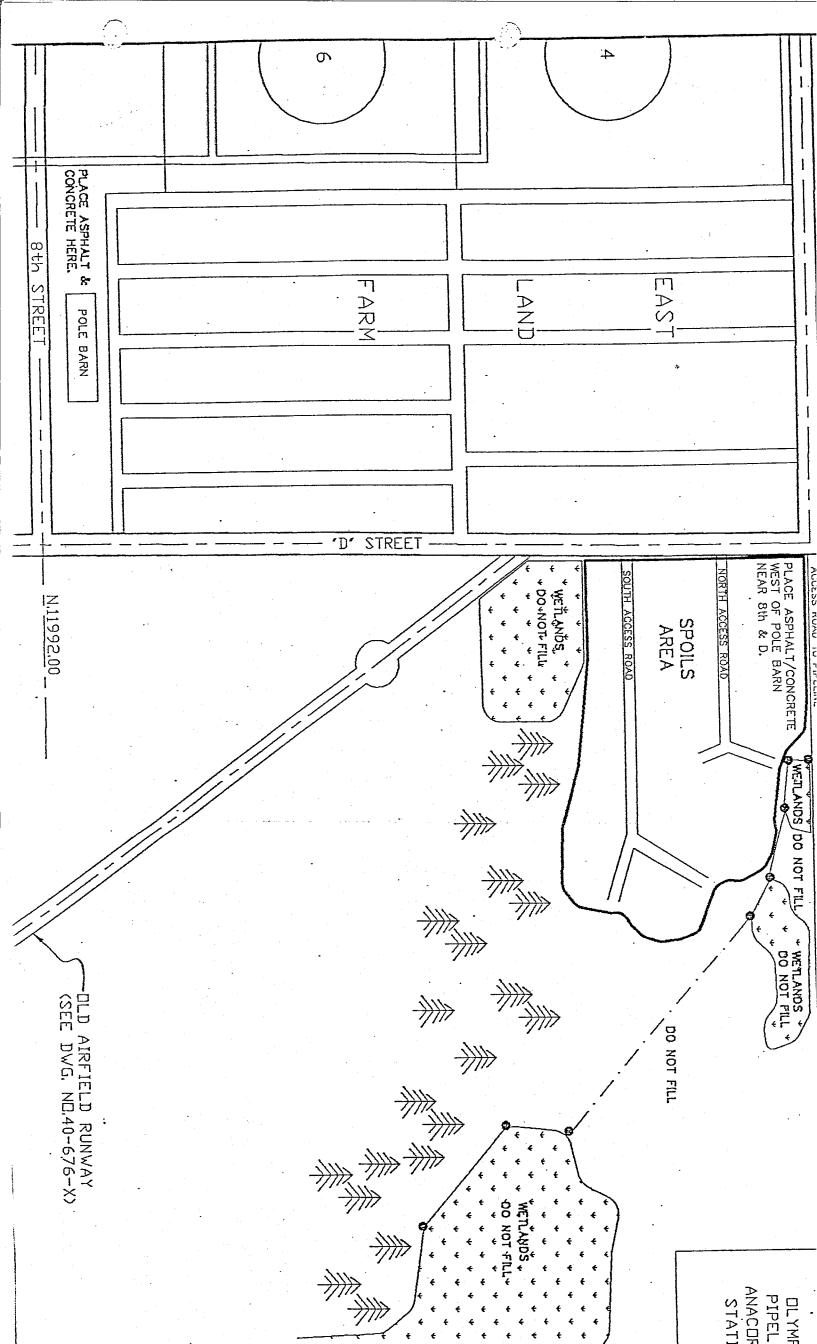
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