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MCAS EL TORO
SSIC # 5090.3

**MARINE CORPS AIR STATION
EL TORO, CALIFORNIA**
**ADDENDUM 1A TO SITE ASSESSMENT REPORT
FOR TANK 398 AREA**
CONTINUED PILOT STUDY OF A PRODUCT RECOVERY SYSTEM
12 JANUARY 1993

PREPARED BY:

*Southwest Division Naval Facilities
Engineering Command
1220 Pacific Highway
San Diego, California 92132-5187*

THROUGH:

*CONTRACT #N68711-89-D-9296
CTO #0150
DOCUMENT CONTROL NO:
CLE-101-01F150-86-0002*

WITH:

*Jacobs Engineering Group Inc.
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San Diego, California 92122*

In association with:

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ADDENDUM 1A CONTINUED PILOT STUDY OF A PRODUCT RECOVERY SYSTEM

1.0 INTRODUCTION

This report is an addendum to the Site Assessment Report prepared under Contract Task Order (CTO) #0150 issued by the Southwest Division Naval Facilities Engineering Command (Navy) to the Jacobs Engineering Group, Inc. (Jacobs) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) program, Contract No. N68711-89-D-9296. The addendum was prepared in partial fulfillment of Work Scope Modification No. 1 (MOD 1) issued to CTO #0150.

1.1 Project Background and Objectives

The pilot study began under CTO #0112. The system was purchased and installed in April 1991 and was operated through November 1991 under CTO #0112. In December 1991, the air compressor was stolen and pumping activities ceased until the funding of MOD 1 under CTO #0150. A work authorization for MOD 1 was received in May 1992. This addendum report describes activities performed during the period from May 1992 through November 1992.

The objectives of the original pilot study were met and are described in a report being prepared under CTO #0112. The objectives were as follows:

- Determine the effectiveness of the system for removing the free hydrocarbon layer
- Gather information needed for the design of future remediation systems for the Tank 398 area.

After the pilot study under CTO #0112 was completed and pumping operations ceased, the Regional Water Quality Control Board (RWQCB), Santa Ana Region, requested that free product removal be continued. This was the primary reason that funding was authorized to continue the pilot study operations.

The RWQCB also requested that free product thicknesses be measured regularly and that a product-only pumping test be conducted. The objectives of this portion of the pilot

study operations are to comply with these requests and to provide more information on the efficiency of the system for site remediation.

1.2 Site Description

As described in the Site Assessment Report (Navy, 1992), the Tank 398 site consists of paved and unpaved areas bound by taxiways to the south, east, and west, and building 372 to the north.

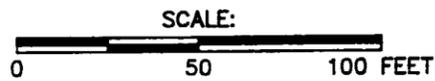
Six 4-inch monitoring wells (MW398-01 through MW398-06) were installed in 1990, at which time 8 feet of JP-5 was measured in MW398-02. No free floating product was encountered in the other five wells at that time.

As part of the site assessment activities in January 1992, three six-inch wells (MW 398-10, -11, and -18) were installed in the study area for use as recovery wells. MW398-10 was screened in mostly silt, MW398-11 was screened in mostly clay, and MW398-18 was screened in a sand and gravel deposit (Figure 1).

The sand and gravel deposit intersected by MW398-18 appears to be a channel that is also intersected by MW398-02, MW398-01, and possibly MW398-06. Additional site assessment (the installation of three more wells) is being conducted under MOD 2 of this CTO to further delineate the sand channel and JP-5 migration. Results of this investigation will be presented in Addendum 2 to the Site Assessment Report.

A pumping system was installed in MW398-02 and operated for 1 year under CTO #0112. A separate report describing system selection, operation theory, and the pilot test results is being prepared under that CTO (Navy, 1993). The system includes a pneumatic pump, a control panel, an air compressor, and a receiving tank. The pump is a 3-inch-diameter product-only pump manufactured by Ejector Systems, Inc. (Figure 2). The system is connected by extension cord to an electrical outlet at a nearby trailer.

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 CHECKED BY: MIP 7-6-93
 APPROVED BY: MIP 7-6-93
 DRAWING NUMBER: 243150-B28



LEGEND

- SB398-02 ● LOCATION OF SOIL BORING DRILLED TO GROUNDWATER
- MW398-04 ● MONITORING WELL LOCATION
- PRIMARILY SAND AND GRAVEL*
- PRIMARILY SILT*
- PRIMARILY CLAY*

* ESTIMATED DISTRIBUTION OF SOIL TYPES AT WATER TABLE BASED ON GROUNDWATER ELEVATIONS MEASURED ON FEBRUARY 28, 1992

NOTE:

DISTRIBUTION OF SOIL TYPES AT GROUNDWATER TABLE SHOWN IS HIGHLY SCHEMATIC AND BASED ON A LIMITED NUMBER OF DATA POINTS. DISTRIBUTION IS EXPECTED TO CHANGE SIGNIFICANTLY WITH EVEN SLIGHT CHANGES IN GROUNDWATER ELEVATIONS.

