**PLAYBOOK SECTION 1**
**Judicial Inspection, Oriente Region, Ecuador**

Chevron

# EXECUTIVE SUMMARY: SSF-18 Well Site



| | |
|---|---|
| **Site Selection Basis** | ☑ MOU/SOW ☑ Plaintiffs Requested Inspection Judicial Visit Order: 27<br>☑ Texpet RAP ☐ CVX Requested Inspection |
| **Summary of Key Points** | • **Site Description:** Open platform area located just S of the main E-W highway and surrounded by tall trees to the E and W. A steel barricade that blocked vehicle entrance to the platform has been cut and this well is now accessible. The well was converted to water injection by 1995, but is now inactive and disconnected. An open grass area is due S of the platform. Household trash piles line E and W sides of the platform. The area beyond the platform is characterized by hilly topopgrahy, complicating the hydrology of this site. The terrain N of the road is dominated by farm/pasture/grasslands with windrow-like hills oriented N/S every 100 m. At the bottom of each of these small valleys are streams or wetlands flowing north. South of the well pad is a large excavated area that is cleared of vegetation. Orange quick clay is the predominant feature of this relatively flat area, though the land uniformly falls away to the south beyond this area, eventually leading to an old pipeline running E-W. Valleys and ravines frame the well pad to the E and W. The vegetation in these directions is mature jungle.<br><br>• **Site History:** The drill completion date for this well was February 1973. It was converted to an injection well and later abandoned at unknown dates. Structures associated with the platform were present from 1976 up to 2000. One pit is included in historical records. Aerial photos from 1975, 1976, 1985, 1990, and 2000 were available:<br>• **Pit 1**, an oil pit, was remediated by SER in August 1996 as part of Texpet. It is clearly visible in 1985/1990 aerial photos to the SE of the wellhead. It is part of a cleared area SE of the platform that was present as early as 1975 in the aerial photos. Dimensions in the clearest photo (1985) roughly match those listed in the remedial records (374 $m^2$). Based on the 1985 aerial photo, an additional pit was present 20-30 m SE of Pit 1. This pit (labeled **Pit 2)** appeared to contain crude, but based on the 1990 aerial, it may have been covered prior to 1990. It was not remediated as part of Texpet.<br>• The majority of residences (most of which are located N of the main E-W road) were built between 1976 and 1985.<br>• **Texpet Remediation Program:** The remedial action program (RAP 1995) for this site consisted of SER for Pit 1. Pit 1 contained high viscosity crude and water which was recovered and sent to Sacha Central (Station 1). The pit was remediated by SER by August 16, 1996. Pre-remediation samples of remaining sludge contained 15,972 mg/kg of TPH. Unauthorized discharge of process water during remediation is noted in the logs. Post-remediation TPH TCLP tested < 5 mg/L.