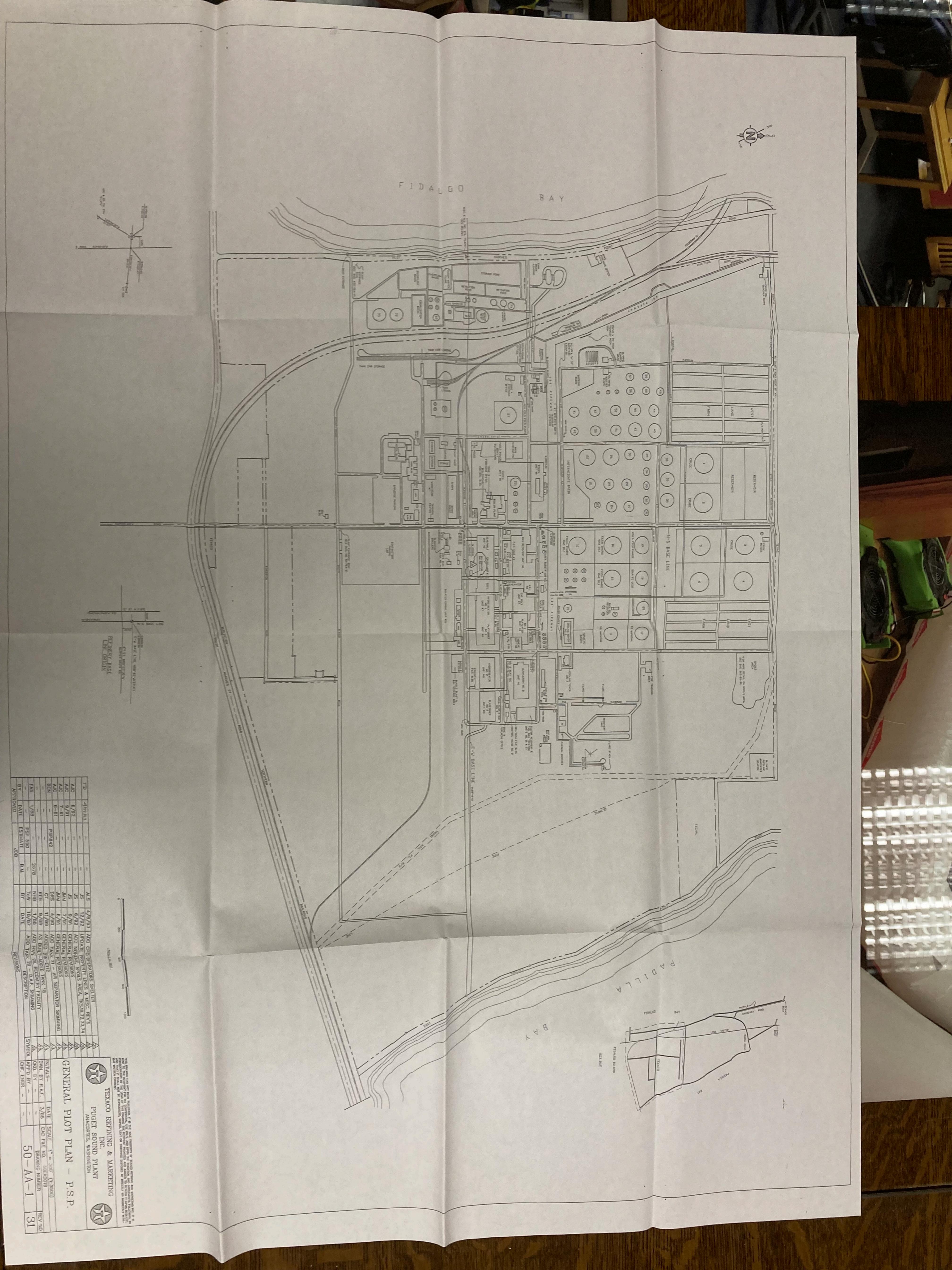
C'K'D