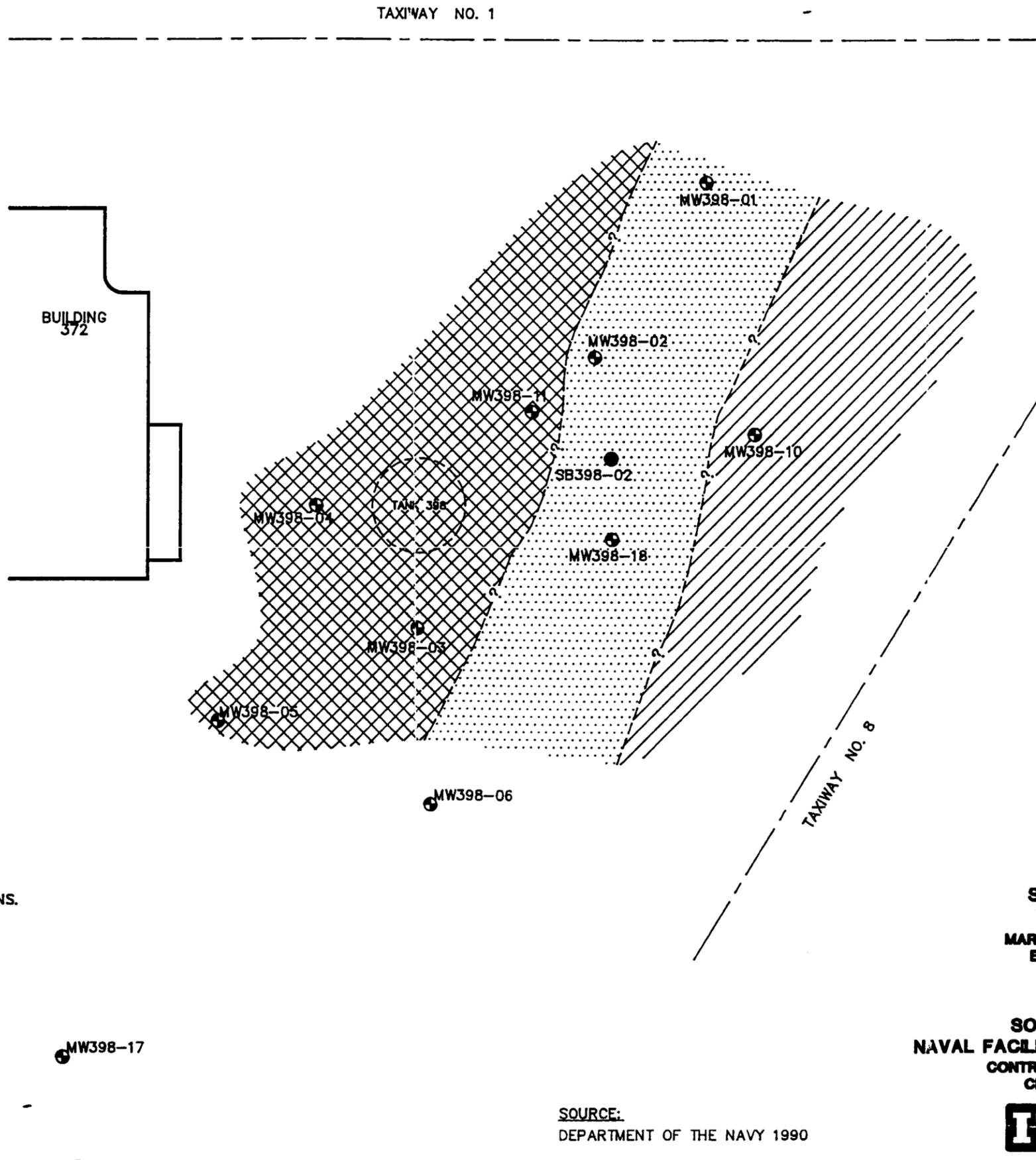


FIGURE 1
SITE DESCRIPTION
TANK 398 AREA
MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

PREPARED FOR
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
 CONTRACT NO. N68711-89-D-0286
 CLE-101-01F150-86-0002



