

Case Number

3428

3429

Application

Transcripts.

Small Exhibits

ETC.

ENGINEERING REPORT
EUMONT HARDY AREA
EUMONT POOL
LEA COUNTY, NEW MEXICO

Prepared by:
Continental Oil Company
and
Eumont-Hardy Engineering Subcommittee

November 1, 1963

DISCUSSION

GENERAL

The Hardy Area of the Eumont Gas Pool, located approximately six miles northwest of the town of Eunice in eastern Lea County, New Mexico, was discovered on April 24, 1937, when Texaco, Inc. completed their J. P. Alexander No. 1 well, located 3300 feet FSL & 1980 feet FWL Sec. 5-21-37, for an initial flowing potential of 53 BOPD, no water, with a GOR of 704, from the Penrose sand member of the Queen formation.

The Eumont Gas Pool is a large anticlinal type structure with an associated but discontinuous oil rim. The Hardy Area is an isolated section of this oil rim, which prior to the creation of the Eumont Gas Pool was known as the Hardy Oil Pool. Figure No. 1 is a structure map contoured on top of the Yates formation, which shows the location of the Hardy Area on the east side of this large Eumont anticline.

The Yates, Seven Rivers, and Queen formations are included within the vertical limits of the Eumont Gas Pool, as created by New Mexico Oil Conservation Commission Order No. R-254, dated February 17, 1953. All of these formations are oil productive on the west side of the pool. On the east side of the pool oil production is largely limited to the Penrose sand member of the Queen formation due to the lack of porosity and permeability development in the other formations. Figure No. 2 is a structure map contoured on top of the Penrose sand.

Development of the Hardy Area occurred in two stages. Initial development took place during the period from 1937 to

1941. Then during 1956 and 1957, Continental Oil Company expanded development on their acreage in the northern portion of the pool. During initial development, the majority of the wells were completed open hole and shot. The casing program used in these wells exposes from 32 to 196 feet of section above the top of the Penrose. Wells drilled during the second stage of development were cased to total depth and sandfraced. During 1955, the majority of the old wells were also sandfraced with treatments ranging from 5,000 to 40,000 gallons. Table No. I summarizes completion information for wells in the Hardy Area.

The area, as now developed, contains 60 oil wells and one gas well. As of 9-1-63, 39 of the oil wells were still producing, 12 were shut-in, and 9 were plugged and abandoned. Daily average oil production for the 39 producing wells averaged 2.0 barrels during August, 1963. The areal extent of oil production is estimated at 3334 acres, with an average net pay thickness of 6.5 feet.

At the present time, active study is being given toward the feasibility of forming units for waterflooding the northeast, northwest, north central, south central, and southwestern sections of the Eumont Gas Pool oil rim, in addition to the Hardy Area. Gulf Oil Corporation also has an 80-acre pilot waterflood in operation in Sections 27 and 34 of T-21S, R-36E.

GEOLOGY

The oil productive zones of interest underlying the proposed Eumont-Hardy Unit include the Penrose sand member of the Queen formation and a few scattered sand stringers in the lower portion of the Queen formation, which are in the Guadalupe Series of the Permian System.

Fine grained sand sections comprise the major portion of the Penrose zone, but small intervals of interbedded dense crystalline dolomite are also present. Below the Penrose, in the lower Queen formation, thick sections of dense dolomite with scattered sand stringers are present. Core analyses show that both the sand and dolomite contain oil. However, due to the low permeability (less than 0.1 md) in the dolomite, only the sand sections or stringers are believed to be oil productive. Therefore, secondary recovery estimates are confined to these sand bodies. Permeability and porosity values of the pay sand are discussed under the "Reservoir Rock and Fluid Characteristics" section of this report.

Depth to the top of the Penrose zone varies from 3560' (79' subsea) to 3660' (203' subsea) and the gross thickness of the Penrose ranges from 30' to 60'. Generally, the uppermost main pay sand occurs about 25' to 40' below the top of the Penrose. The scattered sand stringers in the lower Queen occur between 90' and 120' below the Penrose top. Figure Nos. 3 and 4 are north-south and east-west cross sections illustrating the continuity of these sands in the Hardy Area.

Structurally, the Penrose zone under the proposed Eumont-Hardy Unit is located in a local synclinal depression on the east flank of the huge Eumont anticline (see Figure Nos. 1 and 2). Upstructure to the north, west, and south, a gas-oil contact, at a subsea depth of about 150', defines the limits of Penrose oil production. Down-structure to the east, the productive limit of the reservoir is defined by a permeability pinchout. The existence of this pinchout is indicated by the poor recovery of some of the wells along the eastern edge of the area and from a core of the Penrose and lower Queen sections taken in Continental's L. G. Hill No. 1 well located in Lot 4 of Section 4-21-37. Logs on wells located to the east of the Hardy Area also show a lack of porosity development in the Queen section.

RESERVOIR ROCK AND FLUID CHARACTERISTICS

Three cores were taken in the Hardy Area. Two of the cores are in the northern portion of the area from diagonally offsetting wells, Continental's State KL-36 No. 1 and State 25 No. 1. The third core was taken using oil as a circulating fluid in Pan American's Hill A No. 7. This well penetrated an estimated 44 feet into the Penrose before coring operations commenced.

Figure No. 5 is a graphical presentation of the core analyses on State 25 No. 1 and State KL-36 No. 1. The main pay zone in these wells occurs approximately 30 feet below the top of the Penrose. A smaller pay zone also occurs approximately 90 feet below the Penrose top in these wells. Completion information from the wells drilled during the initial development of the area also confirms the existence of the main pay zone in the southern portion of the field and of at least one lower pay zone, several wells having reported multiple shows in the lower Queen section.

In order to determine average pay characteristics from the core analyses, a permeability cutoff of one millidarcy was used. Only those correlative zones possessing greater than one millidarcy permeability in both wells were considered to be pay. The gross pay intervals, thus defined, are shown in Figure No. 5. Using these intervals and the pay section from the Pan American core, the following weighted average values were obtained.

Porosity	16.7%
Permeability	22.6 md.

The average water saturation determined from the Pan American core taken with oil as a circulating fluid was 36%.

A reservoir fluid sample was taken on Continental's State A-36 No. 6. The mid-formation pressure at the time of sampling was 413 psi, so it was necessary to extrapolate the data back to the estimated original reservoir pressure of 1400 psi. The data obtained are in close agreement with those from a fluid sample taken on the west side of the Eumont Gas Pool at a pressure less than 100 psi below the estimated initial pressure in the Hardy Area. A brief summary of the sample analysis is shown graphically in Figures 6, 7, and 8 and is tabulated below:

*Initial Reservoir Pressure	1400 psig @ 250'
Saturation Pressure	1400 psig
Initial Solution Gas	465 SCF/bbl
Initial F.V.F.	1.215
Reservoir Temperature	87°F.
API Crude Gravity	35°

*Estimated

RESERVOIR PERFORMANCE AND RESERVE CALCULATIONS

The reservoir drive mechanism for the Hardy Area is a combination of solution gas and gas cap expansion. The degree of effectiveness of the gas cap expansion as a drive mechanism is difficult to determine because of the lack of pressure information and accurate volumetric data. It is believed to have been substantial, however, for the following reasons:

1. Gas-oil ratios have been consistently high at higher structural positions. This indicates higher oil saturations are being maintained down structure. The one degree dip makes it doubtful that gravity drainage is a dominant factor in maintaining these saturations.
2. The volume of gas produced from the area is over 2-1/2 times the volume of gas initially in place as calculated volumetrically.

Water production from the area has been negligible except for the period during late 1955 and 1956. Since several frac jobs occurred during this period, the water production may have been caused by the remedial work. Only one well, the Skelly Hill No. 5, is producing water at this time.

Figure No. 9 is a reservoir performance curve for the Hardy Area.

From completion information the original gas-oil contact in the area is estimated to have been 150 feet subsea. Continental's State F-1 No. 3 well encountered a slight show of oil in what is believed to be the main pay zone at a depth of 152 feet subsea. Ambassador's Currie No. 1 well blew in when it penetrated the main pay zone at 173 feet subsea and was reported to have

flowed gas at the rate of 2000 MCFPD and then began to make oil. Skelly's Hill No. 5 flowed 32 BO in 19 hours from the subsea interval 169 to 177 feet in the main pay zone. Since only gas shows have been reported as high as 152 feet subsea, the original gas-oil contact is believed to have been at approximately 150 feet subsea in the Hardy Area.

Figure No. 10 is a GOR map showing the GOR tests taken during the official pool test period from May to July, 1962. As shown on the map, the higher GOR's occur in the structurally higher wells near the gas-oil contact. The GOR's in the wells away from the gas-oil contact are in the same order of magnitude indicating the existence of a fairly uniform saturation distribution even though recoveries from the north and south portions of the area differ considerably. The difference in recovery could be explained by a difference in pay thickness; however, completion information, the few available logs, and the one core analysis from the south end of the area do not substantiate this inference. It is believed that the difference in recovery can be attributed to the fact that the north end of the area was developed some twenty years after the south end when the bottom hole pressure had declined to one-half of original. Wells below the gas-oil contact in the north end have never exhibited the high gas-oil ratios that would be characteristic of low oil saturations.

Reliable information for use in making an isopachous map of the area is limited. However, in order to estimate the effectiveness of primary recovery and to predict the expected performance under secondary recovery, some estimate of the reservoir

volume is required. An average ratio of net to gross pay was determined from the two core analyses shown in Figure No. 5 for both the upper and lower zones. The average net to gross ratio for the upper zone was .27 and for the lower zone .1. The gross pay intervals shown on Figure 5 were then determined on all wells possessing logs. Any portion of the gross pay intervals occurring above -150' was not counted as pay. The gross pay intervals thus determined were then adjusted by the above net to gross ratios. Due to the advanced stage of depletion of the area, an iso-ultimate primary recovery map (Figure 11) was prepared to aid in the preparation of the isopachous map. Using the net pay figures determined from logs, an average thickness interval of 90 feet from the top of the Penrose to the top of the lower zone, and the iso-ultimate primary recovery map, the isopachous map shown in Figure No. 12 was prepared. Although the data upon it is based is less than is desirable, Figure 12 represents the best interpretation possible with the available information.

The total oil productive pay in the Eumont-Hardy area is estimated at 21,499 acre-feet. Using the average rock and fluid characteristics previously discussed, the initial oil in place in the Eumont-Hardy Area is estimated at 15,200,000 barrels, 13,200,000 barrels of which were inside the proposed waterflood area boundary. The estimated ultimate primary recovery from the waterflood area is 2,915,000 barrels or 22% of the initial oil in place. Cumulative recovery from the area to 9-1-63 is 2,901,854 barrels or 99.5 percent of the estimated ultimate primary recovery.

The average oil saturation in the proposed unit area is estimated at 45% from volumetric data. The oil saturation was also computed from GOR data and the relative permeability curves shown in Figure No. 13. These curves are the envelopes of a large number of K_g/K_o curves run on sandstone samples by Continental's Research and Development Department. The average GOR in the wells away from the gas-oil contact is 3563. Using the lower envelope of the K_g/K_o curves, and assuming an average BHP of 300 psig, an oil saturation of 44.8% is calculated. This close agreement with the volumetric calculation is considered fortuitous; however, it does lend some support to the reasonableness of the isopachous map.

Table No. VI presents volumetric calculations for the proposed waterflood area. The calculations and exhibits presented in this report treat the waterflood area as a whole. As a matter of necessity the northernmost tract, herein designated as SEMU Eumont lease will not be included in the unit area since it is a part of the participating area in the S.E. Monument Unit. The waterflood is proposed to be carried out across the common boundary on a cooperative basis under a lease-line agreement.

PREDICTED WATERFLOOD PERFORMANCE

The Stiles method was used to aid in predicting waterflood performance for the Hardy Area. The calculations are presented in tabular form in Tables II through V and in graphical form in Figure Nos. 14 and 15. The Stiles calculation is being used in this instance to supply the general shape of the performance curve.

Since no relative permeability (K_{rw} & K_{ro}) and water viscosity (μ_w) data were available for determining the "A" factor used in Table IV, values for these terms were taken from published empirical data. The values used for K_{rw} and K_{ro} were .15 and .85, respectively. The water viscosity is estimated to be 0.8 cp.

During the period between fillup and water breakthrough the injection rate will theoretically have to be reduced in order to prevent oil production from exceeding the allowable. An injection rate of 2750 BWPd was used for this period rather than the oil allowable rate of 2225 BPD because it was assumed that only 75% of the water injected would be effective in displacing oil toward producing wells. In actual practice, it is doubted that the reduction in injection rate, if required at all, will be as great as theoretically calculated.

Secondary oil in place inside the proposed waterflood unit area is volumetrically calculated at 3,412,000 barrels. An areal sweep efficiency of 80% was assumed for the Stiles calculation. The vertical sweep efficiency at the economic limit is 97.5% from the Stiles' calculation for an overall sweep efficiency

of 77 percent. Because of the limited core data on which the calculations are based and the existence of zoning in the reservoir, a more conservative 75% vertical sweep efficiency was used in arriving at secondary oil production for use in the economic evaluations. Recoverable secondary reserves in the proposed unit are estimated at 2,100,000 barrels using the more conservative sweep efficiency.