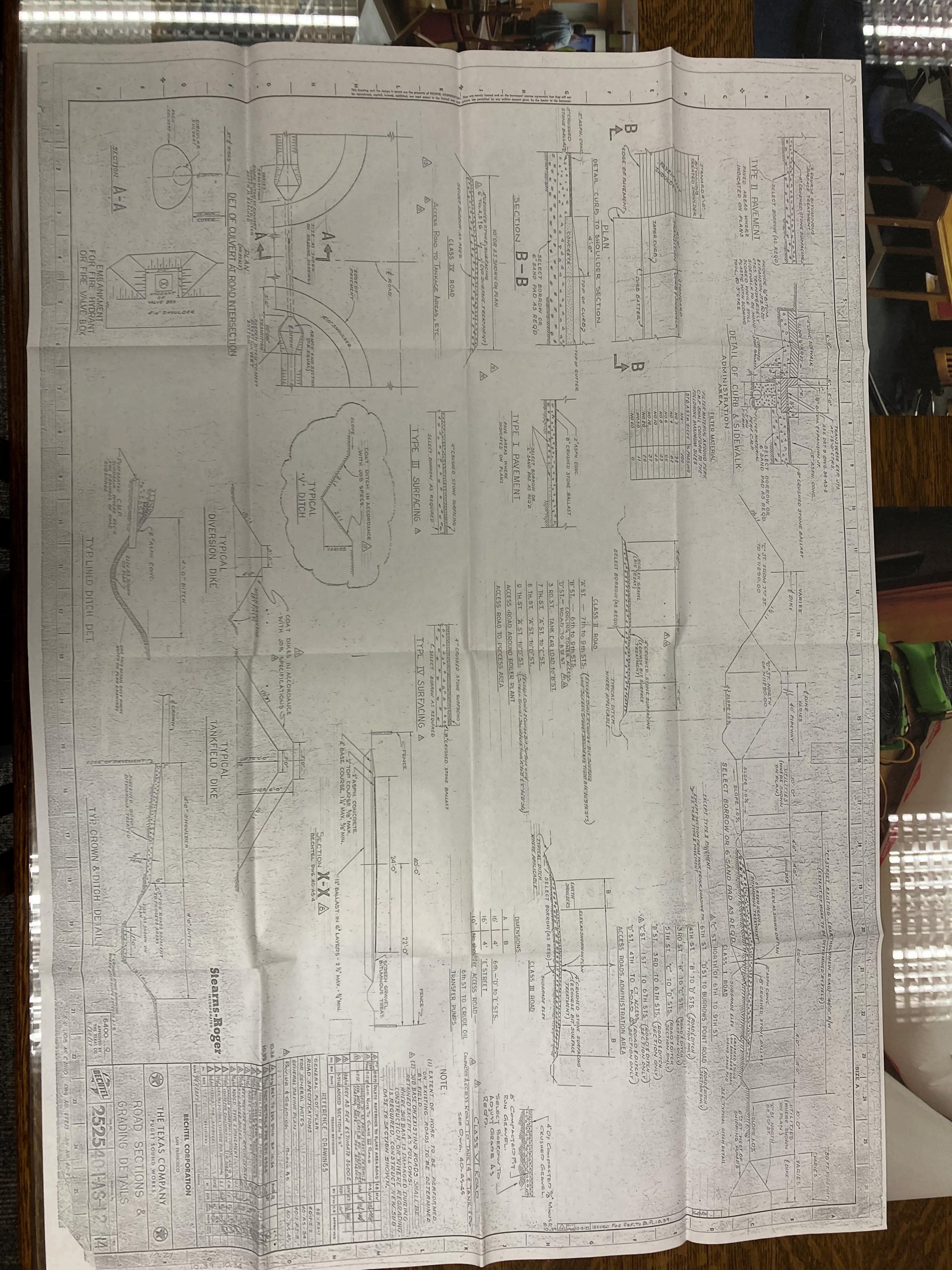
APP'D SIN 9/16/93



SK 2/10/93







Appendix B

3.9.0 Install a dike to provide containment in the event of a spill or leak in the crude booster pump area.

Status: Item Closed, this milestone had been completed prior to the implementation of the consent decree and is represented as such within the decree. Associated drawings and a photograph have been provided.





