CORE DESCRIPTIONS
STANDARD OIL COMPANY OF CALIFORNIA - PEXCO #1 WELL
Sec. 36, T. 20 S., R. 20 E.
Crook County, Oregon

CORE #1 1266' - 1276'. Rec. 2". Tuffaceous agglomerate, hard, rather tough, very compact but only medium density, massive. The recovery consists of a few 1"-2" pieces consisting of irregular shaped clasts (to at least 2" in diameter) of medium to dark gray, very siliceous to cherty, vesicular, commonly minutely laminated, very slightly to noncalcareous. The matrix is light creamy gray, hard, rather tough, porcelainous, quite pure and homogenous, siliceous tuff. These two lithologies each represent about 50% of the rock. No flash. N.O.S.C.F. No dips due to small pieces of recovery.

CORE #2 3226' - 3233'. Rec. 7'. Tuff, light gray, hard when dry but almost soapy when wet, very dense. Consists of a clayey matrix containing phenoclasts ranging from fine to medium sand size but predominantly fine, rare dark minerals, common rather poorly bedded streaks containing sub-rounded very poorly sorted fine sand size to small gravel size dark gray volcanic clasts, common very thin bedding plane streaks of carbonaceous appearing material and random small black coal fragments with some pyritization within these inclusions. The recovery was a fence post and no fracturing is apparent. N.O.S.C.F. No flash. Bedding indications are rather poor and some cross bedding is probably present but there are consistent indications of a rather flat dip with variations of 5°-25°, mostly about 15°.

CORE #3 4518' - 4533'. Rec. 15'. Volcanic tuff conglomerate, medium gray, hard, very dense and compact, massive, slightly calcareous. The matrix is light gray green to faintly reddish gray, predominantly clayey but with abundant very angular to sub-rounded very fine to coarse and occasionally very coarse sand size fragments and grains of dark volcanic flow rocks, pale green devitrified glass (?) and occasional quartz grains. The "conglomeratic" portion consists of dark colored (rush red to dark green and dark gray) aphanitic and porphyritic flow rocks varying from gravel to large cobble sizes. These large clasts are consistently sub-rounded to well rounded. The recovery is in 6"-2' pieces with some slightly broken zones. Rare to occasional very thin white calcite streaks indicate some fracturing but they all appear to be completely cemented and tight except for these few probably broken open by the coring. N.O.S.C.F. No flash. The core is very massive with no apparent bedding.

CORE #4 5394' - 5404'. Rec. 7'. Contorted tuffaceous claystone with some tuff, light faintly greenish gray, frequently hard and siliceous to very locally soapy and somewhat altered, commonly brittle to slightly shattered, dense and compact, locally shaly, noncalcareous, common minute carbonaceous specks and rare very thin coal streaks and pods, rare widely scattered specks of pyrite. The recovery is in solid core sections, 1'-2' in length. Erratic contortions are common and the random fracture planes show some alteration and occasional shearing but appear to be very tight with no apparent connected porosity or permeability. The occasional secondary cementation streaks and fracture planes cut the core at all angles. N.O.S.C.F. No flash. No definite continuous bedding.

CORE #5 5989' - 6002'. Rec. 3'. Interbedded siliceous claystone and limestone. The claystone is generally similar to Core #4 but is slightly darker gray and more carbonaceous appearing and commonly very siliceous. Limestone, creamy white to light gray with faint tan and rare purple or violet mottlings, hard, very compact, apparently massive, commonly coarsely crystalline rather sugary texture, common to abundant minute dark stylolites and very irregular carbonaceous streaks. The recovery is in two 6" pieces of the "claystone" overlain by somewhat rounded biscuits and small cobbles of the limestone. Much of the limestone rounding may have occurred during coring but the minute carbonaceous streaks within the limestone and the presence of very small limestone lenses within the "claystone" suggest this limestone may have been concretions, nodules or even clasts within a tuff or "claystone" matrix and were "worn out" by the coring action. N.O.S.C.F. No flash. Many of the "claystone" surfaces consist of highly polished black carbonaceous appearing flakes. When ground and left in carbon tetrachloride, these flakes yield a very faint fluorescent cut after 15 minutes to one hour. No dips.

CORE #6 6044' - 6051'. Rec. 1'. Siliceous claystone to chert, dark gray with local green to faint dark red mottlings, streaks and inclusions, hard to very hard, very dense and compact, locally silty with some well rounded sand size grains, occasional thin, green, rather soapy appearing, possibly tuffaceous streaks. The recovery consisted of several small (1"-2") pieces and one 4" section. These pieces frequently have thin, black, carbonaceous appearing, highly polished, flaky surfaces. Local areas within the individual pieces of core are shot through with many tiny white calcite slivers. The largest piece shows a calcite filled fracture (1/8" thick) cutting the core at about 35°. N.O.S.C.F. No flash. As in Core #5, powdered flakes of the highly polished carbonaceous appearing material gives an extremely faint fluorescent cut in carbon tetrachloride after standing, but no visible cut. No dips.

CORE #7 6121' - 6128'. Rec. 6". Siliceous claystone, similar to Core #6. Abundant highly polished, flaky, very carbonaceous appearing (gilsonite like), apparently sheared surfaces. The recovery consists of three small cobble size pieces of core. As in Core #6, these pieces are locally shot through with a network of abundant very tiny white calcite streaks. The core commonly breaks along the previously mentioned polished surfaces, making a fresh surface difficult to obtain. N.O.S.C.F. No flash. As in the two previous cores, ground up flakes of the polished carbonaceous material (gilsonite ?) give an extremely faint fluorescent cut after standing in carbon tetrachloride. No dips.