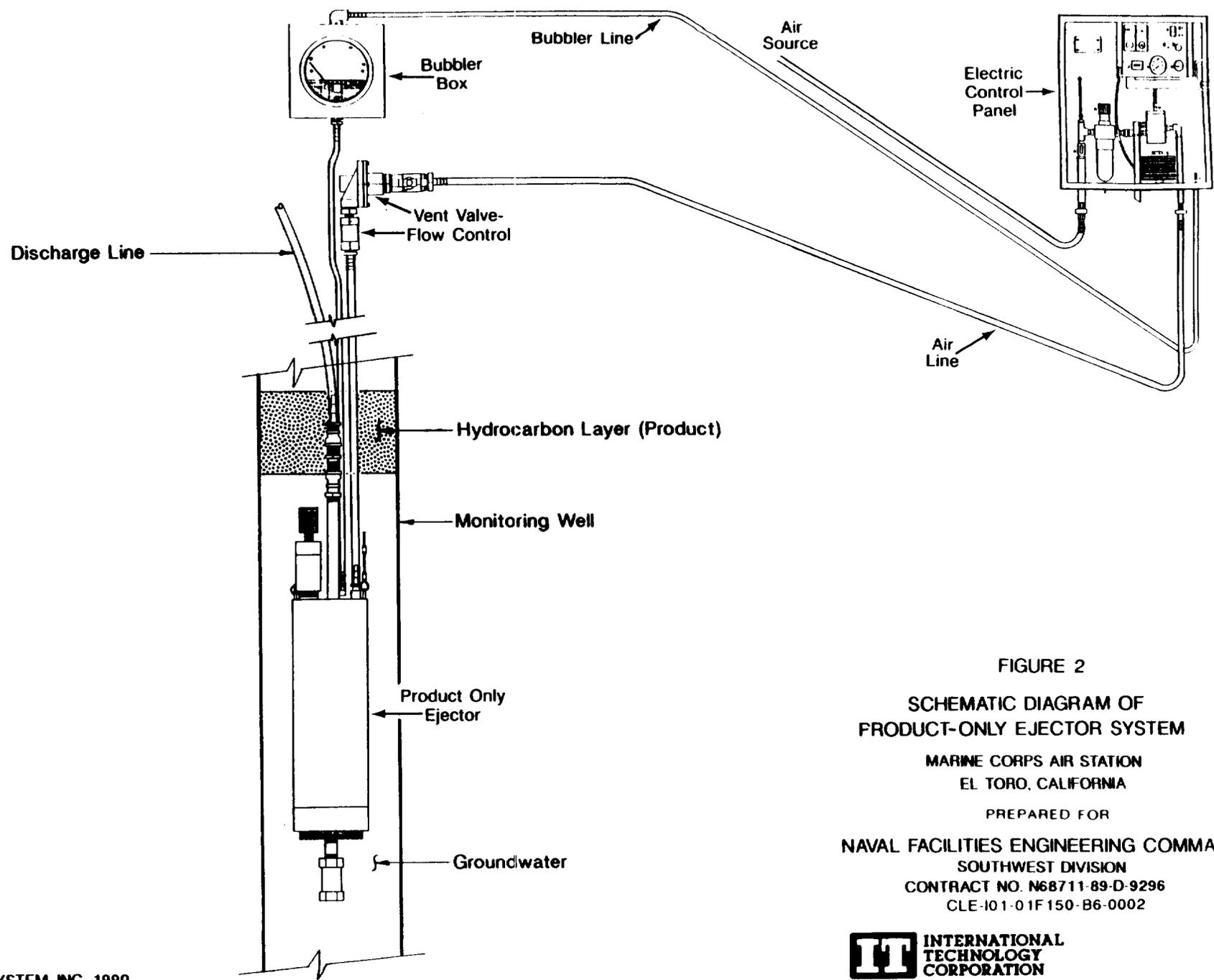
SOURCE:
 DEPARTMENT OF THE NAVY 1990

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	12-10-90	APPROVED BY	OUT	5-21-91		



1-5

FIGURE 2
**SCHEMATIC DIAGRAM OF
 PRODUCT-ONLY EJECTOR SYSTEM**
 MARINE CORPS AIR STATION
 EL TORO, CALIFORNIA
 PREPARED FOR
 NAVAL FACILITIES ENGINEERING COMMAND
 SOUTHWEST DIVISION
 CONTRACT NO. N68711-89-D-9296
 CLE-I01-01F150-B6-0002

SOURCE:
 EJECTOR SYSTEM, INC. 1990



806690

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2.0 TECHNICAL APPROACH

This section describes activities performed under CTO 150, MOD 1, Option 2 (continued pilot study operations).

2.1 Site Monitoring and Product Recovery

In May 1992, a new air compressor was purchased and installed, and pumping was resumed. Field activities included biweekly measurements of the following:

- Cycle counter
- Air pressure
- Control pressure
- Discharge pressure
- Duration of fill cycle
- Duration of empty cycle
- Bubbler well gage readings
- Tank fuel level.

These measurements are documented on the field activity logs presented in Attachment 1.

The system pumped continuously from May 21 to July 2, when it was unplugged. The fill and empty cycles had shifted and were taking too long. On July 28, a representative from the pump manufacturer visited the site to help correct the irregular cycles. The pump was lowered and adjustments were made to the fill and empty cycles. The system was found unplugged again on the following visit (August 5). The system was restarted and continuous pumping was achieved until approximately September 16, when the pump was again found unplugged and flagged with a note to not use the previously tapped supply. Approximately 1,000 to 1,200 gallons of fuel was emptied from the tank for recycling by the Navy.

On 3 November 1992, a drill rig was contracted to pull the pump from MW398-02 and place it in MW398-18 to accomplish the following:

- Measure product thickness in MW398-02
- Measure product recovery rate in MW398-02 after removal of the pump
- Check the condition of the pump
- Establish higher recovery rates for 6-inch-diameter wells.

A new control box was installed with digital settings for fill and empty cycles. The hoses were damaged and replaced with new ones. The pump was cleaned and found to be in good condition.

Product thickness in MW398-02 was measured at 2.85 feet immediately after pump removal. Successive measurements after 8 hours and after 6 days showed very little change in product thickness in that well.

The new system was started up in well MW398-18 (a 6-inch well), and an optimum pumping rate was determined by adjusting the fill and empty cycles. The fill and empty cycles were set at 30 and 90 seconds, respectively. To measure pumping rates, product was allowed to flow into a 5-gallon bucket and timed. A pumping rate of 3.6 gallons per hour (gph) was established; however, the duration of the pumping is uncertain because the system was unplugged again a few days later. When measured one or two days after pumping was discontinued, the bubbler showed a 4-inch reduction in product thickness in MW398-18.

The product level (shown by the bubbler) does not dip during the fill cycle as it does in the 4-inch well, also indicating that this higher pumping rate can be sustained for increased removal rates.

Bubbler readings measure the amount of fluid (water and/or JP-5) above the pump inlet. These readings may be used as a general guide to indicate pumping efficiencies and product thicknesses, but actual thicknesses may vary owing to the buoyancy of the JP-5 and its relative position to the pump.

Attempts to lower the 1-inch-diameter oil/water interface probe past the 3-inch pump were unsuccessful.

2.2 Storage and Disposal of Free Product

Free product is pumped directly into a 3,000 gallon trailer tank. When the tank becomes full, it is removed from the site and emptied. The free product is sold to a recycling center, along with other waste fuel generated at the MCAS.

TABLE 1**Free Product Thickness Measurements**

Well No	JP-5 Thickness (feet)				
	1 April 1992	3 June 1992	5 August 1992	15 September 1992	3 November 1992
398-01	3.74	3.05	4.18	4.97	5.62
398-02	NM	NM	NM	NM	2.85
398-10	1.61	1.93	1.69	2.16	4.01
398-11	0	0	0	0	0
398-18	6.55	6.35	6.62	7.20	6.84

Note: MW398-01 contained no free product in April 1990 and only minor amounts of dissolved JP-5. MW398-02 contained approximately 8 feet of JP-5 in April 1990.

NM - Not measured - occupied by pump.

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3.0 CONCLUSIONS AND RECOMMENDATIONS

The decrease in product thickness at MW398-02 due to pumping over the past 18 months has reduced the weight over the water table in that area, and the resulting rise in water table has effectively pushed product away from the center of the plume at MW398-02 toward MW398-01 and MW398-18 (upgradient and downgradient), as shown in Figure 3. This accounts for some of the increase in product thicknesses at those locations. Figure 3 shows a conceptual model of product plume movement.

Factors controlling free product plume migration are related more to site geology than to groundwater gradient. JP-5 entering the sand channel will migrate preferentially upgradient along the channel rather than downgradient through less permeable units. Product is even more likely to migrate upgradient along the sand channel if the downgradient portion of the channel dips below the water table.

