

SACHA

JUR

HOJA DE CONTROL DE INSPECCIONES

ESTACION SACHA SUR

ORDEN DE INSPECCION: 36
RAP o NO RAP: NO RAP
PEDIDA POR: CVX y FDA

PROVIDENCIA ORDENANDO INSPECCION: Febrero 10, 2006

OPENING PREPARADO POR: Dr. Adolfo Callejas

FECHA INSPECCION: Marzo 8-9, 2006

ABOGADO CVX 1: Dr. Adolfo Callejas
ABOGADO CVX 2: Dr. Patricio Campuzano
ABOGADO CVX 3: Dr. Diego Larrea

ABOGADO FDA 1: Abogado Pablo Fajardo
ABOGADO FDA 2:

PERITO CVX: Maestro en Ciencias Bjorn Bjorkman
PERITO FDA: Ing. Químico Orlando Manuel Felicita Nato

PERITOS DIRIMENTES CORTE: Ing. José Marcelo Echeverría

FECHA ELABORACION ACTA: Marzo 9, 2006

INFORMES

PLAZO PERITOS CVX Y FDA PRESENTACION INFORME: 60 días

FECHA INICIO PLAZO PARA PRESENTAR INFORMES: Marzo 10, 2006

FECHA EN QUE PERITO CVX DEBE PRESENTAR INFORME: Junio 6, 2006
FECHA DE PRESENTACION DE INFORME CVX:
PROVIDENCIA QUE INCORPORA INFORME CVX A EXPEDIENTE:

FECHA EN QUE PERITO FDA DEBE PRESENTAR INFORME: Junio 6, 2006
FECHA DE PRESENTACION DE INFORME FDA:
PROVIDENCIA QUE INCORPORA INFORME FDA A EXPEDIENTE:

OBSERVACIONES:

PLAZO PARA QUE LAS PARTES PRESENTEN OBSERVACIONES
A INFORME DE CVX:

FECHA INICIO PLAZO PARA PRESENTAR OBSERVACIONES a CVX:

FECHA PARA PRESENTAR OBSERVACIONES DE CVX A INFORME CVX:
FECHA DE PRESENTACION:
PROVIDENCIA QUE INCORPORA:

Hoja de Control ESTACION SACHA SUR

FECHA PARA PRESENTAR **OBSERVACIONES DE FDA A INFORME CVX:**
FECHA DE PRESENTACION:
PROVIDENCIA QUE INCORPORA:

PLAZO PARA QUE LAS PARTES PRESENTEN **OBSERVACIONES
A INFORME DE FDA:**

FECHA INICIO PLAZO PARA PRESENTAR **OBSERVACIONES a FDA:**

FECHA PARA PRESENTAR **OBSERVACIONES DE CVX A INFORME FDA:**
FECHA DE PRESENTACION:
PROVIDENCIA QUE INCORPORA:

FECHA PARA PRESENTAR **OBSERVACIONES DE FDA A INFORME FDA:**
FECHA DE PRESENTACION:
PROVIDENCIA QUE INCORPORA:

CONTESTACIONES:

PROVIDENCIA QUE ORDENA A PERITO **CVX CONTESTE**
OBSERVACIONES DE **FDA A INFORME DE CVX:**

- PLAZO PARA QUE PERITO **CVX CONTESTE:**
- FECHA EN QUE PERITO **CVX DEBE CONTESTAR a FDA:**
- FECHA EN QUE PERITO **CVX PRESENTO CONTESTACION:**
- PROVIDENCIA QUE INCORPORA **CONTESTACIÓN de CVX a FDA:**

PROVIDENCIA QUE ORDENA PERITO **FDA CONTESTE**
OBSERVACIONES DE **CVX A INFORME:**

- PLAZO PARA QUE PERITO **FDA CONTESTE:**
- FECHA EN QUE PERITO **FDA DEBE CONTESTAR A CVX:**
- FECHA EN QUE PERITO **FDA PRESENTO CONTESTACION:**
- PROVIDENCIA QUE INCORPORA **CONTESTACION de FDA a CVX:**

PROVIDENCIA QUE ORDENA PERITO **FDA CONTESTE**
OBSERVACIONES DE **FDA A INFORME DE FDA:**

- PLAZO PARA QUE PERITO **FDA CONTESTE:**
- FECHA EN QUE PERITO **FDA DEBE CONTESTAR A FDA:**
- FECHA EN QUE PERITO **FDA PRESENTÓ CONTESTACION:**
- PROVIDENCIA QUE INCORPORA **CONTESTACION de FDA a FDA:**

PRONUNCIAMIENTO DE LAS PARTES SOBRE CONTESTACIONES DE PERITOS A OBSERVACIONES A SUS INFORMES:

PROVIDENCIA QUE ORDENA A **LAS PARTES PRONUNCIARSE SOBRE
CONTESTACION DE PERITO FDA A OBSERVACIONES DE CVX:**

- PLAZO PARA QUE **LAS PARTES SE PRONUNCIEN:**
- FECHA EN QUE **CVX Y FDA DEBEN PRONUNCIARSE:**
- FECHA DEL **PRONUNCIAMIENTO DE CVX:**
- PROVIDENCIA QUE INCORPORA **PRONUNCIAMIENTO CVX:**