<br>• **CVX Site Inspections, 2003-2005:** Key findings include:<br>▪ **Surface Water and Sediments:** Small streams are present N of the platform, generally flowing to the N and draining to a slightly larger stream flowing W to E. Several samples were collected from these streams, with TPH DRO detected in 2 of the sediment samples at concentrations < 100 mg/kg. No petroleum impacts were found in surface water samples from these locations. The Rio Shushufindi was sampled at a location 700 m E/SE of the well head (see Figure 4.1C and Figure 1.1-Topo) because Sra. Luz Marin complained that it had been contaminated by SSF-18 pit overflows. Sediment samples at a Rio Shushufindi bridge crossing contained 15 mg/kg TPH DRO but no petroleum impacts in the surface water. An old surface spill E of the platform and pits was discovered, draining into a ravine that eventually leads to a small stream system SE of the site. This stream drains into a small pond. Samples collected from the small stream and pond encountered sediments containing 26 to 33 mg/kg TPH DRO but no other detection of TPH or BTEX in the sediments or surface water.<br>▪ **Drinking Water:** Of the 6 residences investigated, 5 have access to a city water supply (Shushufindi). This drinking water was sampled twice and no petroleum impacts were detected. A groundwater well that was used by Adolfo Guachun prior to connection to city water was tested and found to contain no hydrocarbons. Sr. Guachun and his daughters (who live in nearby houses) have also previously used water from one of the streams, and this source was sampled and found to be free of petroleum impacts in the water and sediments. One resident (Sr. Piyaguaje) does not have access to city water, and uses surface water from the stream to the N. This water was sampled as well and not impacted by petroleum (though sediments contained 15 mg/kg TPH DRO). Sra. Marin used the Rio Shushufindi for drinking water prior to connection to the city supply and complained of contamination from SSF-18.<br>▪ Pit 1 is adjacent to the SE platform corner and is covered with invasive grasses. Borings were drilled within the pit to 4.8 m bgs and encountered 1.8 to 2.0 m of clean cover followed by 1.2 to 2.1 m of impacted soil containing TPH DRO of 15 to 590 mg/kg and TPH GRO of up to 6.4 mg/kg. No groundwater was encountered. Clean borings (3.6 m bgs) were collected to the S and SE of Pit 1.<br>▪ Pit 2 is 20 m SE of Pit 1 and is in a high spot with invasive vegetation and slightly discernible berms. Two borings were drilled within the pit to 3.6 and 4.8 m and encountered 0.7 to 2.2 m of clean cover followed by 0.7 to 1.7 m of impacted soil containing up to 3500 mg/kg TPH DRO and 121 mg/kg GRO. No groundwater was encountered. Clean borings (3.6 m bgs) were collected to the N and S.<br>▪ Clean boundaries were identified to the S and SE, and there are clean boundaries for the pits. The ground slopes sharply to the E and W, complicating the collection of boundary points. No water was produced from these borings.<br>• **Impacts by Petroecuador and Others:** No spills or workovers are part of the database for this site. The site contains a large amount of household and other trash on the boundaries of the platform.<br><br>• **Site-Specific Claims:** Luz Marin complained that the Rio Shushufindi received drainage from oil pit overflows at SSF-18. The river served as a prior drinking water source for her and her husband, who died from cancer that she attributes to contamination of the river. Irene Romero complained that the small stream E of her house is contaminated by petroleum, and Adolfo Guachun complained that a large stream 1 km N of his house is contaminated and caused problems for the offspring of one of his daughters. Both Sra Romero and Sr. Guachun complained of animals deaths from drinking stream water. |