Additional wells installed as part of MOD 2 to this CTO will help define the sand channel, plume size, and the effects of pumping in MW398-18.

Product thickness in all wells should be monitored monthly to evaluate the movement of the plume. The thickness of product in MW398-02 is of particular interest. The speed with which the product thickness increases in this well will provide information on the source of the plume and the capacity and yield of the formation.

Jacobs recommends that an additional pump be installed in MW398-01. Once product levels have been reduced in MW398-01 and -18, one of the pumps can be returned to MW398-02 (at which time more product may have accumulated in the well). It is common practice to allow wells from which free product has been pumped to recover or reach equilibrium over a period of weeks or months. During well recovery, the pumps can be rotated and used in other wells. If free product is encountered in the proposed new wells, the product pumps can be rotated among those wells also.

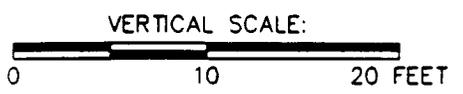
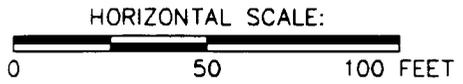
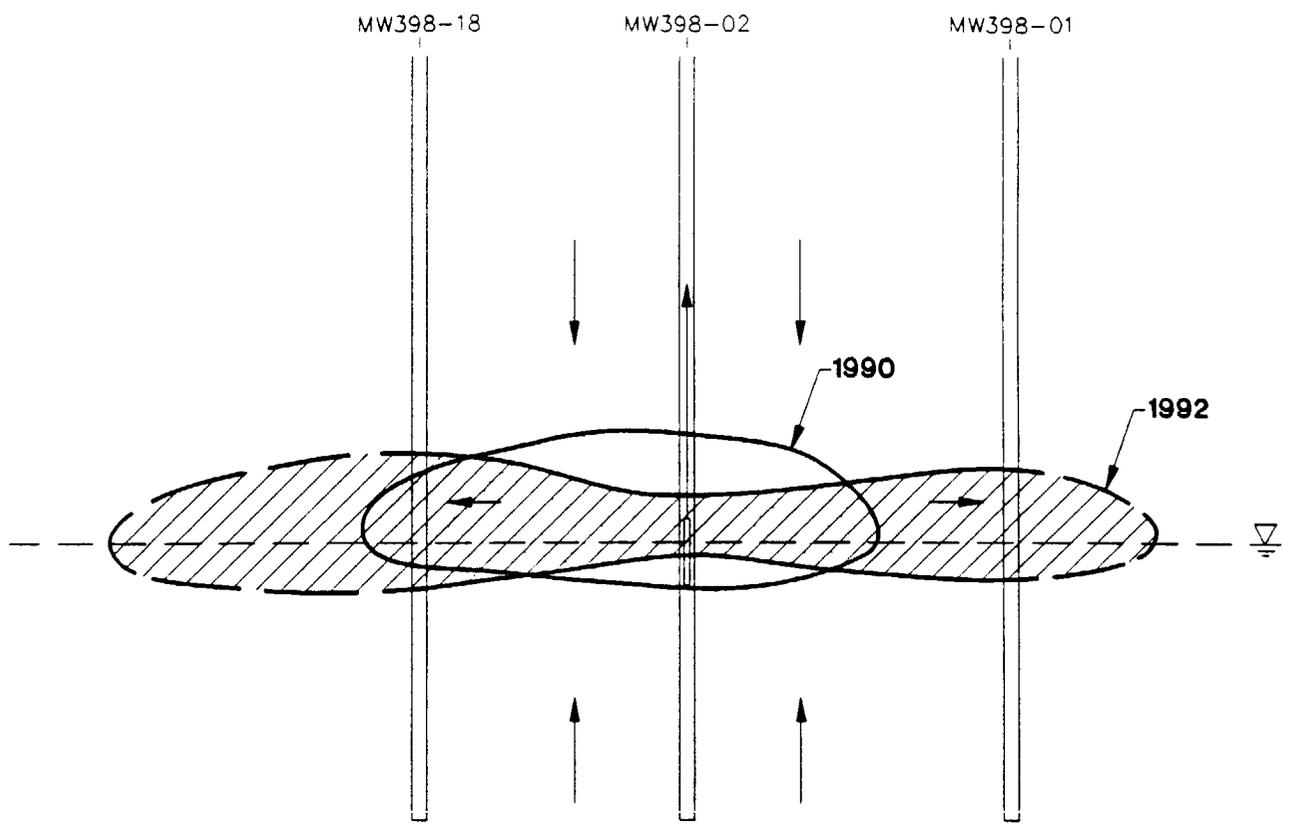
Before any further action is taken, a secure power supply and more permanent facilities must be obtained to allow recovery to continue unobstructed.

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 CHECKED BY MFS
 APPROVED BY MFS
 SDJF
 12-14-92
 DRAWN BY

WEST

EAST



5X VERTICAL EXAGGERATION

WATER TABLE

BASED ON FREE PRODUCT THICKNESS
 IN WELLS, NOT MEANT TO DEPICT SOIL
 PORTION SATURATED WITH PRODUCT.
 CHANGES SHOWN HAVE OCCURRED OVER
 A PERIOD OF 2 YEARS

FIGURE 3

**FREE PRODUCT PLUME
 CONCEPTUAL MODEL
 MARINE CORPS AIR STATION
 EL TORO, CALIFORNIA**

PREPARED FOR

**SOUTHWEST DIVISION
 NAVAL FACILITIES ENGINEERING COMMAND
 CONTRACT NO. N68711-89-D-9296
 CLE-101-01F150-86-0002**

**INTERNATIONAL
 TECHNOLOGY
 CORPORATION**

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4.0 REFERENCES

Navy. see Southwest Division Naval Facilities Engineering Command.

Southwest Division Naval Facilities Engineering Command, 1992, "Marine Corps Air Station El Toro, California, Site Assessment Preliminary Draft Report For Tank 398 Area," prepared by Jacobs Engineering Group Inc., 9 June.