Hoja de Control
ESTACION SACHA SUR

- FECHA DEL **PRONUNCIAMIENTO DE FDA:**
- PROVIDENCIA QUE INCORPORA **PRONUNCIAMIENTO FDA:**

PROVIDENCIA QUE ORDENA A **LAS PARTES** PRONUNCIARSE SOBRE
CONTESTACION DE PERITO CVX A OBSERVACIONES DE FDA:

- PLAZO PARA QUE **LAS PARTES** SE PRONUNCIE:
- FECHA EN QUE **FDA Y CVX** DEBEN PRONUNCIARSE:
- FECHA DEL **PRONUNCIAMIENTO DE FDA:**
- PROVIDENCIA QUE INCORPORA **PRONUNCIAMIENTO FDA:**
- FECHA DEL **PRONUNCIAMIENTO DE CVX:**
- PROVIDENCIA QUE INCORPORA **PRONUNCIAMIENTO CVX:**

DIRIMENCIA:

PROVIDENCIA ORDENANDO A PERITOS DIRIMENTES
SE PRONUNCIEN:

PLAZO PARA PRESENTACION INFORME DIRIMENTE:
FECHA EN QUE DEBERAN PRESENTAR INFORME:
FECHA DE PRESENTACION:

PROVIDENCIA ORDENANDO PARTES EMITAN
OBSERVACIONES A INFORME DIRIMENTE:

PLAZO PARA PRESENTAR OBSERVACIONES:

FECHA PARA QUE **CVX** PRESENTE OBSERVACIONES:
FECHA DE PRESENTACION OBSERVACIONES:

FECHA PARA QUE **FDA** PRESENTE OBSERVACIONES:
FECHA DE PRESENTACION OBSERVACIONES:

PROVIDENCIA ORDENANDO PERITOS DIRIMENTES
SE PRONUNCIEN SOBRE OBSERVACIONES DE LAS PARTES:



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MEMORANDUM

TO: JI Team
FROM: Bjorn Bjorkman
DATE: 3/12/06

CLIENT: CVX
TASK:
RE: Summary – Sacha Sur JI

+ ATTORNEY CLIENT PRIVILEGED WORK PRODUCT+

SUMMARY OF SACHA SUR JI

The Sacha Sur JI was, as you have all heard by now fairly dramatic from a security standpoint. These issues are under review and I will say no more about them here, and will focus on inspection, site observation and sampling issues.

A. Pre-JI inspections

We arrived with a reduced team to the location on Monday afternoon for initial observations, and returned with a complete team (including Geoprobe) on Tuesday. Having 1 ½ day to review the site proved very valuable in terms of anticipating issues that could be raised by the plaintiffs. The contraparte team, including Pablo Fajardo himself, was there both days. They were seen spending a lot of time drilling in the old pit area as well as in the old drainage canal. They were also seen exploring areas west of the station, which worried me as we had no indication of potential problems in that direction.

We had ample time to conduct pit delineation borings (bigger pits than we thought), station delineation borings (all clean), investigate the drainage (the borings revealed apparently continuous degraded hydrocarbons below about a foot for at least ½ mile downstream), and also to poke some holes in features identified on Brad Deans aeriels.

B. JI and Plaintiff claims

The inspection was fairly intense. Due to the security situation only essential members of the team were present that day (lawyers, Roberto, two techs, myself, and the PR team). We left immediately after the end of the JI and conducted no sampling.

- The plaintiffs brought a full complement: Fajardo with two assistant lawyers, one (American) expert, William Powers or Powell, to testify that our sampling and analysis strategy is flawed (!), one Ecuadorian health expert (Dr. Francisco Cevallos) to testify about the dangers of the components of crude oil to health, and one Ecuadorian epidemiologist (Dr. Jaime Breil) to discuss San Sebastian and the critique to his papers.
- In addition several camera crews were there, including one American freelance team, as well as several Amazon Watch “observers” wearing special armbands, and a few other gringos, including two young women I couldn’t figure out quite who they were.

- They brought forth four witnesses who themselves had health issues or who had relatives with problems, including dying of cancer. There was crying.
- They conducted a demonstration boring in the sediment, having apparently located the worst spot in the whole drainage. The whole crowd was hauled by Fajardo down muddy slopes to the location. Obviously contaminated sediment was pulled up and shown to the cameras. It looked pretty bad.
- The lawyers were aggressive this inspection, although few actual pedidos emerged from the talk. The legal rhetoric was pitched at larger issues and relatively little addressed technical issues specific to Sacha Sur.
- The perito was a new guy, Orlando Felicita. He turned out to be pretty nice and we got along fine. Although he was clearly new to the process and hadn't been given much training, he picked up quick.
- The demandantes focused on the covered main pit (as expected), the drainage (also as expected). The only surprise was the claim of contamination issues in a drainage to the west, resulting in a pedido to sample said drainage.