Water requirements are estimated at 10,923,000 barrels or 0.45 pore volumes. The total life of the waterflood, including fillup, is estimated to be seven years. Figure 16 is a graphical presentation of the predicted performance.

As shown in Figure 16, oil production increased from near the primary economic limit to top unit allowable of 2226 BOPD immediately after fillup. Actually, a response to injection usually occurs at between 60 to 80% of fillup and increases to capacity or allowable rates in a few months. The top project allowable of 2226 BOPD will be maintained for 641 days, during which time 67.9% of the estimated recoverable reserves will be obtained.

PLAN OF DEVELOPMENT

Most of the wells in the southern portion of the Hardy Area were completed open hole and shot. The majority of these wells have also been sandfraced. Because of the completion method and remedial history, the installation of liners for control of injected water does not appear to be mechanically feasible. Under these conditions, there is very little to be gained from a pilot flood. The small size of the unit and the advanced stage of depletion also favor full scale flooding immediately.

As shown by Figure No. 17, the proposed waterflood will utilize 30 input and 21 producing wells. It is planned to use a five-spot injection pattern except along the western boundary of the unit. Here a complete line of injection wells will be used to effect a water barrier to prevent movement of secondary oil upstructure into the gas cap. After fillup has been reached, injection into four of the non-pattern wells along the barrier line will be halted, leaving a complete set of five-spot or partial five-spot patterns among the remaining 26 input wells.

The waterflood allowable, as determined by New Mexico Oil Conservation Commission regulations, for the proposed Eumont-Hardy Unit will be 2226 barrels of oil per calendar day (BOPD). This is equivalent to 42 BOPD per well for the 53 wells in the proposed unit.

RECOMMENDED AREA TO BE UNITIZED

Six of the seven wells in the southeast corner of the Eumont-Hardy Area have been plugged and abandoned by pulling the pipe. Considerable risk would be associated with attempting to re-enter and recomplete these wells. Also, the low cumulative recoveries probably indicate either poor pay quality or a thin pay section. Because of the degree of risk associated with the required investment for this area, it is not considered an attractive prospect for secondary recovery at this time.

Continental's Meyer B-31 No. 2 well, located in Unit K of Sec. 31-20-38, was plugged and abandoned with junk in the hole. Secondary reserves for this tract are not sufficient to justify the cost of drilling a new well. Four wells in the S.E. Monument Unit in Sec. 25 will be flooded on a cooperative basis across the common boundary.

It is recommended that all wells in the Hardy Area be included within the unit area with the exception of the wells discussed above. The proposed unit outline is shown on Figure No. 18.

VERTICAL LIMITS OF FORMATION TO BE UNITIZED

Completion information and core data indicate that the oil producing interval of the Hardy Area of the Eumont Pool is confined to the Queen section below the top of the Penrose sand. The casing program used on wells drilled prior to 1955 exposes up to 196 ft. of section above the Penrose sand. The vertical limits of the Eumont Pool, of which the Hardy Area is a part, extend from the top of the Yates formation to the base of the Queen formation. Extensive testing in Continental's Meyer B-31 No. 2 well failed to find any production above the Penrose sand. Since the Yates, Seven Rivers, and Queen formation above the Penrose sand can reasonably be presumed non-productive in the Hardy Area, and since the casing program on 42 out of 61 wells exposes section above the top of the Penrose, it is recommended that the upper limit of the formations to be unitized be taken as the top of the Yates formation.

TABLE NO. 1

WELL COMPLETION DATA - EUMONT-HARDY UNIT AREA

Company, Lease, Well Number Unit S.T.R., Elevation	Total Depth Subsea	Casing Setting Subsea	Penrose Top Subsea	Producing Intervals	Well Status 9-1-63	Initial Potential				Initial Stimulation	Lat Stimu
						Date	BOPD	BWPD	GOR or MCFGPD		
Ambassador											
Mae Currie No. 1 S Sec. 6-T21S-R37E Elev. 3504	-264	+17	-118	-113 to -264	SI	4-14-38	130			Shot/400 qts 3673-3773	-
Continental Oil Company											
Hawk A-5 No. 1 R Sec. 5-T21S-R37E Elev. 3495	-265	-48	-135	-135 to -265	F	8-28-37	119 FL		220 MCF	Shot W/165 Qts Nitro From 3669-3760	7-2-5
Hawk B-6 No. 1 R Sec. 6-T21S-R37E Elev. 3519	-308	-20	-135	-135 to -308	SI	12-7-38	39 GL		90 MCF	Shot W/300 qts From 3670-3819	8-5-3
Meyer B-31 No. 1 L Sec. 31-T20S-R38E Elev. 3500	-290	-6	-170	-170 to -290	P	9-5-38	864 FL	0	952 GOR	Natural	9-8-5
Meyer B-31 No. 2 K Sec. 31-T20S-R38E Elev. 3503	-383	-9	-165	-165 to -383	PSA	12-8-38	21 FL		206 MCF	Shot W/325 qts 3635-3773 A/1000 gal 3832-3872; Shot/460 qts. 3634-3872	4-15-5
Meyer B-31 No. 3 D Sec. 31-T20S-R38E Elev. 3512	-288	-287	-133	-142 to -276	SI	9-30-56	272 FL	0	728 GOR	A/2,000 gal; F/18,000	7-20-5
Meyer B-31 No. 4 E Sec. 31-T20S-R38E Elev. 3504	-346	-346	-164	-186 to -332	SI	9-14-57	12 P	0	801 GOR	A/250 gal. F/29,000 gals	11/50-5
SEMU Eumont No. 52 F Sec. 25-T20S-R37E Elev. 3528	-297	-296	-97	-110 to -190	F	7-7-56	276 FL	0	3163 GOR	A/1000 gal; F/15000 gal.	None
SEMU Eumont No. 54 K Sec. 25-T20S-R37E Elev. 3522	-328	-327	-115	-190 to -260	SI	1-7-57	228 FL	0	7912 GOR	A/1000 gal; F/8000 gal.	None
SEMU Eumont No. 55 J Sec. 25-T2-S-R37E Elev. 3523	-377	-376	-107	-189 to -255	SI	2-3-57	52 FI	0	27,327 GOR	A/2,000 gal; F/18,000 gal.	None
SEMU Eumont No. 56 I Sec. 25-T20S-R37E Elev. 3523	-377	-376	-92	-103 to -246	P	2-13-57	78 FI	0	28,423 GOR	A/2000 gal; F/18,000 gal.	None
State 25 No. 1 O Sec. 25-T20S-R37E Elev. 3518	-273	-272	-124	-134 to -265	F	7-25-56	304 FL	0	8,069 GOR	A/2,000 gal. F/23,000 gal.	None
State 25 No. 2 P Sec. 25-T20S-R37E Elev. 3510	-290	-289	-120	-146 to -283	SI	9-15-56	546 FL	0	2,965 GOR	A/1,500 gal. F/20,000 gal.	None
State 25 "A" No. 1 N Sec. 25-T20S-R37E Elev. 3512	-288	-287	-123	-153 to -279	F	10-15-56	214 FL	0	3,058 GOR	A/1,000 gal. F/12,000 gal.	None
State A-36 No. 1 P Sec. 35-T20S-R37E Elev. 3406		-294 PB	-124	-174 to -294	SI	9-6-38	264 FL	0	1,500 GOR	Shot W/400 qts SNG 3620-3790	10-5-5

TABLE NO. I

WELL COMPLETION DATA - EUMONT-HARDY UNIT AREA

Total Depth Subsea	Casing Setting Subsea	Penrose Top Subsea	Producing Intervals	Well Status 9-1-63	Initial Potential			GOR or MCFGPD	Initial Stimulation	Later Stimulation
					Date	BOPD	BWPD			
-264	+17	-118	-113 to -264	SI	4-14-38	130			Shot/400 qts 3673-3773	-
-265	-48	-135	-135 to -265	F	8-28-37	119 FL		220 MCF	Shot W/165 Qts Nitro From 3669-3760	7-2-56 SF/10,000
-308	-20	-135	-135 to -308	SI	12-7-38	39 GL		90 MCF	Shot W/300 qts From 3670-3819	8-5-39 A/300
-290	-6	-170	-170 to -290	P	9-5-38	864 FL	0	952 GOR	Natural	9-8-56 SF/10,000
-383	-9	-165	-165 to -383	P&A	12-8-38	21 FL		206 MCF	Shot W/325 qts 3635-3710 A/1000 gal 3832-3872; Shot/460 qts. 3634-3872	1-15-40 Shoot/150 qts 7-20-55 4" Liner Fract. W/10,000 gal.
-288	-287	-135	-142 to -276	SI	9-30-56	272 FL	0	728 GOR	A/2,000 gal; F/18,000	11/56 Frac/5,000 gal 3674-3688
-346	-346	-164	-186 to -332	SI	9-14-57	12 P	0	801 GOR	A/250 gal; F/29,000 gals	None
-297	-296	-97	-110 to -190	F	7-7-56	276 FL	0	3163 GOR	A/1000 gal; F/15000 gal.	None
-328	-327	-115	-190 to -260	SI	1-7-57	228 FL	0	7912 GOR	A/1000 gal; F/8000 gal.	None
-377	-376	-107	-139 to -255	SI	2-3-57	52 FL	0	27,327 GOR	A/2,000 gal; F/18,000 gal.	None
-377	-376	-92	-103 to -246	P	2-13-57	78 FL	0	28,423 GOR	A/2000 gal; F/18,000 gal.	None
-273	-272	-124	-134 to -265	F	7-25-56	304 FL	0	8,069 GOR	A/2,000 gal. F/23,000 gal.	None
-290	-289	-120	-146 to -283	SI	9-15-56	546 FL	0	2,965 GOR	A/1,500 gal. F/20,000 gal.	None
-288	-287	-123	-153 to -279	F	10-15-56	214 FL	0	3,058 GOR	A/1,000 gal. F/12,000 gal.	None
-294	PB	-124	-174 to -294	SI	9-6-38	264 FL	0	1,500 GOR	Shot W/400 qts SNG 3620-3790	10-4-55 Set Liner A/500 gal; F/8,000

FILE NO. 1 - Page 2
Well Completion Data - Eumont-Hardy Unit Area

Company, Lease, Well Number, Unit S.T.R., Elevation	Total Depth Subsea	Casing Setting Subsea	Penrose Top Subsea	Producing Intervals	Well Status 9-1-63	Initial Potential			GOR or MCFGPD	Initial Stimulation	Late Stim
						Date	BOPD	BHPD			
State A-36 No. 2 I Sec.36-T20S-R37E Elev.3499	-291	-2	-166	-166 to -291	P	11-30-38	144 FL	0	1,935 GOR	Shot W/320 qts. 3630-3790	
State A-36 No. 3 O Sec.36-T20S-R37E Elev.3472	-248 PB	0	-143	-143 to -248	SI	7-18-40	247 FL	0	1,970 GOR	Shot W/130 Qts. 3650-3715	None
State A-36 No. 4 N Sec.36-T20S-R37E Elev.3489	-291 PB	-26	-131	-131 to -291	P	10-6-40	84 FL	0	2,200 GOR	Shot W/260 qts. 3645-3780	
State A-36 No. 5 T Sec.36-T20S-R37E Elev.3507	-293	-292	-136	-155 to -285	P	4-22-56	433 FL	0	1,824 GOR	A/1,000 gal; F/15,000 gal.	None
State A-36 No. 6 A Sec.36-T2-S-R37E Elev.3510	-290	-289	-139	-152 to -286	P	8-5-56	340 FL	0	3,605 GOR	A/2,000 gal; F/20,000 gal.	None
State A-36 No. 7 G Sec.36-T20S-R37E Elev.3505	-295	-294	-146	-157 to -289	P	8-21-56	422 FL	0	626 GOR	A/2,000 gal, F/20,000 gal.	None
State A-36 No. 8 J Sec.36-T20S-R37E Elev.3502	-293	-296	-153	-169 to -238	P	10-29-56	126 FL	0	TSTM GOR	A/3,000 gal, F/22,000 gal.	None
State A-36 No. 9 A Sec.36-T20S-R37E Elev.3512	-301 PB	-317	-157	-171 to -286	P	3-10-57	47 FL	0	315 GOR	A/1000 gal; F/16,00 gal.	None
State A-36 No. 10 K Sec.36-T20S-R37E Elev.3501	-275	-274	-125	-137 to -272	P	5-30-57	43 FL	0	712 GOR	F/27,000 gal.	None
State A-36 No. 11 L Sec.36-T20S-R37E Elev.3476	-359	-353	-111	-124 to -258	SI	11-9-57	2 FL	0	20,400 GOR	A/1,600 gal, F/18,000 gal.	None
State A-36 No. 12 L Sec.36-T20S-R37E Elev.3490	-310	-309	-95	-120 to -234	P	8-24-57	11 FL	0	57,455 GOR	A/8,000 gal, F/20,000 gal.	None
State F-1 No. 2 H Sec.1-T21S-R36E Elev.3501	-306	+5	-79	-79 to -306	SI	5-26-38	58 FL		420	Shot W/260 qts. SNG 3675-3807	
State F-1 No. 3 I Sec.1-T21S-R36E Elev.3486	-246	-70	-102	-192 to -246	F	5-5-40	77 FL		512	Shot W/260 SNG 3644-3744	7-30
State F-1 No. 4 A Sec.1-T21S-R36E Elev.3486	-284	-14	-89	-89 to -234	F	12-14-40	9.5 FL		196	Shot W/200 qts SNG 3700-3780'. Reshot W/ qts. 3650/3730'	
State KK-36 No. 1 F Sec.36-T20S-R37E Elev.3503	-320	-316	-127	-42 to -266	F	12-10-56	60 FL			A/250 gal; SF/30,000 gal	
State KK-36 No. 2 E Sec.36-T20S-R37E Elev.3505	-210	-210	-103	-125 to -195	F	11-27-57	47 FL			A/250 gal; SF/20,400 gal	
State KL-36 No. 1 C Sec.36-T20S-R37E Elev.3510	-290	-290	-125	-152 to -254	SI	3-29-57	110 FL		1231 GOR	SF/10,000 3752-3764 Other perms. Comp. W.	