Southwest Division Naval Facilities Engineering Command, 1993, "Marine Corps Air Station El Toro, California, Pilot Study of Free-Phase Hydrocarbon Recovery System for Tank 398 Area," in preparation by Jacobs Engineering Group Inc.

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ATTACHMENT 1
DAILY FIELD ACTIVITY LOGS



FIELD ACTIVITY DAILY LOG

PROJECT NAME MCAS EL TORO	PROJECT NO. 243112-16
FIELD ACTIVITY SUBJECT: Pilot Study of Product Recovery System 343150-17	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:	
<p>Date: 5/22/92 Time: 1745</p> <p>Cycle Counter: 000004</p> <p>Air Pressure: 120 psi</p> <p>Control Pressure: 60 psi</p> <p>Discharge Pressure: 85 psi</p> <p>Duration of Fill Cycle: 70 sec</p> <p>Duration of Empty Cycle: 145 sec</p> <p>Bubbler Well Gauge Readings:</p> <p style="padding-left: 40px;">During Fill Cycle: 14 inches of water</p> <p style="padding-left: 40px;">During Empty Cycle: 18 inches of water</p> <p>Tank Fuel Level: 1 inches</p>	
VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS. Hook up new air compressor, getting system restarted.
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS: (System had not been in operation since Dec. 1991).
IT PERSONNEL ON SITE: Steve Tsai + Maria Shayegan	
SIGNATURE Maria P. Shayegan	DATE: 5-21-92



FIELD ACTIVITY DAILY LOG

PROJECT NAME MCAS EL TORO	PROJECT NO. 243150-17
FIELD ACTIVITY SUBJECT: Pilot Study of Product Recovery System	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:	
<p><i>14:35- Dropped off a box of Locks to Gary at the Jacobs trailer.</i></p> <p>Date: 5/26/92 Time: 14:45</p> <p>Cycle Counter: 000981</p> <p>Air Pressure: 115 psi</p> <p>Control Pressure: 56 psi</p> <p>Discharge Pressure: 84 psi</p> <p>Duration of Fill Cycle: sec</p> <p>Duration of Empty Cycle: 150 sec</p> <p>Bubbler Well Gauge Readings:</p> <p style="padding-left: 40px;">During Fill Cycle: 15 inches of water</p> <p style="padding-left: 40px;">During Empty Cycle: 11 inches of water</p> <p>Tank Fuel Level: 12 inches</p> <p><i>I cannot distinguish when a fill cycle ends and an empty cycle begins.</i></p>	
VISITORS ON SITE: <i>N/A</i>	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS. <i>N/A</i>
WEATHER CONDITIONS: <i>Hazy, 75°</i>	IMPORTANT TELEPHONE CALLS: <i>N/A</i>
IT PERSONNEL ON SITE: <i>Taylor Waters</i>	
SIGNATURE <i>Taylor Waters</i>	DATE: 5/26/92



FIELD ACTIVITY DAILY LOG

PROJECT NAME MCAS EL TORO	PROJECT NO. 243112-16
----------------------------------	------------------------------

FIELD ACTIVITY SUBJECT: Pilot Study of Product Recovery System	150-17
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DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

Date: 06/03/92 Time: 14:10

Cycle Counter: 002237

Air Pressure: 115 psi

Control Pressure: 56 psi

Discharge Pressure: 84 psi

Duration of Fill Cycle: 565 sec

Duration of Empty Cycle: 100 sec

Bubbler Well Gauge Readings:

During Fill Cycle: 15 inches of water

During Empty Cycle: 10.5 inches of water

Tank Fuel Level: 17 inches

VISITORS ON SITE: <i>N/A</i>	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS. <i>N/A</i>
---------------------------------	--

WEATHER CONDITIONS: <i>clear 80°</i>	IMPORTANT TELEPHONE CALLS: <i>N/A</i>
---	--

IT PERSONNEL ON SITE:

SIGNATURE <i>Taylor Waters</i>	DATE: <i>06/03/92</i>
--------------------------------	-----------------------



FIELD ACTIVITY DAILY LOG

PROJECT NAME	MCAS EL TORO	PROJECT NO.	243112-16
FIELD ACTIVITY SUBJECT:		Pilot Study of Product Recovery System	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:		243150-17 (TW)	
			
Date: 6-16-92		Time: 13:35	
Cycle Counter: 00331.5			
Air Pressure:	118	psi	
Control Pressure:	55	psi	
Discharge Pressure:	85	psi	
Duration of Fill Cycle:	27:59 sec MIN RED-OUT		
Duration of Empty Cycle:	02:00 sec MIN RED-IN		
Bubbler Well Gauge Readings:			
During Fill Cycle: 13.5		inches of water	
During Empty Cycle: 11		inches of water	
Tank Fuel Level: 21	inches		
VISITORS ON SITE:		CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.	
NONE		N/A	
WEATHER CONDITIONS:		IMPORTANT TELEPHONE CALLS:	
CLEAR		N/A	
IT PERSONNEL ON SITE: CARY PARRISH			
SIGNATURE: Cary Parrish			DATE: 6-16-92



FIELD ACTIVITY DAILY LOG

OBJECT NAME	MCAS EL TORO	PROJECT NO.	243112-16
FIELD ACTIVITY SUBJECT	Pilot Study of Product Recovery System		
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS.		(Pegs in)	(Pegs out)
		2:22:50 -	2:24:40
<p>Date: 7/2/92 Time: 14:20 arrived on site.</p> <p>Cycle Counter: 003767.5</p> <p>Air Pressure: 35 psi</p> <p>Control Pressure: 28 psi 56</p> <p>Discharge Pressure: 28 psi 84</p> <p>Duration of Fill Cycle: sec</p> <p>Duration of Empty Cycle: 110 sec</p> <p>Bubbler Well Gauge Readings:</p> <p style="padding-left: 40px;">During Fill Cycle: 12.5 inches of water 15</p> <p style="padding-left: 40px;">During Empty Cycle: 10 inches of water</p> <p>Tank Fuel Level: 24 inches</p> <p>14:35 - Checked the air compressor. It must be unplugged or shut off because it has only 35 psi. The door to the white fuels trailer is locked. Gas is the fence around the tank. There's a stack of pallets placed on top of the cord. The cord should be moved underground.</p>			
VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.		
N/A	System was shut off - Had to turn the power back on.		
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:		
Clear, breezy warm $\approx 75^\circ$	Called Steve Tsai (ITCorp) to discuss the empty and fill cycles. Shut the system down until next week.		
IT PERSONNEL ON SITE:	Taylor Waters		
SIGNATURE	Taylor Waters	DATE:	7/2/92