**PLAYBOOK SECTION 1**
**Judicial Inspection, Oriente Region, Ecuador**

# EXECUTIVE SUMMARY: SSF-18 Well Site



**Texpet Remedial Action Program - Pits (1995-1998)**

| Pit No. | Description | Size ($m^2$) | Texpet Rem. Action | Date Complete (or Explanation) | Recent Inspection | | |
|---|---|---|---|---|---|---|---|
| | | | | | Date | Analytical Results | CVX Findings |
| 1 | Oil Pit | 374 | SER | 8/16/1996 | 1/17/2004, 8/12/2005, 8/13/2005 | Yes | Remediation confirmed. Additional pit identified in aerial photos was located and delineated. |

| **Key Points re: Texpet Remedy at this Site** (checked if applicable) | **See Playbook Tab:** |
|---|---|
| ☑ Texpet implemented remedy per MOU/SOW/RAP | 2.0 |
| ☑ Ecuador government approved satisfactory completion | 2.0 |
| ☐ Site not included in Texpet SOW/RAP | N/A |

**Remediation/Closure Criteria for this Site:** ☑ TCLP/TPH < 1000 mg/L: ☐ Soil TPH < 5000 mg/Kg

**Summary Discussion re: Texpet Remedy at this Site:**

- Pit 1, an oil pit, was remediated by SER by August 16, 1996, and the terrain was leveled following soil washing. A pre-remediation sample of the sludge indicated total TPH of 15,972 mg/kg, with the sludge being characterized as heavily degraded and viscous crude. The remedy involved recovery of 76 bbls of crude and 64 bbls of water (sent to Station 1 at Sacha Central). During treatment by PECS, a portion of the process water was tested and not judged suitable for discharge to the environment (based on TPH and COD). Following this, unauthorized discharge to areas N of the pit were observed and noted in the SERT logs. Water in the pit was again tested and found to be above COD limits for discharge to the environment. A second notation of unauthorized discharge is listed in the logs. Several more samples were collected before the treated water met the discharge criteria. During this treatment period, PECS manually attempted to clean the sides of the pit, but the destination of the crude particles from this cleaning is not known and appears to have contributed to a longer requirement for treatment times within the pit.
- A second pit (labeled Pit 2) was discovered based on information from remote sensing images (specifically 1985 aerial photo). It was not part of Texpet, and it may have been closed by 1990 because it is not clearly visible in the 1990 aerial photo (though the surrounding area appears cleared of vegetation in 1990). Clean cover of 0.7 to 1.7 m was encountered in this pit, indicating that it had been backfilled.
- All RAP requirements met as designated by signed Actas by the government.

**Water Resources**

(see Figure 4.1C for locations of residents and sampling points)

- **Surface Water and Sediments:** Several small streams are present N of the platform in small valleys that are oriented in a N/S direction. These streams drain to the N into a slightly larger stream that flows W to E. A number of samples were collected from the smaller streams, including one that runs from the NE corner of the platform entrance to a location 70 m E of the Irene Romero residence. This surface water sample (SSF-18-PI-SW1) was free of petroleum impacts but the sediments (SSF-18-PI-SED1) contained 97 mg/kg of TPH with a noticeable odor of petroleum. , generally flowing to the N and draining to a slightly larger stream flowing W to E. The larger W to E flowing stream was sampled N of Adolfo Guachun's residence and found to contain no evidence of petroleum (SSF-18-PI-SW2/SED2) A second location 325 m downstream was also sampled (SSF-18-PI-SW6/SED6) because it served as the sole source of drinking water for Adolpho Piyaguaje. No hydrocarbons were detected in the surface water but 26 mg/kg TPH DRO was present in the sediments. To address claims (by Luz Marin) that the Rio Shushufindi was contaminated by activities at SSF-18, this river was sampled at a location 700 m E/SE of the well head. Sediment samples at a Rio Shushufindi bridge crossing contained 15 mg/kg TPH DRO but no petroleum impacts in the surface water. An old surface spill E of the platform and pits was discovered, draining into a ravine that eventually leads to a small stream system SE of the site. This stream drains into a small pond. Samples collected from the small stream and pond encountered sediments impacted with 26 to 33 mg/kg TPH DRO but no other detection of TPH or BTEX in the sediments or surface water. The Rio Shushufindi serves as the major drainage channel for the watershed containing SSF-18, but a direct hydraulic connection was not made between any of the streams and the river.
- **Drinking Water:** Of the 6 residences investigated, 5 have access to the city water supply from Shushufindi (which is approximately 1 km E of the site). This drinking water was sampled twice (SSF-18-PI-DW1 at Sra. Romero, and SSF-18-PI-DW2 at Sr. Guachun) and no petroleum impacts were detected. Before being connected to the city supply, Adolfo Guachun occasionally used a groundwater well located 60 m W of his house. This water was sampled (SSF-18-PI-GW2) and found to contain no hydrocarbons. This well is near a small stream that flows N to meet the slightly larger stream that flows W to E and was sampled as SSF-18-PI-SW2/SED2. Sr. Guachun and his daughters (who live in nearby houses) also used to obtain drinking water from these streams, in particular the larger stream W-flowing stream. One resident (Sr. Piyaguaje) does not have access to city water, and uses surface water from the same stream N of his house. Sra. Marin used the Rio Shushufindi for drinking water prior to connection to the city supply and complained of contamination from SSF-18.