dy Unit Area

al th sea	Casing Setting Subsea	Penrose Top Subsea	Producing Intervals	Well Status 9-1-63	Initial Potential			GOR or MCFGPD	Initial Stimulation	Later Stimulation
					Date	BOPD	BHPD			
1	-2	-166	-166 to -291	P	11-30-38	144 FL	0	1,935 GOR	Shot W/320 qts. 3630-3790	
8 PB	0	-143	-143 to -248	SI	7-18-40	247 FL	0	1,970 GOR	Shot W/130 Qts. 3650-3715	None
1 PB	-26	-151	-131 to -291	P	10-6-40	84 FL	0	2,200 GOR	Shot W/260 qts. 3645-3780	
3	-292	-136	-155 to -285	P	4-22-56	438 FL	0	1,824 GOR	A/1,000 gal; F/15,000 gal.	None
0	-289	-139	-152 to -286	P	8-5-56	340 FL	0	3,605 GOR	A/2,000 gal; F/20,000 gal.	None
5	-294	-146	-157 to -289	P	8-21-56	422 FL	0	626 GOR	A/2,000 gal, F/20,000 gal.	None
5	-296	-152	-109 to -238	P	10-29-56	126 FL	0	TST1 GOR	A/3,000 gal, F/22,000 gal.	None
01 PB	-317	-157	-171 to -286	P	3-10-57	47 FL	0	315 GOR	A/1000 gal; F/16,00 gal.	None
5	-274	-125	-157 to -272	P	5-30-57	43 FL	0	712 GOR	F/27,000 gal.	None
9	-353	-111	-124 to -258	SI	11-9-57	2 FL	0	20,400 GOR	A/1,600 gal, F/18,000 gal.	None
10	-309	-95	-120 to -254	P	8-24-57	11 FL	0	57,455 GOR	A/8,000 gal, F/20,000 gal.	None
6	+5	-79	-79 to -305	SI	5-26-38	58 FL		420	Shot W/260 qts. SNG 3675-3807	
6	-70	-102	-102 to -246	F	5-5-40	77 FL		512	Shot W/260 SNG 3644-3744	7-30-55 SF/15,000
34	-14	-89	-89 to -284	F	12-14-40	9.5 FL		196	Shot W/200 qts SNG 3700-3780'. Reshot W/120 qts. 3650/3730'	None
20	-316	-127	-42 to -266	F	12-10-56	60 FL			A/250 gal; SF/30,000 gal	
10	-210	-108	-125 to -195	F	11-27-57	47 FL			A/250 gal; SF/20,100 gal.	
90	-290	-125	-152 to -254	SI	3-29-57	110 FL		1231 GOR	SF/10,000 3752-3764 Other perfs. Comp. Material	

TABLE NO. 1 - Page 3 Well Completion Data - Eumont-Hardy Unit Area

Company, Lease, Well Number, Unit S.F.R., Elevation	Total Depth Subsea	Casing Setting Subsea	Penrose Top Subsea	Producing Intervals	Well Status 9-1-63	Initial Potential			GOR or MCFGPD 1,500 MCFGPD	Initial Stimulation	La St
						Date	BOPD	BWPD			
State K1-36 No. 1 D Gulf	-177	-92	-109	-109 to -177		6-13-54				Natural	
Hill Ramsay J No. 1 M Sec.25-T208-R37E Elev.3513 Pan American	-307	-305	-116	-147 to -249	F	10-1-57	93			SF/24,000 gals	No
Hill "A" No. 1 J Sec.6-T21S-R37E Elev.3481	-296	-36	-144	-144 to -296	P	2-1-38	192 FL	0	200 MCF	Natural	7/4-
Hill "A" No. 2 I Sec.6-T21S-R37E Elev.3492	-293	-23	-196	-196 to -293	P	6-1-38	242 FL	0	480 MCF	Natural	7/3/4-
Hill "A" No. 3 I Sec.6-T21S-R37E Elev.3510	-285	-10	-120	-120 to -285	P	8-1-38	65 FL	0	318 MCF	Shot/140 qts	4-
Hill "A" No. 4 J Sec.6-T21S-R37E Elev.3488	-282	-21	-138	-138 to -232	P	4-1-39	240 FL	0		Shot/270 qts.	3-10
Hill "A" No. 5 L Sec.6-T21S-R37E Elev.3487	-293	-41	-126	-126 to -293	P	12-10-39	333 FL	0	220 MCF	Shot/225 qts	4-
Hill "A" No. 6 K Sec.6-T21S-R37E Elev.3501	-249	-27	-129	-129 to -249	F	4-1-40	77 FL	0	45 MCF	Shot/176 Qts.	4-
Hill "A" No. 7 P Sec.6-T21S-R37E Elev.3495	-285	-22	-150	-150 to -285	P	9-24-41	70 FL	0	135 MCF	Shot/246 Qts.	3-
Hill "B" No. 1 M Sec.5-T21S-R37E Elev.3485	-325	-31	-201	-201 to -325	P&A	12-13-37	250 FL	0	278	Natural	
Hill "C" No. 1 J Sec.5-T21S-R37E Elev.3491	-269	-57	-183	-183 to -269	P&A	9-1-37	120 FL	0	TST	Shot/20 qts 3705-11	
Hill "C" No. 2 E Sec.5-T21S-R37E Elev.3493	-287	-28	-197	-197 to -287	P	4-1-38	127 FL	0	206 MCF	Natural	12 SF/10/12/2/37
Hill "C" No. 3 D Sec.5-T21S-R37E Elev.3497	-298	-8	-203	-203 to -298	P	5-1-38					
Hill "C" No. 4 F Sec.5-T21S-R37E Elev.3479	-301	-43	-196	-196 to -301	P	12-1-38	100 FL	0		Shot/260 qts 3720-37	
Hill "C" No. 5 J Sec.5-T21S-R37E Elev.3476	-299	-37	-185	-185 to -299	P&A	7-16-39	200 FL	0	800 GOR	Shot/300 qts. 3686-3	
Thompson No. 1 A Sec.6-T21S-R37E Elev.3471	-299	-22	-181	-181 to -299	P&A	1-1-38	127 BO	0	280 MCF	Natural	5-

Completion Data - Eumont-Hardy Unit Area

Total Depth Subsea	Casing Setting Subsea	Penrose Top Subsea	Producing Intervals	Well Status 9-1-63	Initial Potential			GOR or MCFGPD	Initial Stimulation	Later Stimulation
					Date	BOPD	BWPD			
177	-92	-109	-109 to -177		6-13-54			1,500 MCFGPD	Natural	
107	-305	-116	-147 to -249	F	10-1-57	93			SF/24,000 gals	None
196	-36	-144	-144 to -296	P	2-1-38	192 FL	0	200 MCF	Natural	7/40 Shot/350 qts.
93	-23	-196	-196 to -293	P	6-1-38	242 FL	0	480 MCF	Natural	4-6-55 SF/12,500
85	-10	-120	-120 to -285	P	8-1-38	65 FL	0	318 MCF	Shot/140 qts	7/40 Shot/295 qts.
82	-21	-138	-138 to -232	P	4-1-39	240 FL	0		Shot/270 qts.	3/31/55 SF/12,500
13	-41	-126	-126 to -293	P	12-10-39	353 FL	0	220 MCF	Shot/225 qts	4-26-55 SF/12,500
19	-27	-129	-129 to -249	F	4-1-40	77 FL	0	45 MCF	Shot/176 Qts.	3-12-55 SF/20,000
15	-22	-150	-150 to -285	P	9-24-41	70 FL	0	135 MCF	Shot/246 Qts.	10-7-57 SF/40,000
15	-31	-201	-201 to -325	P&A	12-13-37	250 FL	0	278	Natural	4-20-55 SF/12,500
9	-57	-183	-183 to -269	P&A	9-1-37	120 FL	0	TST	Shot/20 qts	4-13-55 SF/12,500
7	-28	-197	-197 to -287	P	4-1-38	127 FL	0	206 MCF	Natural	3-26-55 SF/12,500
8	-8	-203	-203 to -298	P	5-1-38					12/38 Shot/220 qts.
1	-43	-196	-196 to -301	P	12-1-38	100 FL	0			SF/12,500 gal.
1	-37	-135	-185 to -299	P&A	7-16-39	200 FL	0	800 GOR	Shot/300 qts.	10-17-56 SF/40,000
1	-22	-181	-181 to -299	P&A	1-1-55	127 BO	0	280 MCF	Natural	12/38 Shot/250 qts.

TABLE NO. 1 - Page 4
Well Completion Data - Eumont-Hardy Unit Area

Company, Lease, Well Number Unit S.T.R., Elevation	Total Depth Subsea	Casing Setting Subsea	Penrose Top Subsea	Producing Intervals	Well Status 9-1-63	Initial Potential			GOR or MCFGPD	Initial Stimulation
						Date	BOPD	BOPD		
Schermerhorn										
Alexander No. 15 Sec.5-T21S-R37E Elev.3496 (formerly Cities Service)	-290	-31	-144	-144 to -290	P&A	11-13-37	5			Shot/320 qts 3610-3745
Alexander "A" No. 1 N (formerly Pan-American) Sec.5-T21S-R37E Elev.3490	-265	-45	-190	-190 to -265	P&A	4-24-37	57 FL	0	700 GOR	Shot/160 qts.3704-3755
Alexander "E" No. 1 L (formerly Pan-American) Sec.5-T21S-R37E Elev.3491	-300	-26	-192	-192 to -0	P&A	9-12-38	120 FL	0		Natural
Alexander "B" No. 2 K (formerly Pan-American) Sec.5-T21S-R37E Elev.3498	-290	-26	-195	-195 to -290	P&A	4-13-39	111 FL	0	98 MCF	Shot/280 qts. 3720-3780
Skelly Oil Company										
Hill No. 1 G Sec.6-T21S-R37E Elev.3493	-293	-37	-160	-160 to -298	P	9-16-37	115 FL			Shot/190 qts. 3631-3771
Hill No. 2 B Sec.6-T21S-R37E Elev.3471	-309	-309	-179	-186 to -309	P	4-1-38	170 FL			
Hill No. 3 E Sec.6-T21S-R37E Elev.3495	-235	-25	-102	-102 to -235	P	9-16-39	217 FL			Shot/360 qts. 3655-5730
Hill No. 4 F Sec.6-T21S-R37E Elev.3491	-269	-46	-134	-134 to -269	P	2-16-40				40 BOPD Natural
Hill No. 5 C Sec.6-T21S-R37E Elev. 3471	-300	-39	-139	-139 to -300	P	4-16-40				96 BOPD after shot/370
Hill No. 6 D Sec.6-T21S-R37E Elev.3469	-259	-41	-106	-106 to -259	P	6-16-40				44 BOPD Natural
Two States										
Hill "A" No. 1 M Sec.31-T20S-R38E Elev.3499	-291	-26	-186	-186 to -291	F	7-26-38	456 FL		200 MCF	Natural
Hill "A" No. 2 H Sec.31-T20S-R37E Elev.3495	-290	-33	-185	-185 to -290	F	9-19-38	228 FL		300 MCF	Shot/300 qts 3625-3785
Hill "B" No. 1 C Sec.5-T21S-R37E Elev.3463	-304	-35	-196	-196 to -304	F	8-22-38	240 FL		150 MCF	Shot/300 qts 3550-3767