FIELD ACTIVITY DAILY LOG

PROJECT NAME El Toro UCAS PROJECT NO. 244315-17

FIELD ACTIVITY SUBJECT: Data recording for Pilot Recovery System

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:
(fuel?)

15:00 The tool Sargent arrived for the gate. He opened the shed. The main power had been shut off instead of just the lights. I asked him to spread the word to the others to leave the main power on so our system runs 24 hours a day.

- He said it was probably just 1/2 hour ago that the power was shut off.

13:32:25 - The system popped and just as quickly popped again. The cycle counter is now 003768.5 This may be due to my playing with the empty and fill dials. I did not notice any change in the pressure gages. The air compressor starts up at 94 psi.

NOTE - We need to open the drain on the compressor and buy some air filters - this is a very dusty area.

15:50 - I lowered the control pressure to 45 psi and the system popped and moved the cycle counter to 3769 with the 6 and 9 half way

VISITORS ON SITE:
N/A

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
N/A

WEATHER CONDITIONS:
N/A

IMPORTANT TELEPHONE CALLS:
N/A

IT PERSONNEL ON SITE:

SIGNATURE Taylor Watson DATE: 7/2/92



FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	7	2	92
	NO.	0	0	6
	SHEET	3 OF 3		

PROJECT NAME EL Toro MCAS PROJECT NO. 243150-17

FIELD ACTIVITY SUBJECT: Data recording for Pilot recovery System

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

15:50 (continued) to 7 and 0. I didn't think this would keep an accurate count of cycles so I zeroed out the counter.

15:45 - Called Steve Tsai and Maria Shayan. I described the situation in that I couldn't tell if moving the empty and full dials was making any difference and Steve decided we should shut the system off. I closed the inlet valve and the discharge valve inside the control box.

16:20 - I unplugged the compressor from inside the white shed. I measured the tank at approximately 24 inches.

16:27 - Cleaned up, off site.

VISITORS ON SITE:
N/A

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
N/A

WEATHER CONDITIONS:
N/A

IMPORTANT TELEPHONE CALLS:
N/A

IT PERSONNEL ON SITE: Taylor Waters

SIGNATURE Taylor Waters DATE: 7/2/92



FIELD ACTIVITY DAILY LOG

PROJECT NAME EL TORO MCAS PROJECT NO. 243150-17

FIELD ACTIVITY SUBJECT: Inspect Ejector pump control Box

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

14:05 - Arrived at the site. Plugged in the compressor and waited for the air to fill the lines.
 14:15:00 Empty cycle starts - Red pegs out.
 14:18:45 - Begin fill cycle.
 14:19:45 - Empty cycles begins.
 14:21:20 - Fill cycle starts.

- Wayne Heinsoth adjusted the fill and empty knobs to get the timing right.
- Wayne said that if the system is started and air is allowed to gradually build up that the valves sometimes get stuck between cycles - it's better to close the control Valve until the air has built up and then open it so the pressure hits the valves all at once.
- Wayne decided the pump needed to be lowered. It was dropped 3-4 inches. We pulled the hose down and watched the JP-5 flow into a 5-gallon bucket.

16:30 - We left the site with the fill cycle at 60 sec. and the empty cycle at 180 seconds.

VISITORS ON SITE: <u>N/A</u>	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS. <u>N/A</u>
---------------------------------	--

WEATHER CONDITIONS: <u>Clear, warm 85°</u>	IMPORTANT TELEPHONE CALLS: <u>N/A</u>
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IT PERSONNEL ON SITE: Taylor Waters

SIGNATURE Taylor Waters DATE: 7/28/92



FIELD ACTIVITY DAILY LOG

PROJECT NAME	MCAS EL TORO	PROJECT NO.	243112-16
FIELD ACTIVITY SUBJECT:	Pilot Study of Product Recovery System		243150-17

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

Date: 7/28/92 Time: 15:17

Cycle Counter: 00000 - Not working

Air Pressure: 120 psi

Control Pressure: 60 ~~50~~ psi

Discharge Pressure: 33 psi

Duration of Fill Cycle: 60 sec

Duration of Empty Cycle: 180 sec

Bubbler Well Gauge Readings:

During Fill Cycle: 14 inches of water

During Empty Cycle: 20 inches of water

Tank Fuel Level: 23 inches

VISITORS ON SITE: N/A	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS. N/A
------------------------------	---

WEATHER CONDITIONS: Hot, clear 85	IMPORTANT TELEPHONE CALLS: N/A
--	---------------------------------------

IT PERSONNEL ON SITE: Taylor Waters	DATE: 7/28/92
SIGNATURE: Taylor Waters	



FIELD ACTIVITY DAILY LOG

OBJECT NAME **MCAS EL TORO** PROJECT NO. **243112-16**

FIELD ACTIVITY SUBJECT **Pilot Study of Product Recovery System** 243150-17

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS.

Date: 08/05/92 Time: 15:00/16:24

Cycle Counter: 00000/000015

Air Pressure: psi ~~65~~

Control Pressure: psi ~~88~~ 60

Discharge Pressure: psi 88

Duration of Fill Cycle: sec 10:29:05 - 10:30:20 = 75 seconds

Duration of Empty Cycle: sec 10:25 - 10:29:05 = 245 seconds

Bubbler Well Gauge Readings:

During Fill Cycle: inches of water 14-inches

During Empty Cycle: inches of water / 20-inches

Tank Fuel Level: 24 inches

The extension cord was unplugged from the building.