TEXACO
BILL OF MATERIALS
PUGET SOUND PLANT

B.M. 4263 W.O. 9200151

SHEET 1 of 2

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TEXACO BILL OF MATERIALS PUGET SOUND PLANT

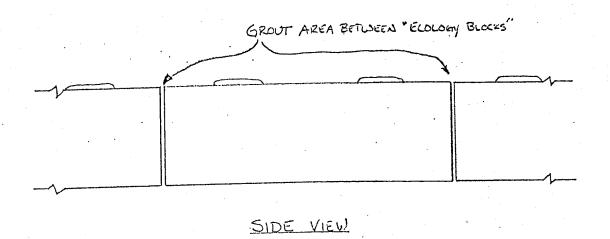
B.M.	4263	·		
W.O.	9200151		,	

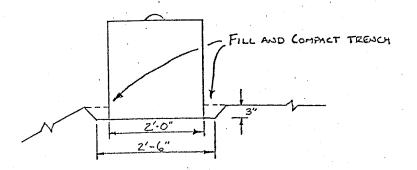
SHEET 2 of 2

ricle:	RP&S: Grout between and Compact around Concrete Blocks							
. •								
Charge:	PSP-159 Made By: TD Checked By: 150 Issue Date: 4/16/92							
Purpose:	This Bill is being issued finalize the construction of the concrete section of the dike around the crude booster pumps. The dike is being constructed to satisfy a requirement set forth by the state in response to the February 1991 Oil Spill. THIS BILL REPRESENTS 100% OF THE WORK TO COMPLETE THIS SCOPE.							
Scope								
	4) After grout has cured fill in and compact the trench around the "Ecology Blocks".							

Quantity	Description	Furnished By
20 gal	Epoxy Grout: Concresive LPL Paste	STHSE:OR# 232708
	<u> </u>	

	TEXACO INC.	SHEET			
FORM ENG-4			DATE_	4/12/92	
LOCATION RPES: DIKE AT C	RUDE BOOSTER PUMBEST. NO.	PSP-159	_ 	TD	,
e . i.,			c'X'D		
SUBJECT			APP'D		





Appendix B

3.10.0 Evaluate the need for spill containment along the east perimeter of the refinery to eliminate the chance of product spillage discharging to Padilla Bay. Submit the findings of this investigation to Ecology.

Status: Item Closed, this milestone had been completed prior to the implementation of the consent decree and is represented as such within the decree. Associated drawings have been provided.

EXHIBIT "C"

LIST OF DRAWINGS AND SKETCHES

PSP-MW-1586

RP&S: EAST SIDE CONTAINMENT PROJECT

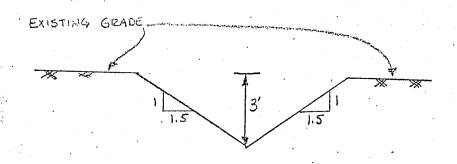
Attached hereto and made a part of agreement No. PSP-MW-1586 dated, are the following drawings and sketches:							
Drawing or <u>Sketch Number</u> SK 8-28-92 SK 9-17-92 SK 8-25-93 40-1-AS-12-14 50-AA-1-31 SK2-26-91	Title Spill Containment Dike Spill Containment Sections Basin Plan Road Sections and Grading Details General Plot Plan - P.S.P. Spoils Waste Management						

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FORM ENG-4	TEX	ACO INC.		HEET NO, 1/1
FORM ENG-4		•	D	ATE 9/17/92
LOCATION TEXACO P.S.	P	EST. NO. <u>P</u>	5P-209 B	Y _TD
SUBJECT SPILL CONTAIN	MENT SECTION	>5	c	'K'D
3			A	PP'D
			ToP o	F DIKE EL= 62,5
PLACE ROCK (61/4" M IN 10'X 10' AREA PREVENT SILTATION C EXISTING GRAD	TO 12"CAR F BASIN STEEL	30N 1.5	1.5	12" BUTTERFU WALYE
				EXISTALL GRADE
	SEC	A-A LIOIT.	SK 8-25-93)	, y , ,
	S	CALE 1/4"=1"		
		TOP OF DIKE E	L=42.5'	
	1.5	1.5	•	