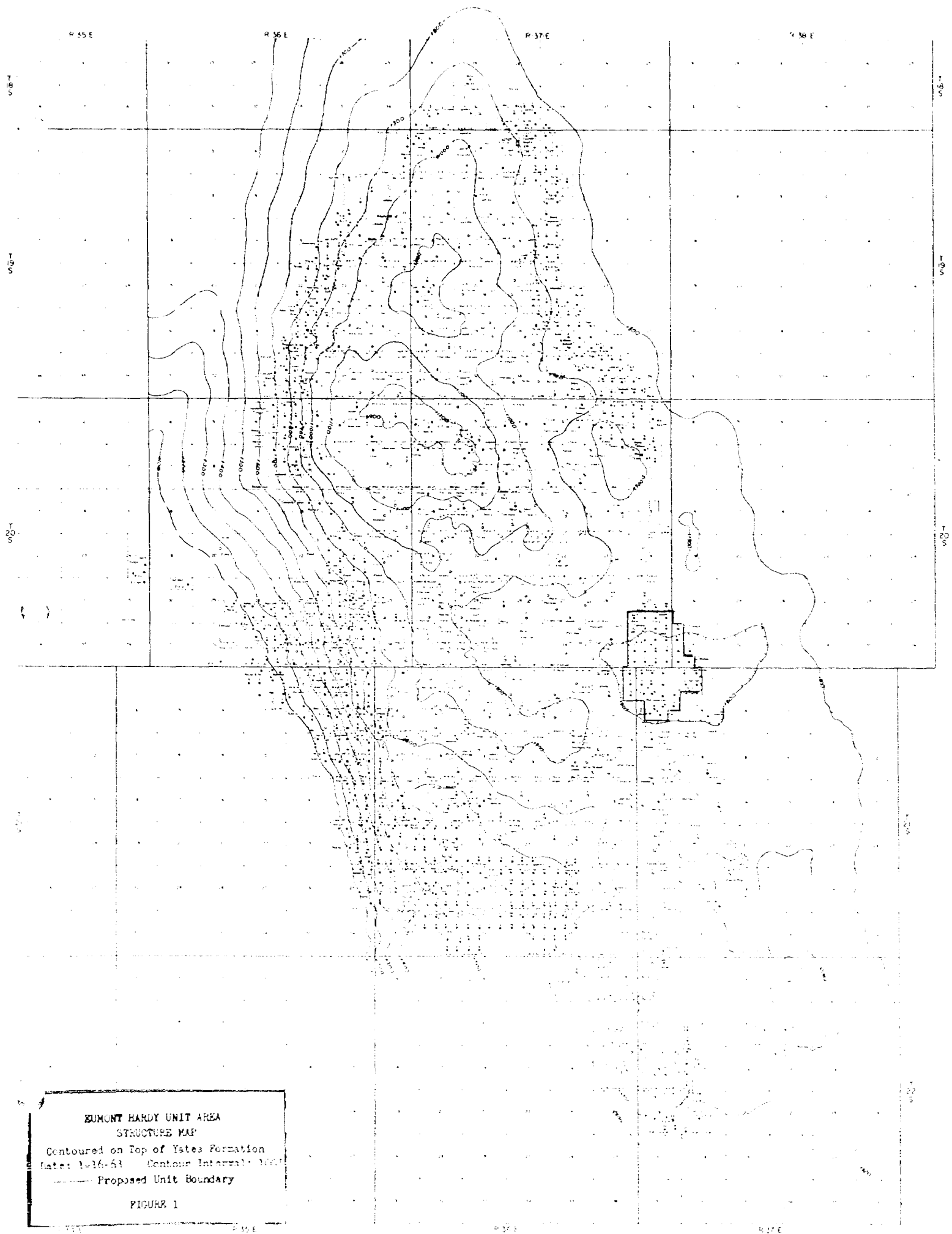
y Unit Area

Casing Setting Subsea	Penrose Top Subsea	Producing Intervals	Well Status 9-1-63	Initial Potential			GOR or MCFGPD	Initial Stimulation	Later Stimulation
				Date	BOPD	BWPD			
-31	-144	-144 to -290	P&A	11-13-37	5			Shot/320 qts 3610-3745	BB to gas 3-16-53
-45	-190	-190 to -265	P&A	4-24-37	57 FL	0	700 GOR	Shot/160 qts. 3704-3755'	
-26	-192	-192 to -0	P&A	9-12-38	120 FL	0		Natural	
-26	-195	-195 to -290	P&A	4-13-39	111 FL	0	98 MCF	Shot/280 qts. 3720-3780	
-37	-160	-160 to -298	P	9-16-37	115 FL			Shot/190 qts. 3631-3771'	
-309	-179	-186 to -309	P	4-1-38	170 FL				10-54 SF/10,000
-25	-102	-102 to -235	P	9-16-39	217 FL			Shot/360 qts. 3655-5730	5-55 SF/10,000
-46	-134	-134 to -260	P	2-16-40				40 BOPD Natural	1-56 SF/12,000
-39	-139	-139 to -300	P	4-16-40				96 BOPD after shot/370	
-41	-106	-106 to -259	P	6-16-40				44 BOPD Natural	
								131 BOPD after shot/430 qts	
								35 BOPD Natural	
								148 BOPD after shot/380 qts	
-26	-186	-186 to -291	F	7-26-38	456 FL		200 MCF	Natural	10-11-53 SF/5,000
-33	-185	-185 to -290	F	9-19-38	228 FL		300 MCF	Shot/300 qts 3625-3785	3-31-55 SF/20,000
-35	-196	-196 to -304	F	8-22-38	240 FL		150 MCF	Shot/300 qts 3550-3767	9-17-60 A/1,000 8-12-55 SF/20,000

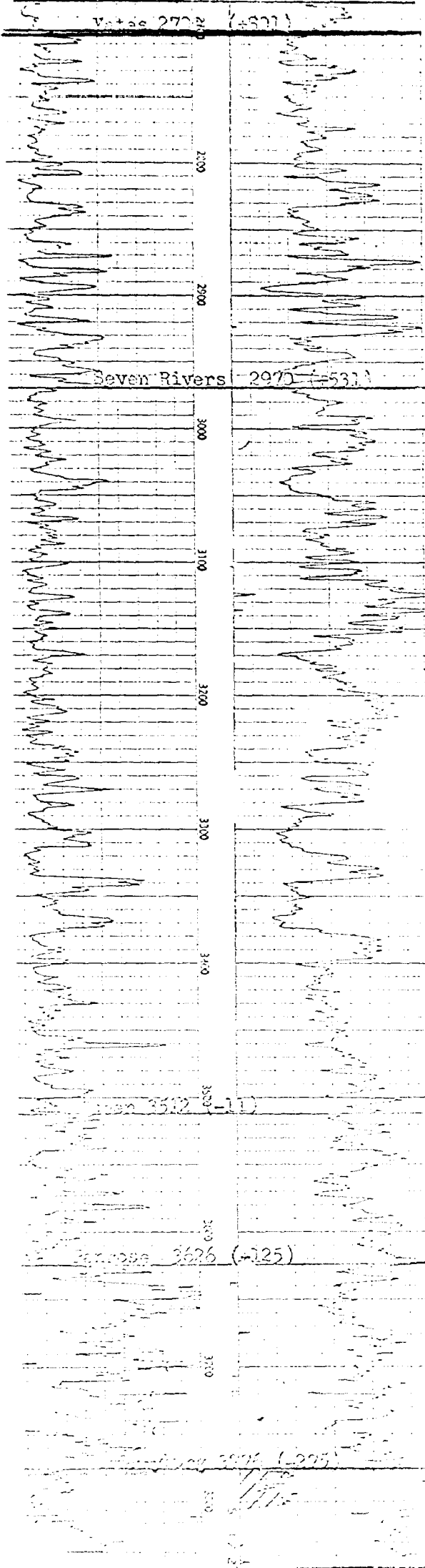
TABLE NO. VI

VOLUMETRIC CALCULATION OF SECONDARY OIL TO BE PRODUCED
EUMONT-HARDY UNIT

Productive Acre Feet	19,382
Average Porosity	16.7%
Estimated Initial Water Saturation	36.0%
Initial F.V.F..	1.215
Estimated reservoir pressure at start of flood	300 psi
F.V.F. at start of flood	1.104
Estimated residual oil saturation after flood (S_{or})	30%
Sweep efficiency (30% horizontal x 75% vertical)	60%
Primary recovery to start of flood (1-1-64)	2,915,000 bbls.
Initial oil in place	13,200,000 bbls 681 bbls/Ac.ft.
$V = 7758 \times 19,382 \times .167 \times (1 - .36)/1.215$	
Oil Saturation at start of flood	
$S_o = \left(1 - \frac{2,915,000}{13,200,000}\right) \left(1 - .36\right) \left(\frac{1.104}{1.215}\right)$	45%
Estimated Secondary Oil	
$V = 7758 \times 19,382 \times .167 \times (.45 - .30)/1.04 =$	3,412,000 bbls. 176 bbls/Ac.ft.
Estimated Recoverable Secondary Oil	
$3,314,000 \times .6$	2,100,000 bbls. 108 bbls/Ac.ft.
Fillup Volume	
$V = 7758 \times 19,382 \times .167 \times .10 =$	4,800,000 bbls.



Radioactivity Log	
COMPANY: CONTINENTAL OIL COMPANY	Well Log
WELL: STATE A-36 No. 10	
FIELD: 1980'	
LOCATION: 1980' FS&WL, Sec. 36, T20S, R37E	
COUNTY: LEA	STATE: NEW MEXICO
LOG 2140	TIME 10:00 AM
DATE 2140	TIME 10:00 AM
MEAN DATUM	



CONTINENTAL OIL COMPANY

State A-36 No. 10

1980' FS&WL, Sec. 36, T20S, R37E

Type log for proposed EUMONT
HARDY UNIT, EUMONT POOL, LEA
COUNTY, NEW MEXICO

Run on May 7, 1957

SUMMARY DATA SHEET
EUMONT-HARDY WATERFLOOD

General

1. Area of Proposed Unit, Acres -----	1930
2. Number of Producing Oil Wells in Proposed Unit, 4-1-66 ----	33
3. Cumulative Oil Production, Proposed Unit, 4-1-66, Barrels -----	2,870,473
4. Average Oil Production, Proposed Unit, March, '66, BPD/Well-----	2.1
5. Average Water Production, Proposed Unit, March, '66 BPD/Well -----	0.5
6. Average GOR, Proposed Unit, March, '66, CF/B-----	18,550
7. Estimated BHP in Proposed Unit, psi -----	300

Geological Data

1. Producing Formation-----	Penrose & Lower Queen
2. Average Depth, Feet-----	3600
3. Type Structure-----	Local Synclinal Depression on Flank of Anticline.
4. Estimated Gas-Oil Contact, Feet-----	-150
5. Primary Pore Volume, Acre-Feet-----	
(Hardy Area)-----	21,499
(Unit)-----	18,826

Reservoir Properties

1. Estimated Original Reservoir Pressure, psi-----	1400
2. Average Rock Properties	
Porosity, Percent-----	16.7
Permeability, Millidarcies-----	22.6
3. Estimated Water Saturation, Percent-----	36
4. Reservoir Oil Properties	
Estimated Bubble-Point Pressure, psi-----	1400
Initial Volume Factor-----	1.215
Volume Factor, Start of Flood-----	1.104
Initial Solution GOR, CF/B-----	465
Initial Oil Viscosity, cp-----	.98
API Gravity, Degrees-----	35
5. Estimated Original Oil in Place, Bbls./AF-----	681
6. Estimated Original Oil in Place, Bbls. (Hardy Area)-----	14,650,000
(Unit)-----	12,840,000
7. Oil Saturation Start of Flood, Percent-----	45
8. Residual Oil Saturation, After Flood, Percent-----	30.0
9. Producing Mechanism-----	Combination Gas Cap Expansion and Solution Gas

Reserve Estimates

1. Ultimate Primary Recovery, Bbls.
 (Hardy Area) ----- 3,382,000
 (Unit)----- 2,885,000
2. Primary Recovery, Percent of Oil in Place----- 23
3. Areal Sweep Efficiency, Estimated, Percent----- 80
4. Vertical Sweep Efficiency, Estimated, Percent----- 75
5. Total Volumetric Sweep Efficiency, Percent----- 60
6. Secondary Oil in Place, Bbls./AF----- 176
7. Secondary Oil in Place, Bbls.
 (Hardy Area)----- 3,784,000
 (Unit)----- 3,314,000
8. Estimated Remaining Primary Oil from 4-1-66, Bbls.
 (Hardy Area)----- 17,000
 (Unit)----- 15,000
9. Recoverable Secondary Oil (Hardy Area)----- 2,100,000
 (Unit) ----- 1,988,000
10. Secondary Recovery, Percent of Oil in Place (Unit) ----- 15.5
11. Pore Volumes of Water to be Injected----- .45

EUMONT-HARDY POOL UNIT - INJECTION WELL DATA

EXHIBIT No.

