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NAS CECIL FIELD, FL  
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QUARTERLY REPORT FOR 1 OCTOBER TO 31 DECEMBER 2000 AT SOUTH FUEL FARM  
SITE WITH TRANSMITTAL LETTER NAS CECIL FIELD FL  
2/26/2001  
ENSAFE



ENSAFE INC.

ENVIRONMENTAL AND MANAGEMENT CONSULTANTS

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February 26, 2001

Commanding Officer  
Southern Division  
Naval Facilities Engineering Command  
Attention: Nick Ugolini  
2155 Eagle Drive, P.O. Box 190010  
North Charleston, SC 29419-9010

Subject: Department of the Navy Contract No. N62467-98-D-0937  
**DO 0007: Quarterly Report 10/01/00 - 12/31/00, South Fuel Farm  
NAS Cecil Field, Jacksonville, Florida**

Dear Sir:

Enclosed for your review is a copy of the Quarterly Report for the time period 10/01/00 to 12/31/00 for the South Fuel Farm, NAS Cecil Field, Jacksonville, Florida. Upon your approval of this report, I will forward it to David Grabka with the Florida Department of Environmental Protection.

If you have any questions concerning the project, please do not hesitate to contact me at (901) 372-7962.

Sincerely,

EnSafe Inc.

By: Darrell Richardson

Encl: As Stated

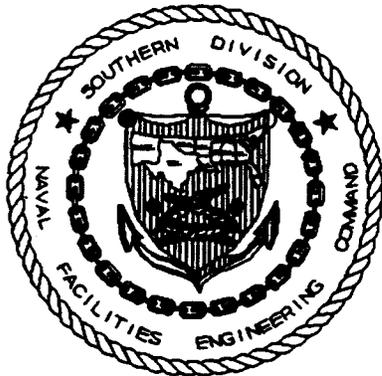
**QUARTERLY REPORT  
SOUTH FUEL FARM  
NAVAL AIR STATION CECIL FIELD  
JACKSONVILLE, FLORIDA**



**Delivery Order Number: 007  
Contract Number: N2467-98-D-0937**

**Prepared for:**

**Department of the Navy  
Southern Division  
Naval Facilities Engineering Command  
North Charleston, South Carolina**



**Prepared by:**

**EnSafe Inc.  
5724 Summer Trees Drive  
Memphis, Tennessee 38134  
(901) 372-7962**

**February, 2001**

**Quarterly Report:**

**South Fuel Farm, NAS Cecil Field — Jacksonville, Florida**

**Start/End Date:** 10/01/00 — 12/31/00

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**BACKGROUND**

The South Fuel Farm is at the edge of an active runway at Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. When fully operational, it consisted of a fuel-truck parking area and an aircraft refueling complex. The site housed three aboveground storage tanks, four underground storage tanks, and four earth mounded tanks. The tanks stored leaded and unleaded gasoline, aviation gasoline, diesel fuel, jet propellant, No. 2 fuel oil, kerosene, lubricant, waste oil, and paint waste.

As a result of past activities, total volatile organic halocarbons (VOHs), total volatile organic aromatics (VOAs), and total recoverable petroleum hydrocarbons (TRPH) were detected in the soil and groundwater. In response to subsurface contamination, a bioventing system and a biosparging system were installed to remediate soil and groundwater, respectively. The bioventing system, which was designed to inject low volumes of air into soil to enhance intrinsic bioremediation, currently delivers oxygen to aerobic bacteria in the vadose zone via subgrade wells. The biosparging system injects low volumes of air below the water table, oxygenating groundwater and promoting contaminant biodegradation.

The bioventing system consists of a blower, inlet air filter, flow meter, pressure and temperature gauges, valving, and piping. The blower operates at a design flow of 36 standard cubic feet per minute (scfm) at approximately 65 inches of water. The system continuously delivers atmospheric air to nine bioventing wells, 24 hours a day, seven days a week. All wells are set at a constant design flow rate of approximately 4 actual cubic feet per minute (acfm) at 20 inches of water.

The biosparging system consists of a screw-type air compressor, receiver tank, air dryer, moisture separator, particulate filter, coalescing oil filter, pressure regulator/gauge, piping, valves, and flow gauge. The biosparging system continuously supplies 23 biosparging wells with compressed

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air at an approximate flow rate of 1 acfm at a pressure of 12 pounds per square inch (psi) 24 hours a day, seven days a week.

A site layout showing the locations of the wells and manifolds is provided in Appendix A, Figure 1.