C. PI Issues and Advance Materials

- The remote sensing work was excellent and allowed us to anticipate most of the issues. We attempted to locate and evaluate all features identified on the maps.
- One item that could come in handy is a better understanding of relief. The topo map does not agree very well with field observations, and the small drainages flow patterns were confusing. The new 3D images Ross is passing around might come in very useful at this site to figure out what flows where.
- The poster size maps were as always useful, and were in fact borrowed by Adolfo for use in the JI.
- The photo quality prints were useful. However, I don't think we really need more than one copy of each photo, and it would be great if they could be printed a little larger (resolution permitting).
- Probably the key issue here was the presence of contamination in the drainage at depth and not visible from the surface. I recommend the PI team in future conduct a boring to native soil in drainages where discharges used to flow to see what can be seen. At this station I think this issue will be the driver, as it was explicitly mentioned as the link between the station and the village health problems.
- PI investigations at this station had been limited to areas outside the station proper due to access issues. In this case this did not handicap the JI.

D. Sampling



- We ended up taking six perimeter borings. Three of these were along the south boundary (i.e. downgradient); two were moved into the station proper flanking the old pits, and one north of the station. All appear clean. No GW was collected, although water was present in some but not all borings. It appears to be perched water and in places is near or at surface. The boring to the east of the old pit had conductivity of 560 uS, otherwise they were low (<100 uS, indicating percolating rainwater). One observation: our new sampling strategy calls for doing 0-0.3 and 0.3 – depth samples for pit perimeter wells, but only a single composite for the outside perimeter wells. This is a discrepancy. I decided to take two samples from the “inside” perimeter borings, and a single one from the others. We need to fine-tune this.
- As the town now has a chlorinated water supply there were no wells to sample. The two wells identified and sampled in the PI’s are no longer used, and in fact one of them is no longer to be found. Therefore we only sampled the town water supply.
- Initially we intended to take two sediment and SW samples. The two locations turned out to be pretty representative of the drainage. The whole bottom of the marshy drainage can be considered sediment, and samples were collected a few feet away from the current flow channel. Because of the presence of contamination only at depth I decided to take one “surface sediment” sample (generally clean organic muck, 0-30 cm), and one subsurface sediment (30 cm to start of native soil generally at around 1.2-1.5 m).
- Because the presence of degraded petroleum was so evident, I considered it essential that this deep material be collected and analyzed for degradation, so we can demonstrate it poses no current risk. When the demandantes conducted their dramatic demonstration it was clear that this was going to be a key point of this JI. It was also clear that they had found a spot considerably worse than the ones we had selected as representative. After deliberation I ended up deciding that we had to also sample that location to evaluate degradation and current risk, and we made a third boring near that spot. I asked Felicita for permission and he was amenable, as was I when he asked if he could add a boring from the “upgradient” side of the station.
- Pits. The plaintiffs asked to take two borings from the main pit and also two borings from each of two nearby features we had identified as old flare containments but they claim were separate pits “in series”. Per our new strategy we therefore had to take a “representative sample” from these three locations. This turned out to not so easy, as the old pits are covered in up to 3 feet of cobble and gravel fill. It is also not evident what to define as a “representative sample”, particularly in view of the demandantes charge of our minimizing issues by deliberately including clean soil in our composites, and we should discuss this issue further.
- The west drainage, requested by the plaintiffs, turned out to be a creek about 300 feet west of the station, and the actual spot they wanted to sample no less than 480 m away from the station, as the creek hit a flat and stagnant spot. It was well chosen by them, as

the plaintiffs did find HC contamination at depth there too. It is unlikely the station could be the cause of this, and the likely culprits are spills from the pipeline racks along the road. I debated what to do here, and at first I was determined to say we are not interested in sampling this spot. However, because (a) it was a specific pedido, and (b) we should know what it is the plaintiffs found as we no longer have splits or RB samples, and (c) the probability that we can fairly convincingly demonstrate that any contamination in this location is not from the old days at the station, I ended up collecting a sample.

- “Groundwater”. The plaintiffs will be presenting data from so-called “groundwater” they collected from their 3 drainage sediment locations, and several of their pit borings. They used a “piezometer”, PVC pipes, without holes or slits placed in the borings and allowed to stabilize for 2 hours. The stuff in these pipes was, naturally, heavily sheened and nasty looking. And turbid. We need to be ready to address this.

E. Other Issues

- The health issue was, as expected, a flashpoint, although it did not lead to a lot of specific pedidos for the technical team. Fajardo made one specific request we will need to address in the report on this topic (apart from the usual “discuss the toxic properties and effects of produced water”).
 - This is: yo pido que se disponga a los Señores Peritos realicen un estudio completo del toda el área afectada, de cuales son las enfermedades más comunes que existen aquí que cuales son sus posibles causas de esas enfermedades y de por qué la gente se esta muriendo lentamente en San Carlos.
 - This pedido obligates us, I think, to add a fuller section on public health aspects, which I haven’t seen in previous JIs. A matter for discussion.
- There was also some talk about “acid rain” although this did not result in a specific pedido. However, I think we should show nonetheless that this is low sulfur oil/gas, if we can.