- Well MW-16 needs an IT lock.
- We need to use the Buddy system on this site.
- We need a pair of pliers to drain the condensate from the compressor
- Need a tape measure to mark the tank stick.

VISITORS ON SITE: - Need Base Contact to insure the plug doesn't get unplugged again. N/A N/A 16:55 off site.	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
---	--

WEATHER CONDITIONS: Clear, Hot 85°	IMPORTANT TELEPHONE CALLS: N/A
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IT PERSONNEL ON SITE **Taylor Waters**

SIGNATURE **Taylor Waters** DATE: **8/05/92**

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	8	19	92
	NO.	0	0	10
	SHEET	/ OF /		

PROJECT NAME

MCAS EL TORO

PROJECT NO.

243112-16

FIELD ACTIVITY SUBJECT:

Pilot Study of Product Recovery System

243150-17

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

16:05 - Arrived on site. The system is running.

Date: 8/19/92

Time: 16:11

16:11:45 -

Cycle Counter: 00/500

Air Pressure: 90 psi (compressor kicked in at 90 psi)

Control Pressure: 60 psi (was at 58)

Discharge Pressure: 80 psi (was at 100) Back at 90

Duration of Fill Cycle: 65 sec

Duration of Empty Cycle: 180 sec

Bubbler Well Gauge Readings:

(Pegs IN) During Fill Cycle: ~~12~~ inches of water

(Pegs out) During Empty Cycle: 18 inches of water

Tank Fuel Level: 27 inches

16:45 - OFF SITE.

Pegs out 16:26:30 - 16:28:00 90 sec, Pegs out 16:33:40 - 16:36:40 180 sec.

Pegs in 16:28:00 - 16:29:05 65 sec. 16:36:40 - 16:37:45 65 sec

Pegs out 16:29:05 - 16:32:30 205 sec

Pegs in 16:32:30 - 16:33:40 70 sec

VISITORS ON SITE:

N/A

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.

N/A

WEATHER CONDITIONS:

Clear, Hot 80°

IMPORTANT TELEPHONE CALLS:

N/A

IT PERSONNEL ON SITE:

Taylor Waters

SIGNATURE

Taylor Waters

DATE:

8/19/92



FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE:	8	26	92
	NO.	0	0	11
	SHEET	OF		

PROJECT NAME	MCAS EL TORO	PROJECT NO.	243112-16
FIELD ACTIVITY SUBJECT:	Pilot Study of Product Recovery System		243150-17

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

10:07 - Arrived on site. Everything is on and working. Stockpiles of soil still out near the new pipeline.

Date: 8/26/92 Time: 16:08

Cycle Counter: 002418

Air Pressure: 92 psi

Control Pressure: 62 psi

Discharge Pressure: 84 psi

Duration of Fill Cycle: 90 sec

Duration of Empty Cycle: sec

Bubbler Well Gauge Readings:

	(Fill)	(Empty)
During Fill Cycle:	17 inches of water	16:23:00 - 16:24:30
During Empty Cycle:	13 inches of water	16:38:00 - 16:38:55

Tank Fuel Level: 28 inches

16:40 - The system is taking too long to empty. I tried adjusting the setting but it's hard to know if that's working because it doesn't start emptying right away.

16:45 - Off site.

VISITORS ON SITE: N/A	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS. N/A
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WEATHER CONDITIONS: Clear, warm, 80°	IMPORTANT TELEPHONE CALLS: N/A
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IT PERSONNEL ON SITE: Taylor Waters	DATE: 8/26/92
SIGNATURE: Taylor Waters	



DAILY LOG	DATE	10	9	92
	NO.	0	0	12
	SHEET	/ OF 1		

FIELD ACTIVITY DAILY LOG

PROJECT NAME MCAS EL TORO	PROJECT NO. 243150-17
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FIELD ACTIVITY SUBJECT: **Pilot Study of Product Recovery System**

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

Date: 9-10-92 **Time:** 1628

Cycle Counter: 5565

Air Pressure: 104 psi

Control Pressure: 62 psi

Discharge Pressure: 90 psi 94 (fill cycle) 86 (empty cycle)

Duration of Fill Cycle: ~~90~~ 100 sec

Duration of Empty Cycle: ~~100~~ 20 minutes sec 80-90

Bubbler Well Gauge Readings:

During Fill Cycle: 13 inches of water

During Empty Cycle: 18 inches of water

Tank Fuel Level: 29 inches

20950.4

1628 16:46

16:47.5

VISITORS ON SITE:

None

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.

Doing down hole geophysics on MW398-01, -10 and -18.

WEATHER CONDITIONS:

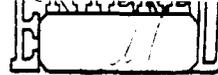
fair

IMPORTANT TELEPHONE CALLS:

None

IT PERSONNEL ON SITE: *Tony Martin, Maria Shayegan*

SIGNATURE *S Maria P Shayegan* **DATE:** *10 Sept. 92*



DAILY LOG	DATE:	9	16	92
	NO.	0	0	13
	SHEET	1	OF	1

FIELD ACTIVITY DAILY LOG

PROJECT NAME: **MCAS EL TORO** PROJECT NO.: **243112-16**

FIELD ACTIVITY SUBJECT: **Pilot Study of Product Recovery System** 243150-17

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

Date: 9/16/92 Time: 14:00

Cycle Counter: 005827

Air Pressure: 0 psi

Control Pressure: 0 psi

Discharge Pressure: 0 psi

Duration of Fill Cycle: 0 sec

Duration of Empty Cycle: 0 sec

Bubbler Well Gauge Readings:

During Fill Cycle: 0 inches of water

During Empty Cycle: 0 inches of water

Tank Fuel Level: \approx 3 inches

- arrived on site. The extension cord was unplugged. The outlet had a note stating - "No Air compressor, too much current draw". We need our own electric set up for this system ASAP. I drained the condensate from the air compressor. 14:15 - off site