**OPERATIONS AND MAINTENANCE**

EnSafe began supervision of routine operations and maintenance on the bioventing and biosparging systems at the end of April 1999.

The bioventing system operated continuously 24 hours a day, seven days a week this quarter. The system operating parameters ranged from 130°F to 135°F (54.4°C — 57.2°C) for the discharge temperature, 80 scfm for the discharge flow rate, and 50 inches of water column for discharge pressure.

The biosparging compressor system operated continuously 24 hours a day, seven days a week with only minor maintenance interruptions for the quarter. The system operating parameters were 20 psi for the discharge pressure and 60 acfm for the discharge flow rate.

**OPERATIONS AND MAINTENANCE SUMMARY**

**October 13, 2000:** System running upon arrival. System checklist completed. Cleaned filter mats.

**October 27, 2000:** System running upon arrival. System checklist completed. Cleaned filter mat and air filter.

**November 10, 2000:** System running upon arrival. System checklist completed. Replaced inlet filter on blower. Replaced air filter, oil, oil filter, and filter mats on compressor.

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**November 24, 2000:** System running upon arrival. System checklist completed. Cleaned air filter and filter mat.

**December 8, 2000:** System running upon arrival. System checklist completed. Cleaned inlet filters on blower and compressor.

**December 22, 2000:** System running upon arrival. System checklist completed. Replaced auto drain on dryer.

**FIELD MONITORING**

Soil-gas vapor and groundwater quality parameters were monitored monthly in the field as part of sampling activities. Field monitoring consisted of measuring and recording the O<sub>2</sub>, CO<sub>2</sub>, CH<sub>4</sub> and total hydrocarbon levels of the soil-gas vapor and the temperature, pH, conductivity, turbidity, and dissolved oxygen levels of the groundwater for 17 monitoring wells. Instruments used to measure these parameters are the Lantech GA-1/1 gas analyzer and the Foxboro TVA-1000B for soil-gas vapor parameters, and the Horiba U-10 water quality meter for groundwater parameters. For this quarter, groundwater parameters were measured on October 3, November 1, and December 21, 2000. Data from these monitoring events are summarized in Appendix B.

**FUTURE ACTIVITIES**

1. Maintain biweekly O&M field visits.
2. Preventative maintenance as needed.
3. Monthly field monitoring.

**OVERALL SYSTEM PERFORMANCE**

Both systems operated at or close to design capacity for the three months. The bioventing blower unit functioned at an overall 100% operational efficiency, operating 91 of 91 days. The biosparge compressor system operated 91 of 91 days with an overall 100% operational efficiency.

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**South Fuel Farm, NAS Cecil Field — Jacksonville, Florida**

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Operational efficiency to date for the bioventing blower remains at 100%, followed by the biosparge compressor with an operational efficiency of 99%.

The systems' continued effectiveness in treating subsurface contamination will be evaluated after the next groundwater sampling event. It is anticipated that contamination concentrations for source plume wells will continue to decrease.

**Appendix A**  
**Site Figure**



**Appendix B**  
**Monitoring Well Parameters**

**Table 6**  
**Sampling Parameter Sheet**  
Hartman & Associates, Inc.  
Jacksonville, Florida  
HAI Job # 99-029.03  
**South Fuel Farm, Cecil Field NAS**  
Ensafe Inc. Job # 0937-007-04-006-00