Company, Lease and Well No.	Total Depth and/or PBD	Surface Casing			Int. Casing			Production Casing		
		Size	Depth	Cement	Size	Depth	Cement	Size	Depth	Cement
<u>Continental Oil Company</u>										
State 25 No. 2	3800'	8 5/8	311	250		None		5 1/2	3799'	1360
State 25 No. 1	3800'	8 5/8"	349	225		None		5 1/2	3799	1450
State A-36 No. 1	3845'/3790'	10 3/4"	224'	225	7 5/8"	1378	425	5 1/2	3520	425'
								4" slotted liner 3489'-3790'		
State A-36 No. 4	3810'/3780'		None			None		5 1/2	3515'	900
State A-36 No. 5	3800'/3797'	8 5/8"	331	225		None		5 1/2"	3799'	1506
State A-36 No. 8	3800'/3796'	8 5/8"	323	225		None		5 1/2"	3798'	1313
State A-36 No. 9	3830'/3813'	8 5/8"	290'	225		None		5 1/2"	3829'	250
State A-36 No. 11	3835'	8 5/8"	324'	250		None		5 1/2"	3834'	800
State A-36 No. 12	3800'	8 5/8"	344	250		None		5 1/2"	3799	915
State F-1 No. 2	3807'	10 3/4"	245'	225	7 5/8"	1355'	425	5 1/2"	3496'	425
State F-1 No. 3	3742'	7"	1318'	10		None		5 1/2"	3570'	600
State F-1 No. 4	3780'	7"	1187-1332'	5		None		5 1/2"	3510'	900
State KK-36 No. 1	3823'	8 5/8"	298'	225		None		5 1/2"	3819'	400
State KK-36 No. 2	3715'	8 5/8"	327'	225		None		5 1/2"	3714'	400
State KM-36 No. 1	3683'	8 5/8"	1373'	200		None		7"	3598'	200
Meyer B-31 No. 1	3790'	10 3/4"	192'	225	7 5/8"	1369'	425	5 1/2"	3506'	425
								4" perf. liner 3502-3790'		
Meyer B-31 No. 3	3800'/3793'	8 5/8"	323	225		None		5 1/2"	3799'	1360
<u>Anadarko</u>										
Mae Currie No. 1	3773'	10 3/4"	180	100	8 5/8"	1328'	100	7"	3492'	100
<u>Pan American</u>										
Hill "A" No. 2	3785'	13"	298'	200	9 5/8"	1385'	500	7"	3515'	300
Hill "A" No. 4	3770'	13"	293'	20	9 5/8"	1373'	500	7"	3510'	300
Hill "A" No. 6	3750'	13"	271'	180	8 5/8"	1386'	500	5 1/2"	3528'	225
Hill "C" No. 3	3755'	13"	311'	200	9 5/8"	1336'	500	7"	3465'	300
Hill "C" No. 4	3780'	13"	268'	200	9 5/8"	1373'	500	7"	3522'	300

EUMONT-HARDY POOL UNIT - INJECTION WELL DATA

EXHIBIT No. 5

Total Depth and/or PBD	Surface Casing			Int. Casing			Production Casing			Producing Int.
	Size	Depth	Cement	Size	Depth	Cement	Size	Depth	Cement	(P) Perf. (OH) Open Hole
800'	8 5/8"	311	250	None			5 1/2"	3799'	1360	(P) 3656-3794'
800'	8 5/8"	349	225	None			5 1/2"	3799	1450	(P) 3665-3791'
845'/3790'	10 3/4"	224'	225	7 5/8"	1378	425	5 1/2"	3520	425'	(OH) 3520-3790'
							4" slotted liner 3489'-3790'			
810'/3780'		None		None			5 1/2"	3515'	900	(OH) 3515-3780'
800'/3797'	8 5/8"	331	225	None			5 1/2"	3799'	1506	(P) 3662-3792'
800'/3796'	8 5/8"	323	225	None			5 1/2"	3798'	1313	(P) 3602-3790
830'/3813'	8 5/8"	290'	225	None			5 1/2"	3829'	250	(P) 3683-3798'
835'	8 5/8"	324'	250	None			5 1/2"	3834'	800	(P) 3600-3734'
800'	8 5/8"	344	250	None			5 1/2"	3799	915	(P) 3610-3744'
807'	10 3/4"	245'	225	7 5/8"	1355'	425	5 1/2"	3496'	425	(OH) 3496-3807'
742'	7"	1318'	10	None			5 1/2"	3570'	6'	(OH) 3570-3742'
780'	7"	1187-1332'	5	None			5 1/2"	3510'	900	(OH) 3510-3780'
823'	8 5/8"	298'	225	None			5 1/2"	3819'	400	(P) 3645-3769
715'	8 5/8"	327'	225	None			5 1/2"	3714'	400	(P) 3630-3700'
683'	8 5/8"	1373'	200	None			7"	3598'	200	(OH) 3598-3683'
790'	10 3/4"	192'	225	7 5/8"	1369'	425	5 1/2"	3506'	425	(OH) 3506-3790'
							4" perf. liner 3502-3790'			
800'/3793'	8 5/8"	323	225	None			5 1/2"	3799'	1360	(P) 3654-3788'
773'	10 3/4"	180	100	8 5/8"	1328'	100	7"	3492'	100	(OH) 3492-3773'
785'	13"	298'	200	9 5/8"	1385'	500	7"	3515'	300	(OH) 3515-3785'
770'	13"	293'	20	9 5/8"	1373'	500	7"	3510'	300	(OH) 3510-3770'
750'	13"	271'	180	8 5/8"	1366'	500	5 1/2"	3528'	225	(OH) 3528-3790'
755'	13"	311'	200	9 5/8"	1336'	500	7"	3465'	300	(OH) 3465-3755'
780'	13"	268'	200	9 5/8"	1373'	500	7"	3522'	300	(OH) 3522-3780'

Eumont-Hardy Injection Well Data
Page 2

<u>Company, Lease and Well No.</u>	<u>Total Depth and/or PBD</u>	<u>Surface Casing</u>			<u>Int. Casing</u>			<u>Production Casing</u>		
		<u>Size</u>	<u>Depth</u>	<u>Cement</u>	<u>Size</u>	<u>Depth</u>	<u>Cement</u>	<u>Size</u>	<u>Depth</u>	<u>Cement</u>
<u>Skelly Oil Company</u>										
Hill No. 1	3870'	10 3/4"	186'	150			None	7"	3530'	500
Hill No. 3	3730'	16"	158'	150			None	7"	3520'	250
Hill No. 5	3741'	16"	134'	150			None	7"	3510'	250
<u>Gulf Oil Company</u>										
Bell Ramsay No. 1	3820'/3816'	8 5/8"	409'	325			None	5 1/2"	3820'	375
<u>Two States</u>										
Hill No. 2	3785'	7 5/8"	286'	175			None	5 1/2"	3528'	250

EXHIBIT No. 5

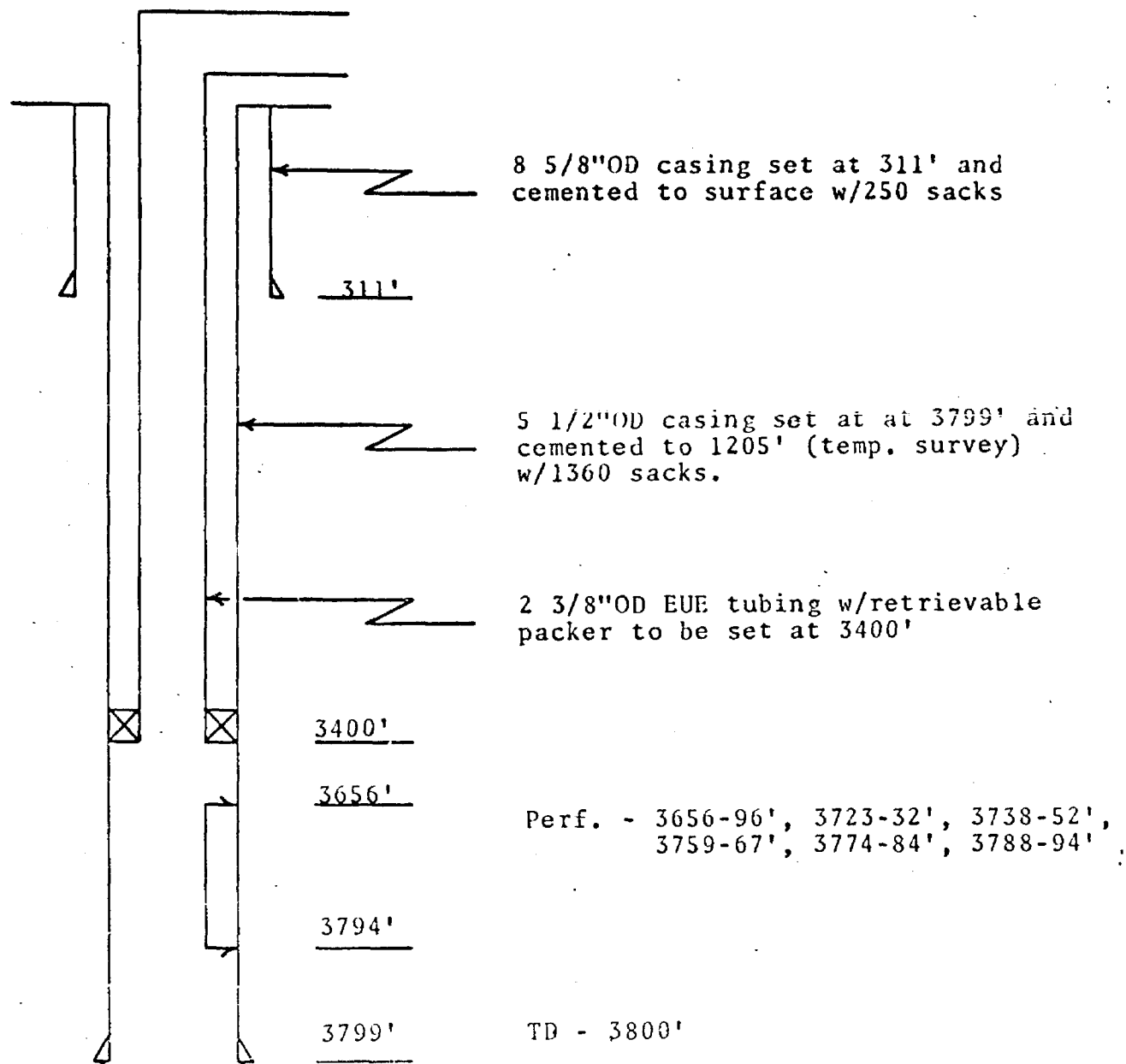
Well Data

Total Depth and/or PBD	Surface Casing			Int. Casing			Production Casing			Producing. Int. (P)Perf. (OH)Open Hole
	Size	Depth	Cement	Size	Depth	Cement	Size	Depth	Cement	
3870'	10 3/4"	186'	150		None		7"	3530'	500	(OH) 3530-3870'
3730'	16"	158'	150		None		7"	3520'	250	(OH) 3520-3730'
3741'	16"	134'	150		None		7"	3510'	250	(OH) 3510-3741'
3820'/3816'	8 5/8"	409'	325		None		5 1/2"	3820'	375	(P) 3660-3762'
3785'	7 5/8"	286'	175		None		5 1/2"	3528'	250	(OH) 3528-3785'

WATER INJECTION WELL DATA

Continental - State 25 No. 2

Elev. - BHIF-3500'
DF-3510'



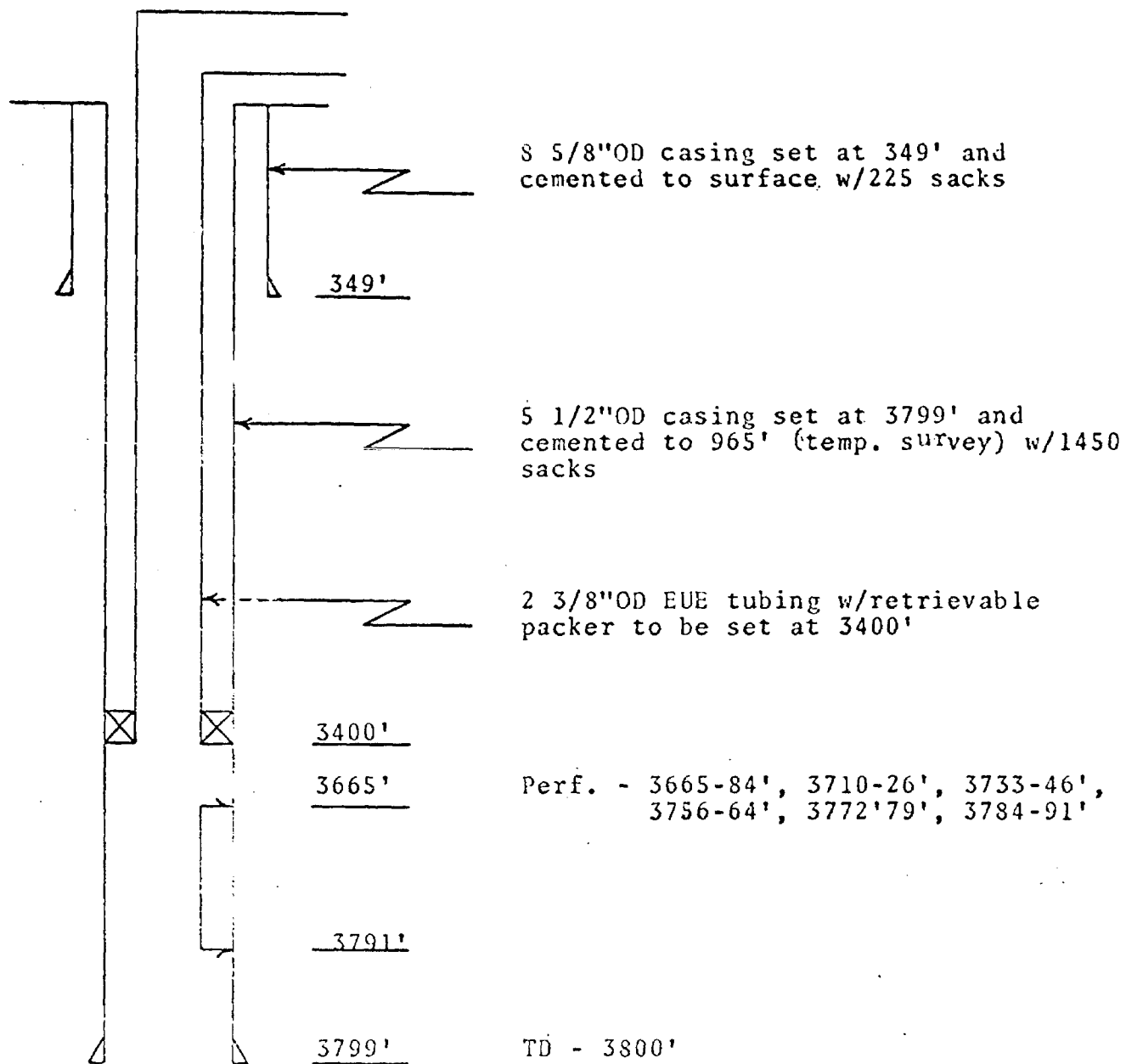
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3796'.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER WELL INJECTION DATA