SECTION B-B (SK 8-28-92) SCALE Y4"=1"

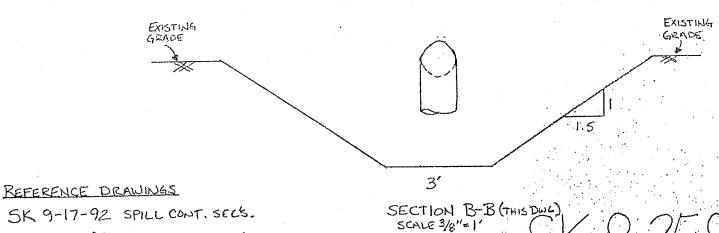


SECTION C-C (5K8-28-92) SCALE V4"=1"

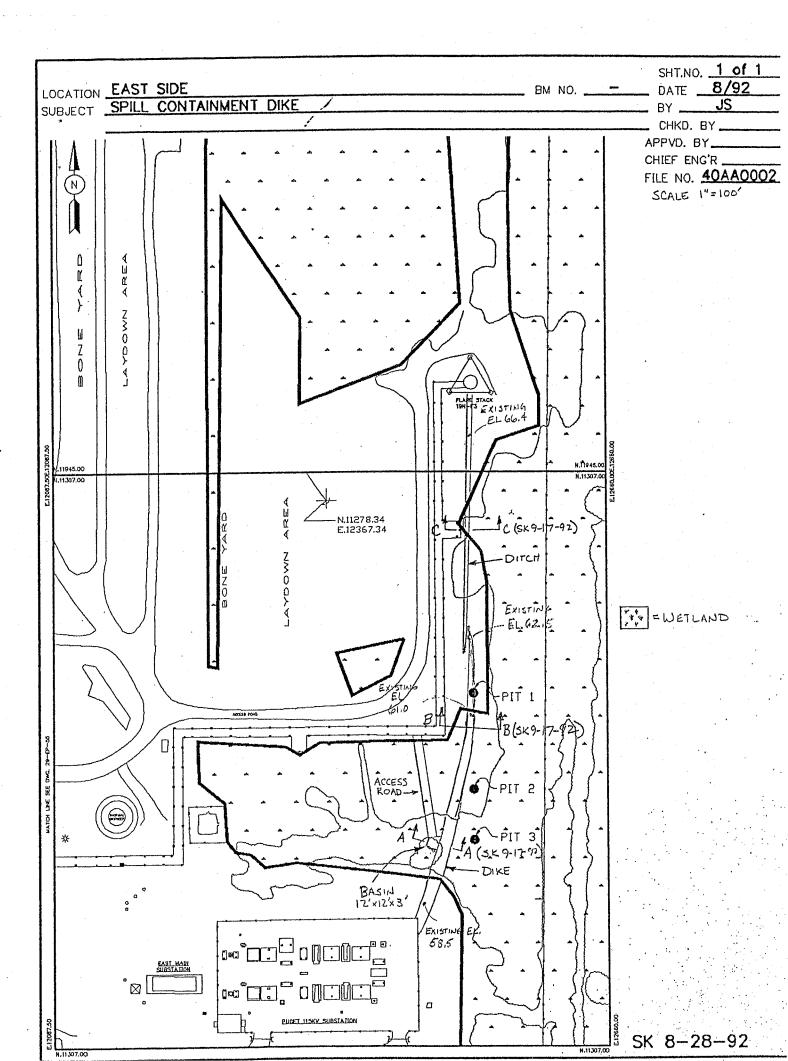
REFERENCE DRAWINGS

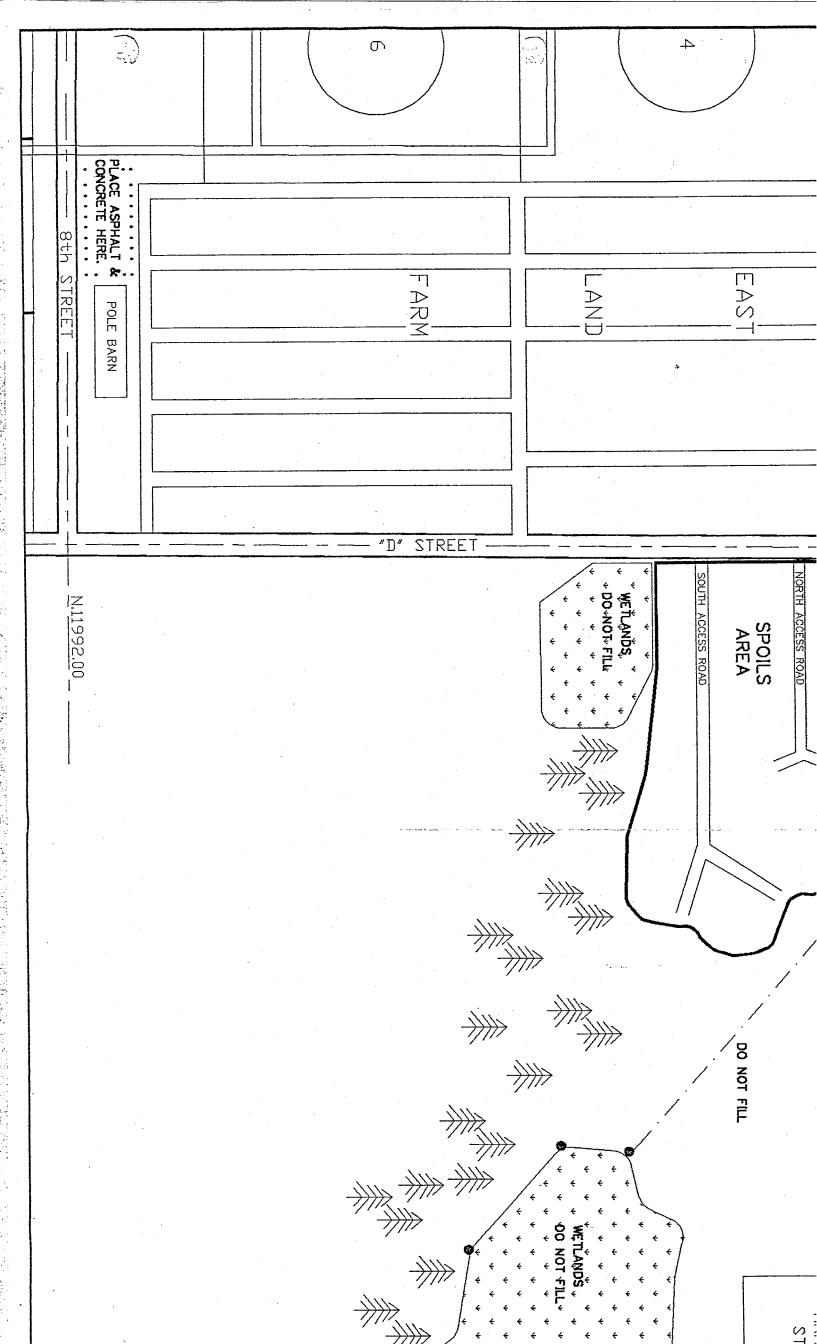
SK8-28-92 SPILL CONT. DIKE SK8-25-93 BASIN PLAN

SK 9-17-92



SK 9-17-92 SPILL CONT. SECS. SK 8-28-92 SPILL CONT. DIKE





Appendix B

3.11.0 Within 12 months of the adoption of Ecology's oil spill prevention operations standards, install, test and maintain a continuous leak detection system on all dock transfer lines in accordance with state requirements. Within 2 months of the systems installation submit documentation to Ecology which includes a description of the commercial leak detection system installed, all additional enhancements to the commercial detection system, and results of performance tests conducted which demonstrate that the leak detection system installed will meet all leak detection standards.

Status: Item Closed, Leak Detection system was installed and operational on June 2, 1995, one year from the date of the signing of the Facility Operations and Design Standards Rule Chapter 173-180A WAC. A final report, drawings and photographs have been included in this section.