Operator: WTR  
Ambient Conditions: Clear 85 F

Date: 10/3/00  
Time: 10:40 AM

EVENT:	AIR						GROUNDWATER						COMMENTS
	Well #	Time	Well Pressure (in. of Hg)	O <sub>2</sub> %	CO <sub>2</sub> %	CH <sub>4</sub> %	OVA ppm	Water Level (ft toc)	Temp. C	pH	Eh mv	Conductivity ms/cm	
CEF-043-1N	2:25 PM	29.8	17.7%	1.6%	0.0%	BDL	5.51	27.0	6.66	-183	0.457	1.42	
CEF-043-2N	12:37 PM	29.9	19.4%	0.9%	0.0%	BDL	5.62	27.3	6.21	-146	0.269	1.69	
CEF-043-3N	12:52 PM	29.8	16.2%	3.8%	0.0%	BDL	6.82	26.3	5.60	153	0.078	3.50	
CEF-043-4N	1:22 PM	29.9	19.2%	1.0%	0.1%	>1000	6.04	26.9	6.40	-43	0.608	1.25	
CEF-043-5N	12:21 PM	29.9	21.5%	0.0%	0.0%	BDL	6.40	26.3	5.21	202	0.086	8.26	
CEF-043-7N	11:54 AM	29.9	21.5%	0.2%	0.0%	BDL	4.17	26.4	6.59	220	0.352	3.68	
CEF-043-8N	10:50 AM	30.0	20.3%	0.3%	0.0%	BDL	5.11	26.4	6.10	261	0.175	5.12	
CEF-043-8N	10:50 AM	30.0	20.3%	0.3%	0.0%	BDL	3.62	26.9	6.81	23	0.275	3.59	
CEF-043-9N	11:12 AM	30.0	21.5%	0.3%	0.0%	BDL	5.93	29.9	5.66	203	0.179	2.04	
CEF-043-10	2:15 PM	29.8	17.5%	1.3%	0.0%	BDL	4.45	26.0	4.41	233	0.046	1.90	
CEF-043-19	11:27 AM	30.0	21.5%	0.2%	0.0%	BDL	4.90	26.9	5.30	148	0.049	3.80	
CEF-043-20	1:49 PM	29.9	21.6%	0.0%	0.0%	BDL	4.90	26.9	5.30	148	0.049	3.80	
CEF-043-21	2:00 PM	29.9	21.4%	0.0%	0.0%	BDL	4.71	27.3	6.29	166	0.135	4.24	
CEF-043-32	3:00 PM	29.8	20.2%	0.3%	0.0%	BDL	4.25	29.5	6.54	121	0.545	2.97	
CEF-043-32	3:00 PM	29.8	20.2%	0.3%	0.0%	BDL	4.25	29.5	6.54	121	0.545	2.97	
CEF-043-33	2:50 PM	29.8	20.5%	0.2%	0.0%	BDL	4.88	20.9	5.69	5	0.221	2.08	
CEF-043-33	2:50 PM	29.8	20.5%	0.2%	0.0%	BDL	4.88	20.9	5.69	5	0.221	2.08	
CEF-043-34	2:37 PM	29.8	21.4%	0.0%	0.0%	BDL	4.92	27.6	5.67	-32	0.061	2.00	
CEF-043-48	11:38 AM	29.9	21.7%	0.3%	0.0%	BDL	3.90	26.5	6.33	220	0.143	6.55	
CEF-043-50D	12:07 PM	29.9	21.6%	0.1%	0.0%	BDL	7.10	27.0	5.18	-53	0.124	2.13	

Additional Event Comments: High volume of rain the last 2 weeks.

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**Table 7**  
**Sampling Parameter Sheet**  
Hartman & Associates, Inc.  
Jacksonville, Florida  
HAI Job # 99-029.03  
**South Fuel Farm, Cecil Field NAS**  
Ensafe Inc. Job # 0937-007-04-006-00

Operator: WTR  
Ambient Conditions: Clear 75D F @ 9:00AM

Date: 11/1/00  
Time: 9:05 AM

EVENT:	AIR						GROUNDWATER						COMMENTS
	Well #	Time	Well Pressure (in. of Hg)	O <sub>2</sub> %	CO <sub>2</sub> %	CH <sub>4</sub> %	OVA ppm	Water Level (ft toc)	Temp. C	pH	Eh mv	Conductivity ms/cm	
CEF-043-1N	12:40 PM	29.9	17.9%	1.6%	0.0%	3.4	6.99	25.4	6.33	-189	0.236	1.49	
CEF-043-2N	11:25 AM	30.0	19.0%	1.2%	0.1%	BDL	7.05	26.1	5.87	-127	0.192	1.83	
CEF-043-3N	11:40 AM	29.9	20.4%	1.1%	0.0%	BDL	8.00	25.0	5.36	174	0.041	2.42	
CEF-043-4N	11:28 AM	30.0	17.1%	2.7%	0.1%	12	7.32	25.2	6.08	7	0.438	1.56	
CEF-043-5N	10:52 AM	30.0	21.5%	0.0%	0.0%	BDL	7.79	25.2	5.07	228	0.077	8.21	
CEF-043-7N	10:24 AM	30.0	20.7%	0.4%	0.0%	BDL	5.87	25.0	5.93	16	0.168	3.62	
CEF-043-8N	9:23 AM	30.0	18.3%	1.4%	0.0%	BDL	6.74	24.9	5.51	300	0.122	3.61	
CEF-043-9N	9:46 AM	30.0	21.5%	0.0%	0.2%	BDL	5.32	25.3	6.09	-139	0.177	2.18	
CEF-043-10	11:05 AM	30.0	16.8%	2.5%	0.1%	BDL	7.43	28.5	5.55	235	0.190	2.21	
CEF-043-19	9:57 AM	30.0	21.4%	0.3%	0.1%	BDL	5.85	25.0	4.54	188	0.047	1.85	
CEF-043-20	12:18 PM	29.9	21.7%	0.0%	0.0%	BDL	6.66	25.5	4.71	255	0.042	3.02	
CEF-043-21	12:29 PM	29.9	21.6%	0.0%	0.0%	BDL	5.63	24.7	5.91	204	0.088	2.72	
CEF-043-32	1:23 PM	29.9	17.3%	2.5%	2.5%	BDL	5.54	27.6	5.93	145	0.294	2.67	
CEF-043-33	1:12 PM	29.9	21.0%	0.2%	0.0%	BDL	6.22	28.2	5.24	26	0.136	1.90	
CEF-043-34	1:00 PM	29.9	21.7%	0.0%	0.0%	BDL	6.34	25.5	5.91	23	0.094	1.97	
CEF-043-48	10:09 AM	30.0	21.5%	0.1%	0.1%	BDL	5.79	24.7	5.76	189	0.050	4.58	
CEF-043-50D	10:36 AM	30.0	21.5%	0.0%	0.0%	BDL	8.64	26.0	5.37	-28	0.112	3.29	