CORE #8 6695' - 6711'. Rec. 15'. Contorted tuff and tuffaceous claystone, with common thin streaks and nodules of chert. The tuff and tuffaceous claystone are dark dirty green, hard, very brittle, rather dense, locally slightly sandy to finely agglomeratic, rare to occasional tiny pods and streaks of pyrite. The chert is rust colored, commonly glassy but only hard, very brittle, abundant minute secondary fractures filled with calcite. The recovery is in solid 1'-2' pieces showing abundant highly polished irregular fracture and shear surfaces of soft to firm, flaky, clayey to serpentinaceous material. Highly contorted streaks are common with one thin zone of gouge-like material recemented with calcite. No apparent porosity or permeability. N.O.S.C.F. No flash. As in Core #4, some poor bedding is apparent but contortions and shear planes make an accurate dip

CORE #8 (Cont.) measurement impossible. In Core #4 the apparent dip variations were from 30°-70° (especially 45°). In this core the dip seems to vary from 25°-50° (especially 35°).

CORE #9 6916' - 6936'. Rec. 20'. Tuff to tuffaceous claystone, forest green, hard, dense and compact, occasional pyrite, very similar to Core #8 except this core is much more uniform with only occasional dark rust red, locally siliceous streaks and no chert. The recovery is in short (1'-3') "fence posts" showing occasional to common highly polished surfaces on broken surfaces and common erratic small white calcite streaks are scattered throughout the core. The bottom face of the core contains the only drusy (apparently slightly open) fracture observed in recent cores. The openings occur, along the fracture, as several small drusy indentations which are stained and coated with very dark brown to black tarry oil which does not fluoresce easily until cut with carbon tetrachloride. Then it immediately fluoresces a bright cloudy manila yellow. This fracture surface has a good tarry odor. No other shows. No flash. As in previous cores, there are some vague but rather consistent contortions and lineations suggesting possible dips of 35°-50°.

CORE #10 6936' - 6956'. Rec. 20'. Tuff and tuffaceous claystone, all details as in Core #9 but with slightly more common streaks and irregular inclusions of the dark rust red to brown, locally slightly siliceous claystone. The recovery and fracturing are also very similar to Core #9. N.O.S.C.F. No flash. There is very little or no suggestion of true bedding in this core although there are some questionable indications of dip similar to Core #9.

CORE #11 7039' - 7051'. Rec. 12'. Tuff and tuffaceous claystone, as in Cores #9 and #10 but with predominant amounts of dark rusty red, very siliceous to commonly cherty claystone. The recovery is very broken and contorted but generally consists of 6"-1' core sections. Thin calcite filled fractures are common to very abundant in the cherty zones. The core is very brittle and shatters easily. N.O.S.C.F. No flash. Contortions and shearing are common but there are some questionable suggestions of 40°-65° dips.

CORE #12 7170' - 7188'. Rec. 6". Very fractured tuff and chert with some limestone. The recovery consists of six dense and compact biscuits or small disc shaped pieces. The tuff and chert are badly fractured and appear to be intermingled to locally gradational. Thin white calcite streaks are very abundant in all directions and completely fill every opening or fracture. Two of the pieces are predominantly a white to locally very faintly purple white, micro-crystalline limestone (?), containing occasional small dark stylolites. The tuff is dark green, very firm, brittle, very platy to flaky, altered, commonly very contorted and squeezed, rare pyrite. The chert is gray brown to very dark gray, very hard, tough, dense, commonly highly fractured to brecciated, grading locally to siliceous tuff. N.O.S.C.F. No flash. There are occasional small spots and streaks of cloudy yellow fluorescence which do not cut in carbon tetrachloride. No dips.

CORE #13 7349' - 7354'. Rec. 5'. Volcanic graywacke or sandy tuff, generally gray green to medium gray but minutely speckled with grains and streaks of light to dark gray and green with some rust red, hard, very tough, dense and compact, massive, local sheared streaks of very dark gray

CORE #13 (Cont.) polished claystone, very siliceous, very abundant, very minute calcite streaks, very poorly sorted fine sand to coarse sand size and rare small pebbles, abundant very dark gray to black grains and rather cloudy light gray to green quartz and other glassy grains in a commonly silicified tuffaceous and silty claystone matrix, common minute clusters and crystals of pyrite. The recovery consists of 1'-2' "fence posts" with several smaller fragments. No flash. The calcite lined fractures commonly have a spotty white to cream yellow fluorescence. Most of this fluorescence is due to the calcite but when washed with carbon tetrachloride these surfaces yield a very weak cloudy yellow fluorescent cut which is not visible to the naked eye. There is commonly no definite staining except for some faint brown coloring in the calcite which rarely appears to be due to petroleum. Only one fracture surface is definitely oil stained to the naked eye and gives a good petroleum odor. Rare sheared claystone streaks and other questionable lineations suggest dips of 45°-60°.

CORE #14 7354' - 7365'. Rec. 8'. Volcanic graywacke or sandy tuff, all details, including shows and dip suggestions, similar to Core #13.

CORE #15 7365' - 7373'. Rec. 8'. Volcanic graywacke or sandy tuff, all details, including shows and dip suggestions, similar to Core #13.

CORE #16 7378' - 7386'. Rec. 8'. Volcanic graywacke or sandy tuff, all details similar to Core #13 except common slightly coarser clasts of tuff and chert but with fewer macro-fractures and even more faint shows than in the previous cores.

CORE #17 7584' - 7594'. Rec. 10'. Volcanic graywacke or sandy tuff, all details similar to Core #13 except slightly more siliceous and no apparent shows. Dip suggestions are also very similar to Core #13 but possibly very slightly lower.