# EXECUTIVE SUMMARY: SSF-18 Well Site



**Site Specific Claims**

(see Figure 4.1C for locations of residents)

**Plaintiffs Databases (Bejaranos and FDA):** The FDA report (1999) lists a property owner named Angel Cilata who claims that the area around the pit was poorly remediated, making the surrounding area infertile for growing crops. He also makes claims of animal deaths. No other complaints are listed, but the site is listed as Injector 9. Note that this property owner was not encountered during CVX inspections of the site. There is no information about this site in the Bejaranos update (2003).

**CVX Interviews (not official claims):**
**Pits:** Both Irene Romero and Luz Marin claimed that activities at SSF-18 (including pit overflows) impacted surface waters.
**Surface Water:** Sra. Romero said that the N-flowing stream E of her house is contaminated by the site, and Sra. Marin claimed that activities at SSF-18 have led to contamination of the Rio Shushufindi, which lies several hundred meters SE of the pits at the site.
**Drinking Water:** All but one of the interviewees has access to a municipal supply, and there are no complaints about this drinking water being contaminated. Adolfo Guachun mentioned a stream at least 1 km N of his house that is contaminated and caused problems from drinking this water, but it is unlikely that this is related to SSF-18. Sra. Marin said that contamination of the Rio Shushufindi was a major problem when they relied on it for their drinking water.
**General Health Concerns:** Sra. Marin believes that drinking contaminated water from Rio Shushufindi led to the death of her husband, who died from cancer several years ago. Skin problems are noted by Adolfo Guachun. He said that 1 of his daughters (who does not live in the vicinity of SSF-18) has had 2 children die from contaminated water in a stream that lies (based on his reckoning) 1 km N of his property. Sr. Piyaguaje lost his wife to a miscarriage 2 years ago, but he does not attribute this to contamination.
**Other:** No complaints about crops. Animal sickness and deaths are noted by Sr. Guachun and Sra. Romero.

**PE Actions (1990 – Present)**

**Petroecuador Actions (1990 – Present)** (checked if applicable) — **See Playbook Tab:**

- ☑ **Workovers (no workovers listed for this site):** ..... 3.0
- ☑ **Spill Reports (no spills reported for this site):** ..... 3.0
- ☑ **Problem Areas Identified by CVX:** ..... 4.0

**Summary Discussion re: Impacts by Petroecuador and Others**

- The database for this site contains no workovers and no spills.
- The Fugro-McClelland Field Audit (1992) does not include information for this site.
- The HBT-Agra Field Audit (1993) contains a pre-assessment listing for this site, and the table contains no specific data collected during the audit.
- This site has served as a dumping ground for a variety of household waste and debris, particularly on the E and W sides of the platform. In early 2004, site access was blocked by a large steel bar across the entrance, presumably to prevent dumping. This bar had been cut by mid-2005 and the well head area was again accessible by car.

**Judicial Inspection Sampling: Key Issues**

*(see Sampling Plan for details)*

**Sampling Objectives for Judicial Inspection:**

Goals of judicial inspection include:
i) Show clean SW supplies at all locations of the platform.
ii) Confirm closure of Pit 1 per RAP criteria.
iii) Delineate affected area with clean borings N, S, E, and W boundaries of pits and well site, using the pre-inspection clean borings as a guide to the SE, S, and between the pits.

Potential problems include:
i) Surface spill SE of the platform and pits extends over a large area and drains to a receiving stream. Source is unknown but may be due to remedial activities.
ii) Sediments in streams E and N of the platform are impacted by petroleum based on analytical data.
iii) Additional pit (Pit 2) that was closed prior to Texpet is present at this site, though demonstrated TPH levels are below RAP criteria. Samples should be composited from multiple depths if possible.