VISITORS ON SITE:
None

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
need to get our own electric for the system

WEATHER CONDITIONS:
clear, hot, breezy
 \approx 85°

IMPORTANT TELEPHONE CALLS:
N/A

IT PERSONNEL ON SITE: Taylor Waters

SIGNATURE: Taylor Waters DATE: 9/16/92



FIELD ACTIVITY DAILY LOG

PROJECT NAME MCAS EL TORO	PROJECT NO. 243112-16
FIELD ACTIVITY SUBJECT: Pilot Study of Product Recovery System 150-17	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:	
<p>Date: 9 November Time: 1430</p> <p>Cycle Counter:</p> <p>Air Pressure: 125 → 90 psi</p> <p>Control Pressure: 60 psi</p> <p>Discharge Pressure: 100 psi</p> <p>Duration of Fill Cycle: 29 sec (red)</p> <p>Duration of Empty Cycle: 190 sec (green)</p> <p>Bubbler Well Gauge Readings:</p> <p style="padding-left: 40px;">During Fill Cycle: 24 inches of water</p> <p style="padding-left: 40px;">During Empty Cycle: 24 inches of water</p> <p>Tank Fuel Level: 6 inches</p>	
VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS.
None	—
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:
Fair	—
IT PERSONNEL ON SITE: Maria Shayegan	
SIGNATURE Maria P. Shayegan	DATE: 9 Nov '92

CTO-150

July 7, 1992

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Attn: Steve Tsai, Project Manager

From: Steven Kummerfeldt, Project Engineer

Subject: MARINE CORPS AIR STATION
EL TORO, CALIFORNIA
FREE PRODUCT RECOVERY SYSTEM

Description of Site and System

Free-product collection system operating from 1 recovery well
Ejector Systems Product Only Pump (Air actuated)
ESI Model S2 Pump Controller
Small portable compressor in fenced area
Compressor connected to standard extension cord across road to
personnel/storage container
Collected free-product fluid stored in aboveground tanker truck

Extraction Pump Supported by:

General Air Compressor Company (714) 996-7660
American IMC Compressor Model AT1A203CP
115/230 vac, 1 phase, 19/9.5 amps

Power Line Distance (Compressor to Storage Container): 90 feet

Existing Storage Container Power Panel Circuits:

Panel Rated 120/240 volt, 3 phase, 4 wire, 60 HZ, 100amp

<u>Circuit Number</u>	<u>Labeled</u>	<u>Breaker Rating</u>
11,13,14	Spare	20 amp
15	Spare	30 amp

Suggested Corrections

1. The compressor is NEMA 1, rated for indoor use only. I recommend purchasing a small metal storage shed from Home Depot, assemble it at the site, and install it in the corner of the fenced area if possible. Secure the sides of the shed to the concrete floor with threaded hiltite bolts and angle iron brackets. Prevent wind movement of the shed by wrapping it vertically with 1/8-inch diameter cable woven through the fence.
2. Currently water which condenses in the compressor receiver tank must be manually drained. Accumulation of this water places a burden on the operation of the compressor and provides a poor quality pressurized air to the well pump. Recommend installation of an automatic discharge valve attached to the tank drain. This valve requires 110 vac power and the cycle and discharge times can be preset on the unit.

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MARINE CORPS AIR STATION
EL TORO, CALIFORNIA
FREE PRODUCT RECOVERY SYSTEM
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3. Electrical connections to the compressor are not to code and potentially dangerous. Standard electrical extension cable may not be rated for long-term exterior use and may not carry the current load of the compressor. In addition, since the cable is crossing a dirt roadway, the potential exists for severing the line by a vehicle and creating an electrical short.

I recommend that a qualified electrical contractor be hired to install a properly rated, exterior-use power cord to run directly from the storage container electrical panel, across the roadway, and be connected hard wire (not plug) into the compressor. The contractor should also install one safety disconnect switch directly next to the compressor to be able to access the unit without turning off the circuit breaker in the storage container panel. The section of the power cord which crosses the dirt roadway should also be protected by a series of sandwiched plywood slats or a steel conduit staked to the ground.

4. The air supply line from the compressor to the pump controller also crosses an open area which is used for vehicle traffic. I suggest this line be placed in a conduit or shallow buried with a plastic wrap to protect it from vehicle compression and exposure to the sun.
5. Safety and security of the equipment and the truck may be an issue. The compressor would be located inside the storage shed whereby the access door can be latched and locked. The area around the tanker truck and recovery well should be enclosed by traffic barriers and caution tape. The tanker truck should be checked that the wheels are chocked, brake set, and the discharge line is properly secured to potential prevent fluid loss to the surrounding area.
6. The bubbler gauge was reading approximately 16 inches on June 3, 1992. The pump should be placed so that the inlet screen at the top of the pump body is located directly in the center or the upper half portion of the free-product plume. Since the pump is designed to pump free-product only, if the pump sees groundwater, no fluid will be pumped out. If low pumping rates are occurring, the pump should be pulled out and the free-product levels rechecked.

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EL TORO, CALIFORNIA
FREE PRODUCT RECOVERY SYSTEM
(Page 3 of 3)**

7. Additional items to be checked on the controller if the pump is not operating properly are:

A. Is the On-Off switch located behind the door on the front of the controller set to the "on" position? The gauges will still continue to function normally if this switch is set to the "off" position.

B. Check the "Pump Fire" button on the right side of the housing. Pressing this button is a quick way of determining if the pump is operating.

C. Check pressure gauges. Is the control pressure set to less than 90 psig and the bubbler gauger set to approximately 8 psig? Ejector pressure should be set to total head psig + 15 psig, where total head (psig) = total head (feet)/2.3.

D. Check the automatic water drain functions for the control and ejector pressure regulators. The controller ejects collected water from the regulators through two small holes in the bottom of the housing at the end of each cycle. The regulator filters are visible from under the housing. If these filters are plugged or dirty, a weak or no air pulse will be sensed indicating replacement is required.