Continental - State ^{25 1/2"}~~A-25~~ No. 1

Elev. - BHF-3502'
DF-3512'



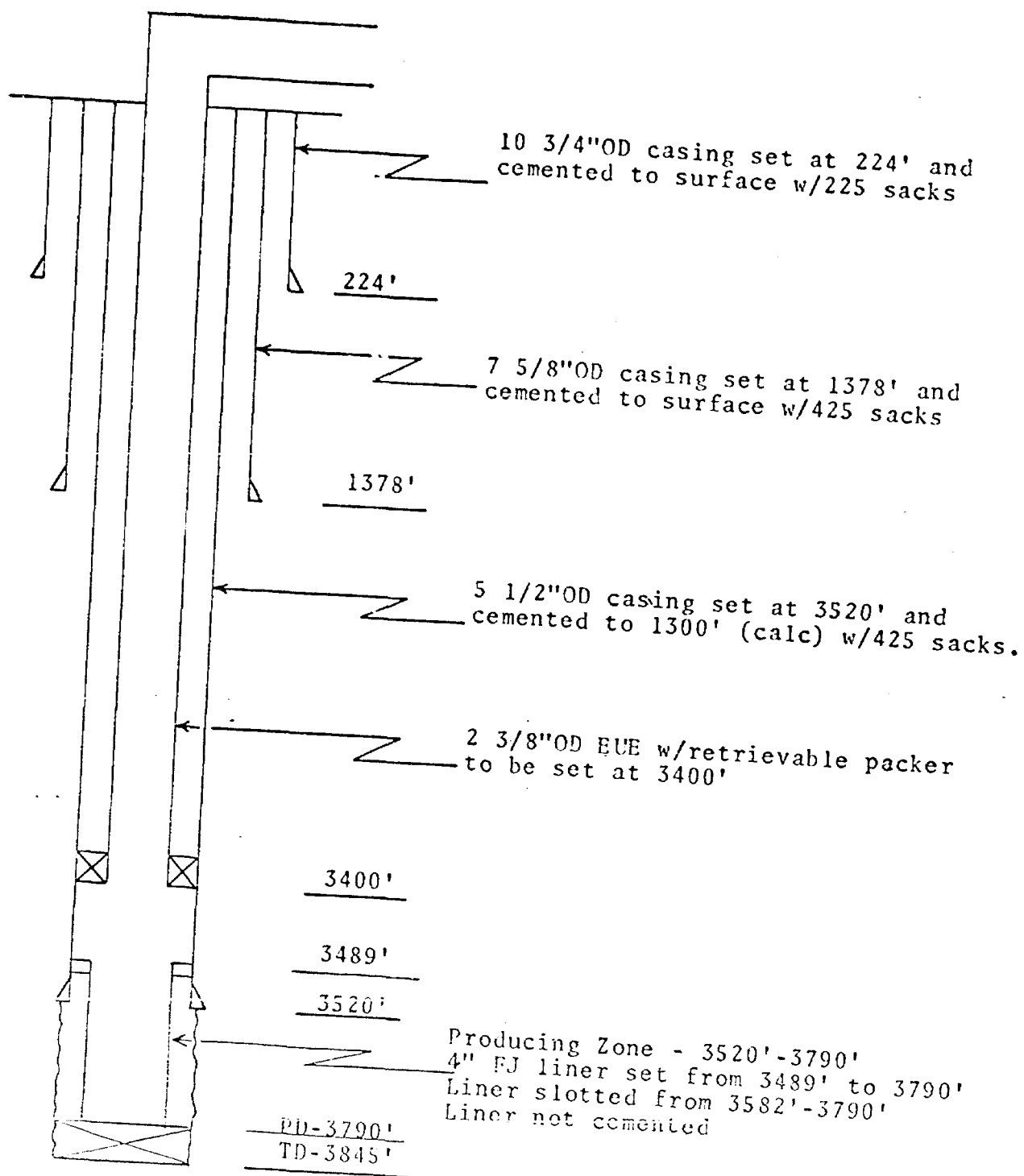
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3795'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No.1

Elev. - BHIF-3496'



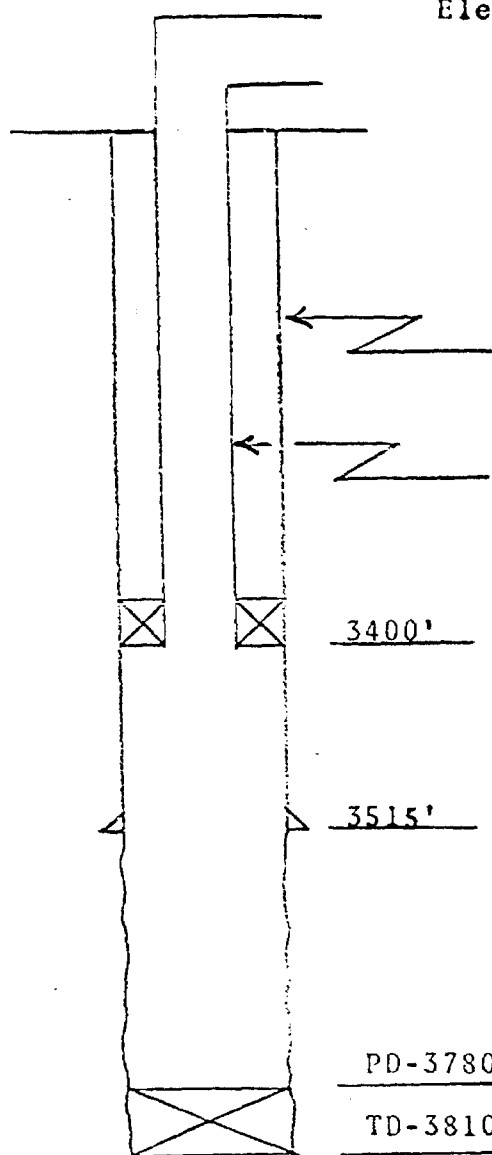
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3790'
2. Run tubing with packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 4

Elev - BHIF - 3489'
DF - 3493'



5 1/2"OD casing set at 3515' and
cemented to surface w/900 sacks

2 3/8"OD EUE tubing w/retrievable
packer to be set at 3400'

Open Hole - 3515'-3780'
Shot from 3645' to 3780'

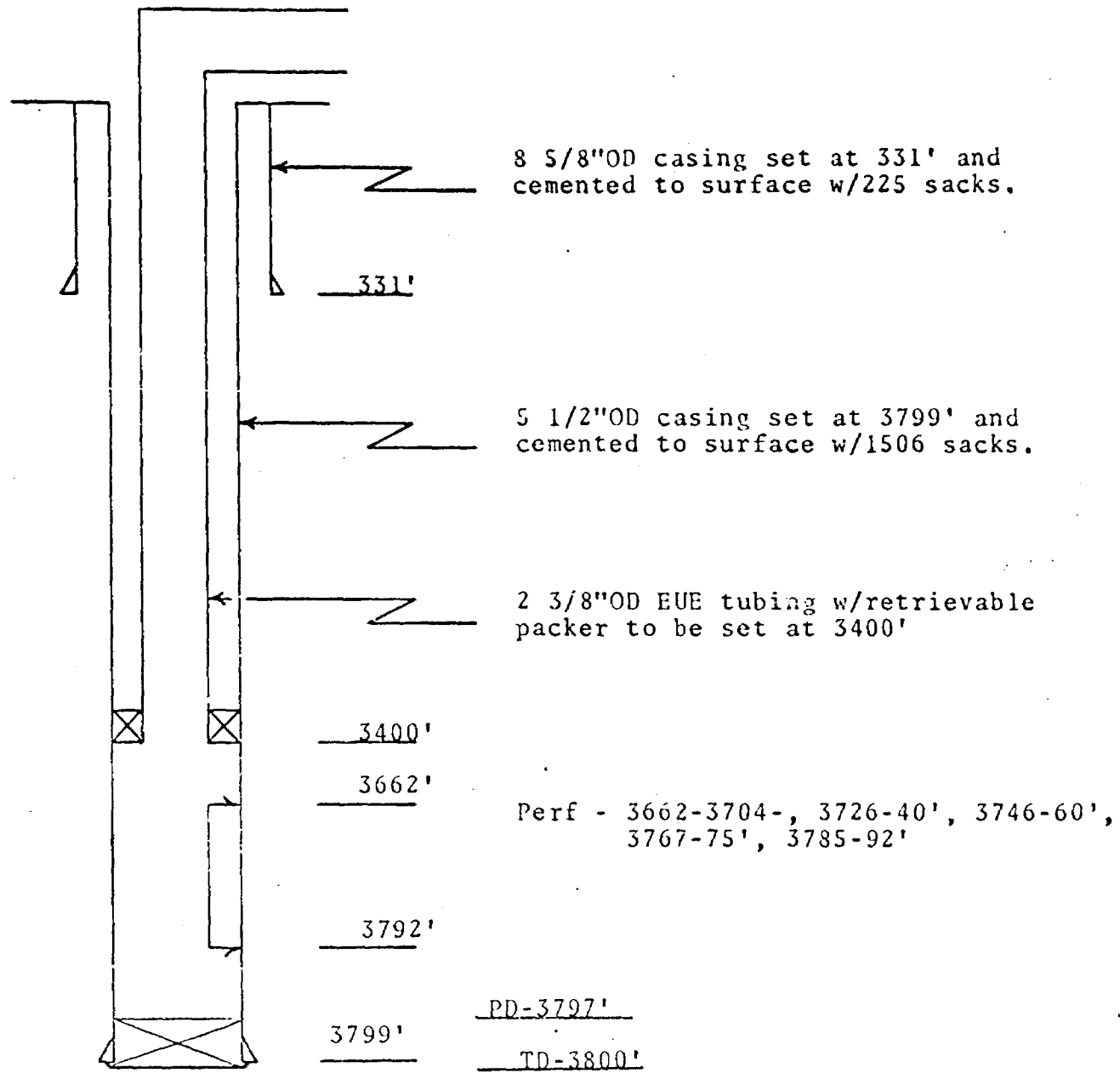
Proposed Procedure

1. Tag bottom - tally out. Clean out to PD of 3780'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 5

Elev. - DF-3507'