Additional Event Comments: \_\_\_\_\_  
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**Table 8**  
**Sampling Parameter Sheet**  
 Hartman & Associates, Inc.  
 Jacksonville, Florida  
 HAI Job # 99-029.03  
**South Fuel Farm, Cecil Field NAS**  
 Ensafe Inc. Job # 0937-007-04-006-00

Operator: WTR  
 Ambient Conditions: 6.5C and clear

Date: 12/21/00  
 Time: 9:30 AM

EVENT:		AIR					GROUNDWATER						COMMENTS
Well #	Time	Well Pressure (in. of Hg)	O <sub>2</sub> %	CO <sub>2</sub> %	CH <sub>4</sub> %	OVA ppm	Water Level (ft toc)	Temp. C	pH	Eh mv	Conductivity ms/cm	Dissolved Oxygen mg/L	
CEF-043-1N	11:47 AM	30.1	20.2%	1.7%	0.1%	BDL	8.56	22.6	6.31	-147	0.243	2.43	
CEF-043-2N	11:35 AM	30.1	15.8%	7.6%	0.3%	190	8.68	23.0	6.14	-125	0.197	1.92	
CEF-043-3N	11:24 AM	30.1	20.4%	2.4%	0.1%	BDL	9.29	21.5	5.23	163	0.040	2.92	
CEF-043-4N	11:13 AM	30.1	11.9%	8.1%	0.6%	FO	8.80	21.6	6.17	3	0.421	1.78	
CEF-043-5N	11:01 AM	30	22.0%	0.0%	0.2%	BDL	9.41	22.3	4.96	217	0.072	8.47	
CEF-043-7N	10:30 AM	30.2	20.4%	1.3%	0.0%	BDL	8.15	21.5	6.06	-110	0.164	4.98	
CEF-043-8N	9:41 AM	30.3	17.5%	2.5%	0.1%	BDL	8.79	21.1	5.35	268	0.109	5.36	
CEF-043-9N	9:55 AM	30.3	18.2%	1.6%	0.0%	BDL	7.54	21.7	6.05	-127	0.163	2.64	
CEF-043-10	12:50 PM	30.1	17.2%	2.8%	0.0%	BDL	9.04	24.7	5.79	211	0.185	2.15	
CEF-043-19	10:06 AM	30.3	21.8%	0.0%	0.0%	BDL	8.20	21.8	4.54	129	0.035	2.58	
CEF-043-20	12:23 PM	30.1	21.4%	0.1%	0.0%	BDL	8.43	22.3	4.84	195	0.037	2.76	
CEF-043-21	12:39 PM	30.1	21.4%	0.0%	0.0%	BDL	6.80	21.6	5.98	194	0.085	2.62	
CEF-043-32	1:11 PM	30.1	19.7%	1.6%	0.0%	BDL	6.85	23.2	5.80	163	0.147	3.22	
CEF-043-33	1:00 PM	30	20.4%	0.9%	0.0%	BDL	7.43	24.2	5.17	-6	0.12	2.17	
CEF-043-34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	*Inaccessible
CEF-043-48	10:16 AM	30.2	21.8%	0.2%	0.2%	BDL	8.03	21.1	6.06	151	0.068	2.70	
CEF-043-50D	10:42 AM	30.2	21.8%	0.2%	0.1%	BDL	9.94	23.3	5.24	140	0.11	5.17	

Additional Event Comments \*Security Gate locked, No Access