

Box 1488
Durango, Colorado
November 22, 1941

Pan American Petroleum Corporation
P.O. Box 487
Farmington, New Mexico

Attention: Mr. E. E. Leconte:

Re: Base Unit No. 42
Section 19, 31 North, 4 West
Rio Arriba County, New Mexico

Gentlemen:

This letter will summarize data obtained from and bearing on the subject well during the periods which were outlined to you in the form of a brief drilling report.

Formation tops picked from the various surveys follow:

Hartland shale	3770'
Hartland formation	3770'
Pictured Cliffs sandstone	3770'
Lords shale	3770'
Cliffhouse sandstone	3770' (?)
Point Lookout sandstone	3770'
Haines transition	3770'
Haines shale	3770'
Sakota sandstone (drilling time)	3770'

A Lane Wells 25-Induction log was run from a TD of 3744' to the surface casing point to evaluate the Pictured Cliffs section and to confirm an intermediate casing point. An interpretation of the log characteristics depicts the Pictured Cliffs as having poor sand development and high water saturations. Total depth, 3744', is 44' below the top of the Pictured Cliffs sandstone and with no sands present below this correlative depth 7 1/2" intermediate casing was landed at 3749' and cemented with 250 sacks. At this point the operation was converted to gas drilling and approximately 25' below the intermediate casing a heavy flow of water was encountered. It was not possible to control the water entry and it became necessary to abandon gas drilling and re-convert to oil.

Pan American Petroleum Corporation
November 22, 1961
Page 2

The hole was then mud-drilled through the Manoverde to 6101h and a Low Walls NS-Induction log obtained from that depth to the intermediate casing point. This log revealed the presence of a sand, 9553'-44', not present in any of the surrounding central wells, which apparently served as an aquifer. An interpretation of the Manoverde log characteristics indicates water saturations sufficiently high to preclude a completion attempt. Correlations with central wells indicated the possible presence of a sand which might be water bearing at an approximate depth of 6100'. Consequently, the hole was deepened to 6100' so a liner might be run and gas drilling resumed for the Manoverde and Sabota portions of the hole without danger of encountering water. A 5 1/2" liner was landed at total depth and cemented with 450 sacks.

It was learned that the cement fill-up was not as computed and it became necessary to squeeze-cement the top of the liner. While drilling out cement, the drill-string was stuck in the pipe and a fishing job of approximately two weeks' duration ensued.

After recovery of the fish, gas drilling was resumed below the liner. Natural flows of gas, too small to measure, were observed at pre-specified gauge depths of 7200', 7300' and 7700'. While drilling at 7700' an exceedingly strong flow of gas, blowing cuttings more than 200' from the end of the 6" black line and burning vegetation more than 100' from the end of the line, was encountered. The driller estimated the flow in excess of 20,000 MCF. He then drilled about 5' and attempted to take a gauge from the 6" black line but the flow was so strong that the water was blown out of the manometer. At this point we attempted to take a gauge; however, we were unable to close the valve on the pressure transmitter and divert the flow through the 3" test line. This also prevented killing the flow at the black line. A gauge, which would be considered accurate, was taken quickly through the flow and read 1000 MCF. The drill pipe was strapped out of the hole and uncemented about 200' to 2500'. After 20 hours a gauge was taken on the 3" test line and read 215 MCF.

A Schlumberger Gamma Ray-Induction log was run over the rest of the hole below the liner to pick the top of the Manoverde, Manoverde and Sabota top of the Sabota and total depth. The log was run in the hole the logging tool struck a ledge at 6100' and the tool was unable to penetrate. For this reason, the hole was logged from 6100' to the bottom of the liner. When the cable came out of the hole there was a sand in the hole. It revealed a sand, 7200' - 7300', which is water and which probably is water. The hole was deepened about 100' and the hole was cleaned out to 6100'.

Because of the bridges and because the hole was becoming sticky from 7833' on down, it was decided to release Schlumberger and drill ahead through the Baheta picking the Baheta top and 20 on the basis of drilling time. Accordingly, drilling was resumed and a gauge of 74.4 MWF was obtained at a depth of 8271'. At 8422' a gauge of 117.9 MWF was taken and at the same depth 2 hours later a gauge of 129.2 MWF was obtained. The hole by this time was very sticky and the hole conditions precluded obtaining slope tests or taking the time to obtain accurate gauges. A conference between the tool pusher, engineer and myself reached the conclusion that the condition of the hole required mudding-up in order to obtain a log. Mud was mixed and the drill-string run to bottom to circulate and condition the hole for logging. In conditioning, the drill-string was pulled off bottom to make a short trip and upon getting 40' off bottom the drill pipe became stuck in the hole.

Another lengthy fishing job followed with the free-point on the drill pipe found at the top of the zone of marginal bridges. With the top of the fish at 7866' and while going in the hole with a bit to clean out, the hole sidetracked. Drilling in this hole, a depth of 8811' was achieved. At this point we made a trip for Bit 45 and went back in the hole. Difficulty was encountered in getting by the top of this fish and after drilling and reaming for several hours it became apparent that the hole had sidetracked again. In spite of numerous attempts it was not possible to re-enter the deep hole. Consequently, it was decided to abandon the hole and shift the rig to another location.

One foot drilling time on a 9" scale was plotted for the sidetrack hole. A break from 6 to 8 minutes per foot to approximately 30 minutes per foot indicates that the top of the Baheta was encountered at 8297' in the sidetrack hole. Because of excessive sample lag due to mud and hole conditions no sand was found in the 14' of samples covering the Baheta interval drilled. Sample descriptions for the sidetrack hole follow:

- 7930-40' Sh, dk gry-blk, silty, f mica; Sh, dk gr, v gr, calc, pyritic.
- 7940-50' Sh, as above; ls, dk gry-blu, f mica, carbonate; Tr ss, as above.
- 7950-60' Sh, dk gry-blk, lgy, ince pyrites; ls, dk gr, dk shly.
- 7960-80' Sample skip.
- 7980-90' Sh and ls, as above.
- 7990-80' Sh, dk gry-blk, v sil calc, pyritic; Tr ss.
- 8000-80' Sh, as above.
- 8020-90' Sh, as above; ss gry-blk, dk gr, v sil calc, w/ bit material.

Pan American Petroleum Corporation
November 22, 1961
Page 4

8090-10' Sh, as above; Sh, as above.
8110-00' Sh, dk gry-blk, pity.
8200-10' Sh, as above.
8210-20' Sh, dk gry-blk, spity, ince prism.
8220-40' Sh, dk gry-blk, pity.

The limestones and limy shales in the upper samples represent the Greenhorn.
The sands found in the samples may be from the interval 7925-39', on the
radioactivity log, or particularly in the case of the sands found below
7990' may be from the zone which gave up the large gas flow in the gas
drilled hole at 7995'.

At this time there is no way of ascertaining the type of lithology or
porosity which gave up the large gas flow. Although no sand development
is known in this particular interval, the gas could be from a strong sand
development; on the other hand, the gas could have come from a fracture
development in shale.

Very truly yours,

SEAR-ALAN OIL COMPANY

By _____
Richard E. Hunt
Manager of Lands and Exploration

RE: El Paso Natural Gas Co.
Mr. Irving Pasternak