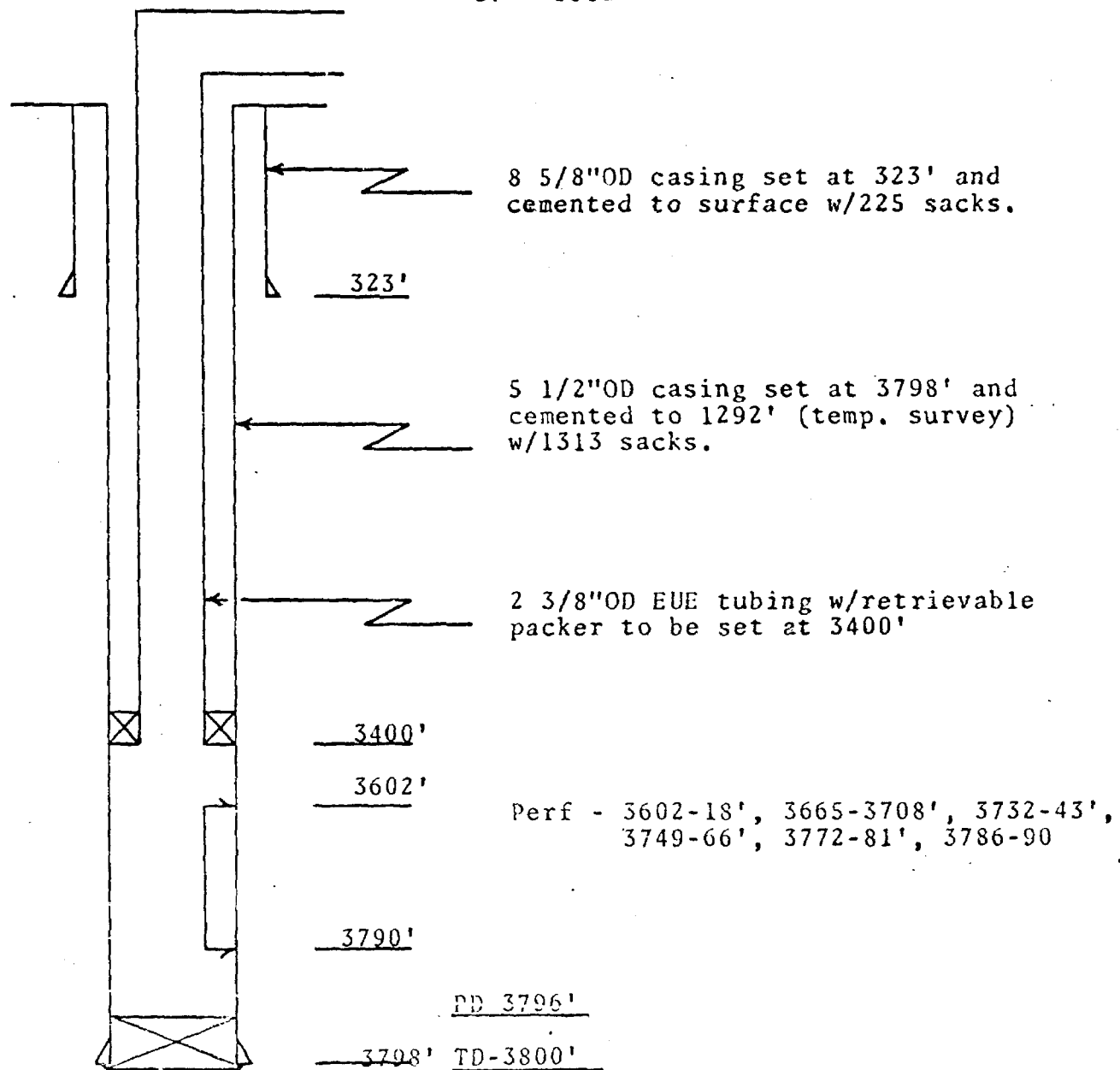
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3795'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 8

Elev - BHIF - 3492'
DF - 3502'



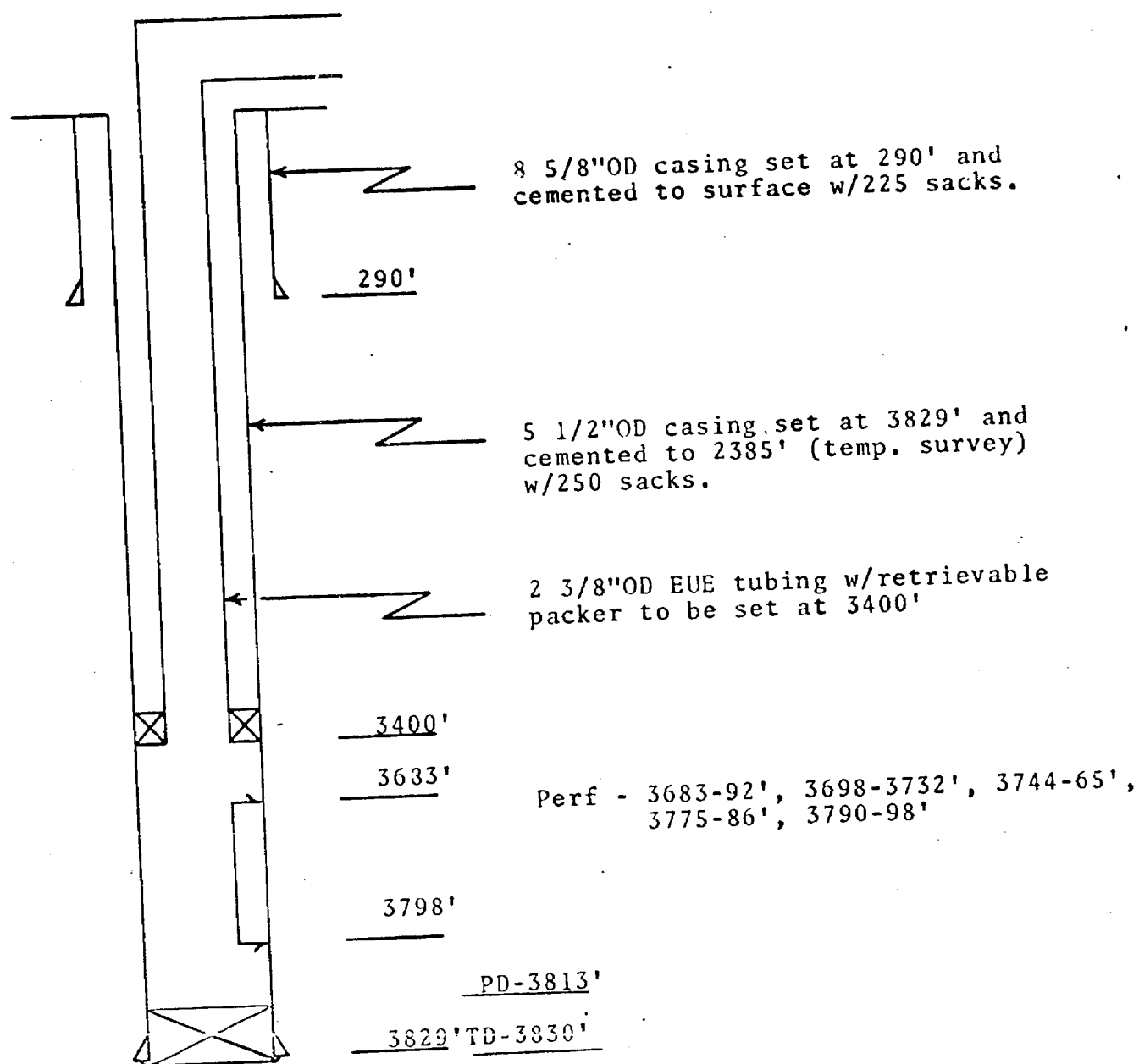
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3792'.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 9

Elev. - BH-3502'
DF-3512'



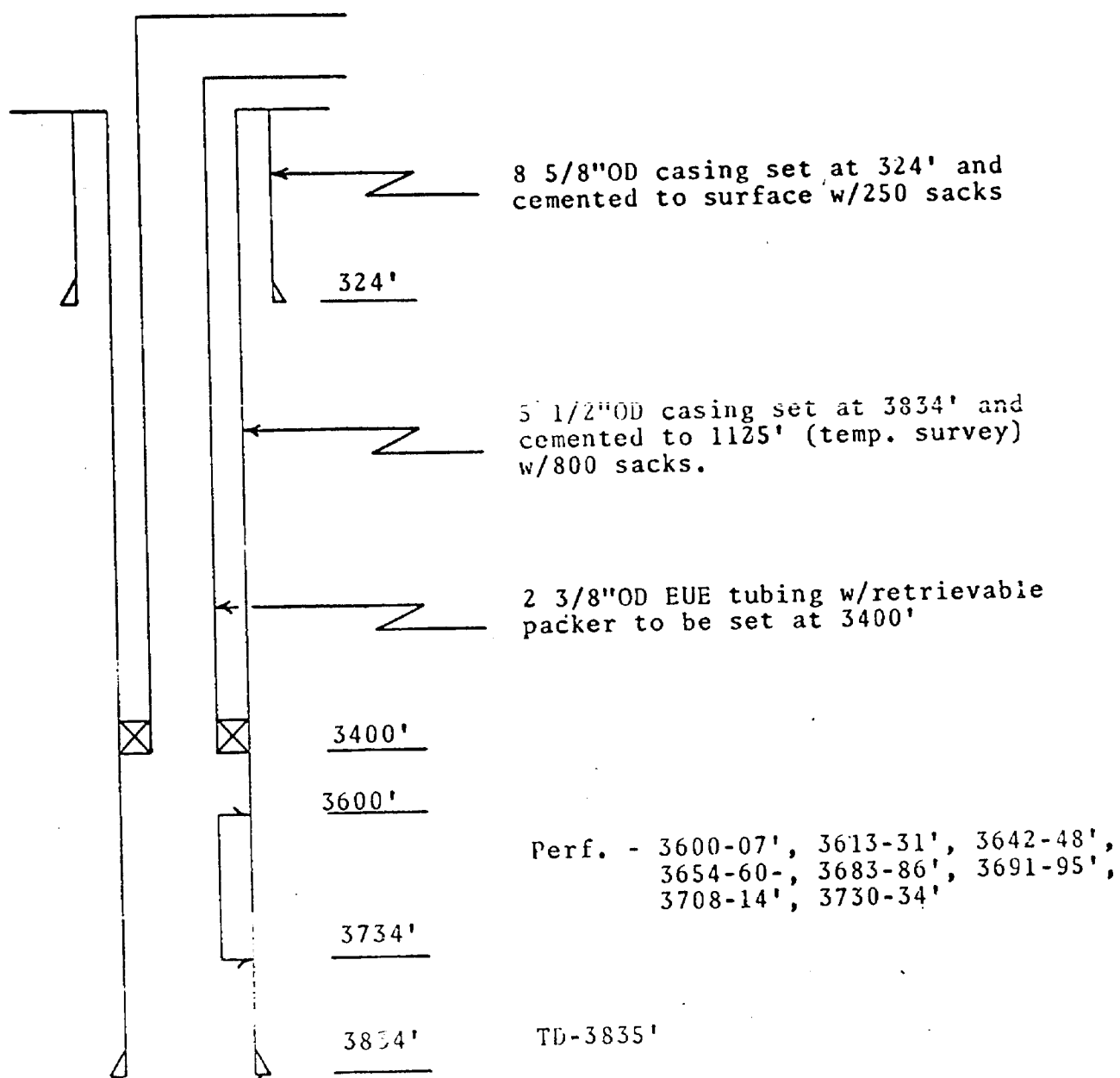
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3800'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 11

Elev. - BHF-3466'
DF-3476'



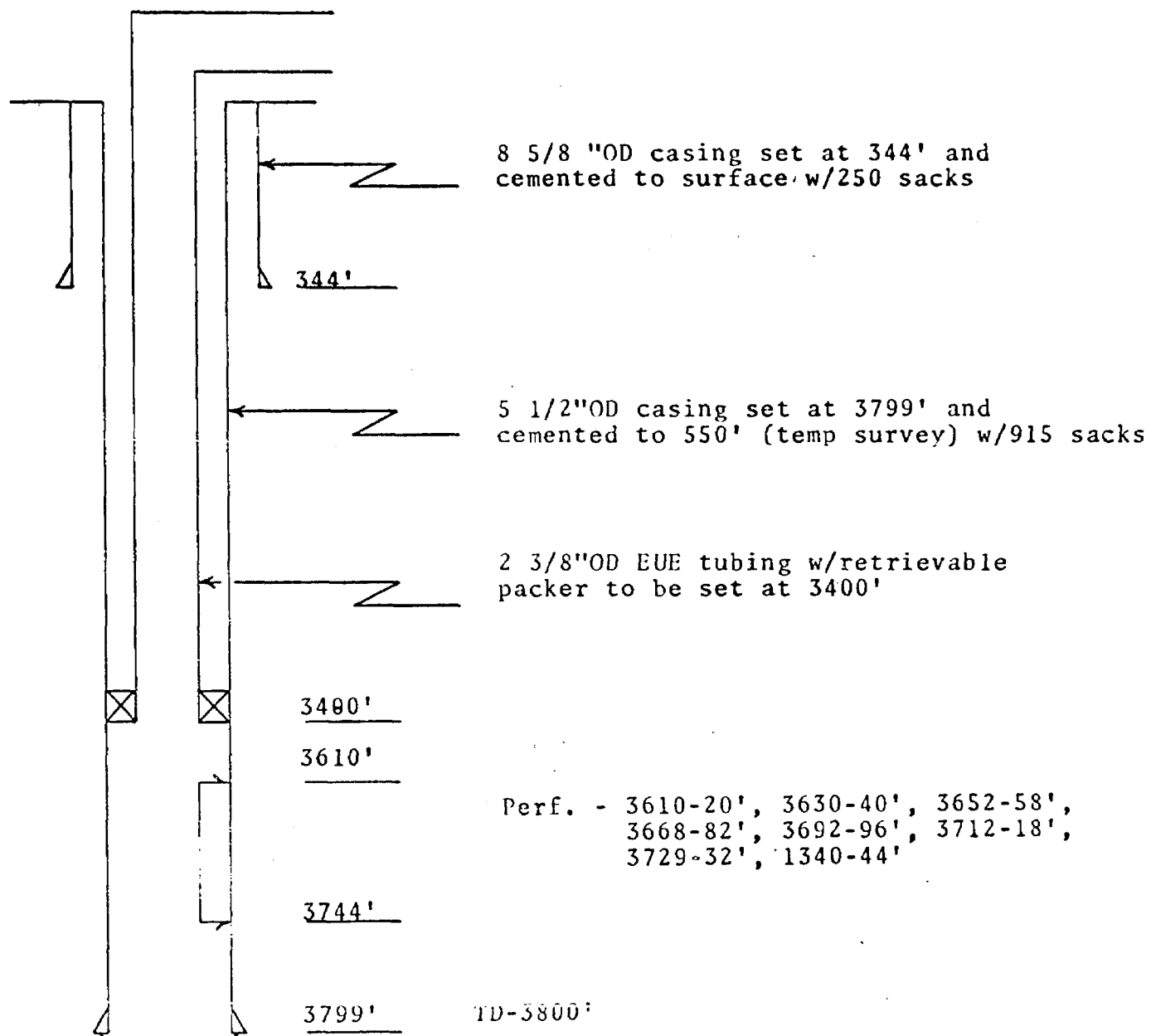
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3737'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 12

Elev. BHF - 3480'
DF - 3490'



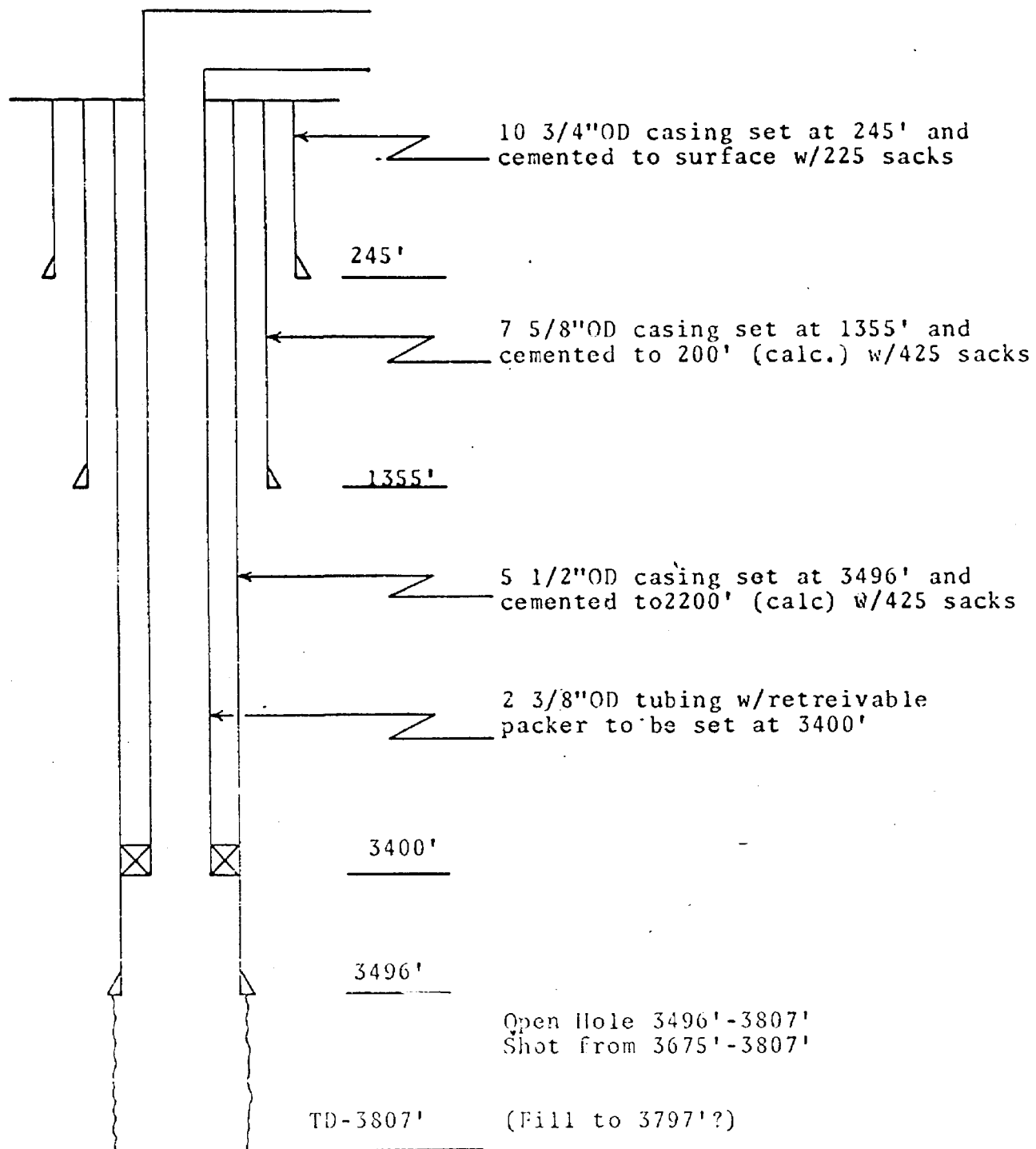
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3747'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State F-1 No. 2

Elev. - BHF-3501'



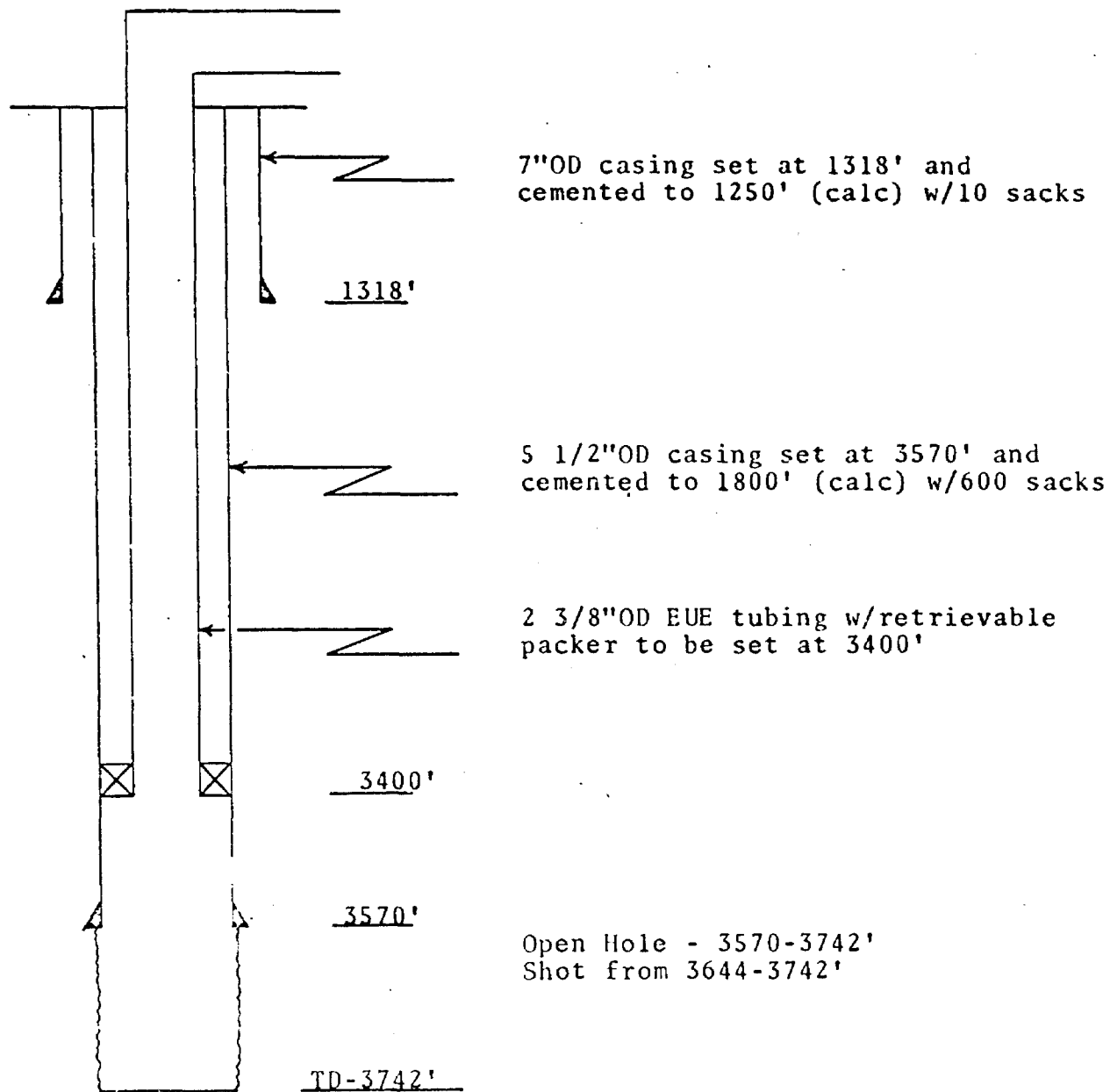
Proposed Procedure

1. Tag bottom tally out. Clean out to 3807'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State F-1 No. 3

Elev. - BHF-3496'



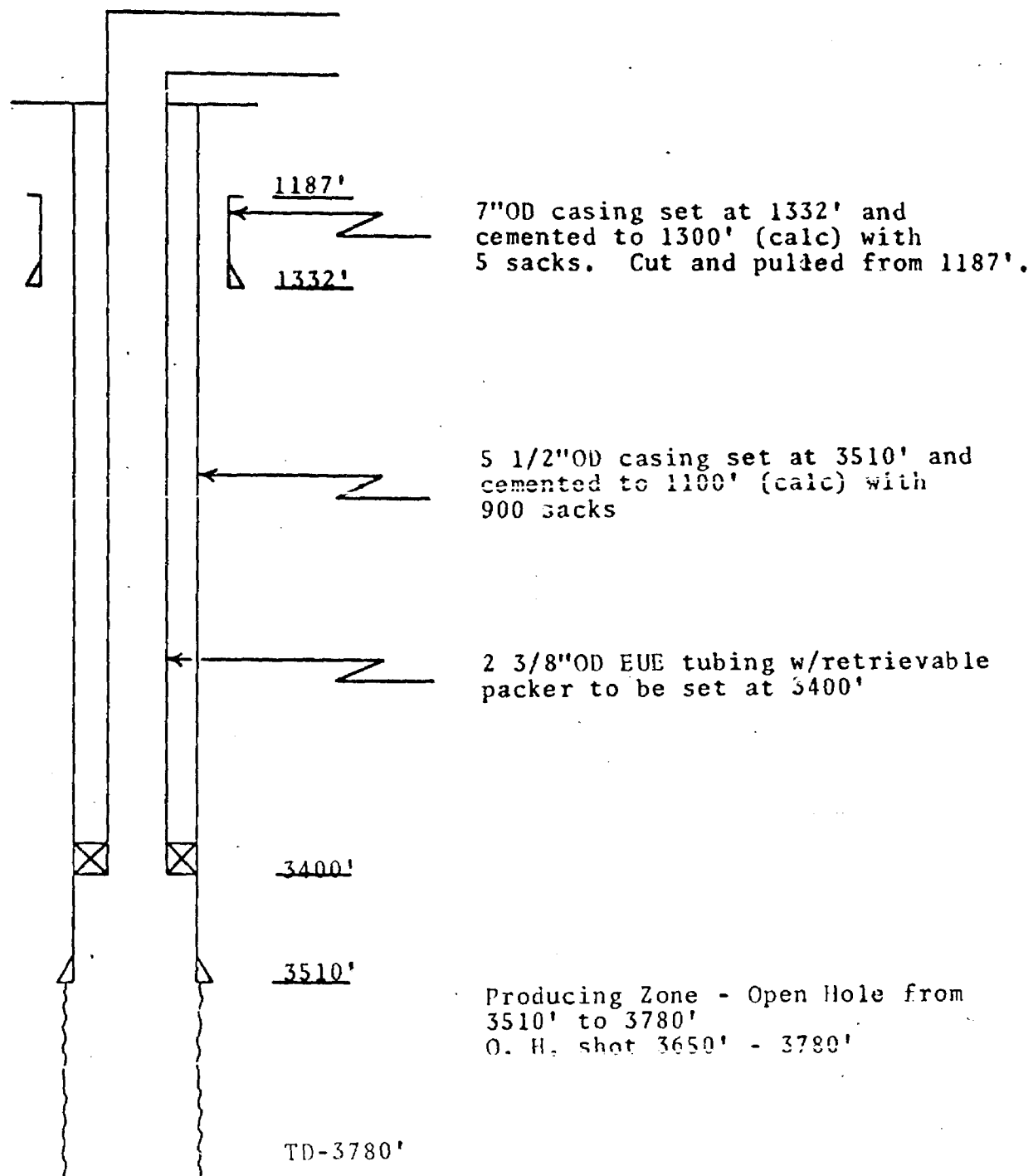
Proposed Procedure

1. Tag bottom tally out. Clean out to TD.
2. Run tubing with packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State F-1 No. 4

Elev. - BHF-3496'



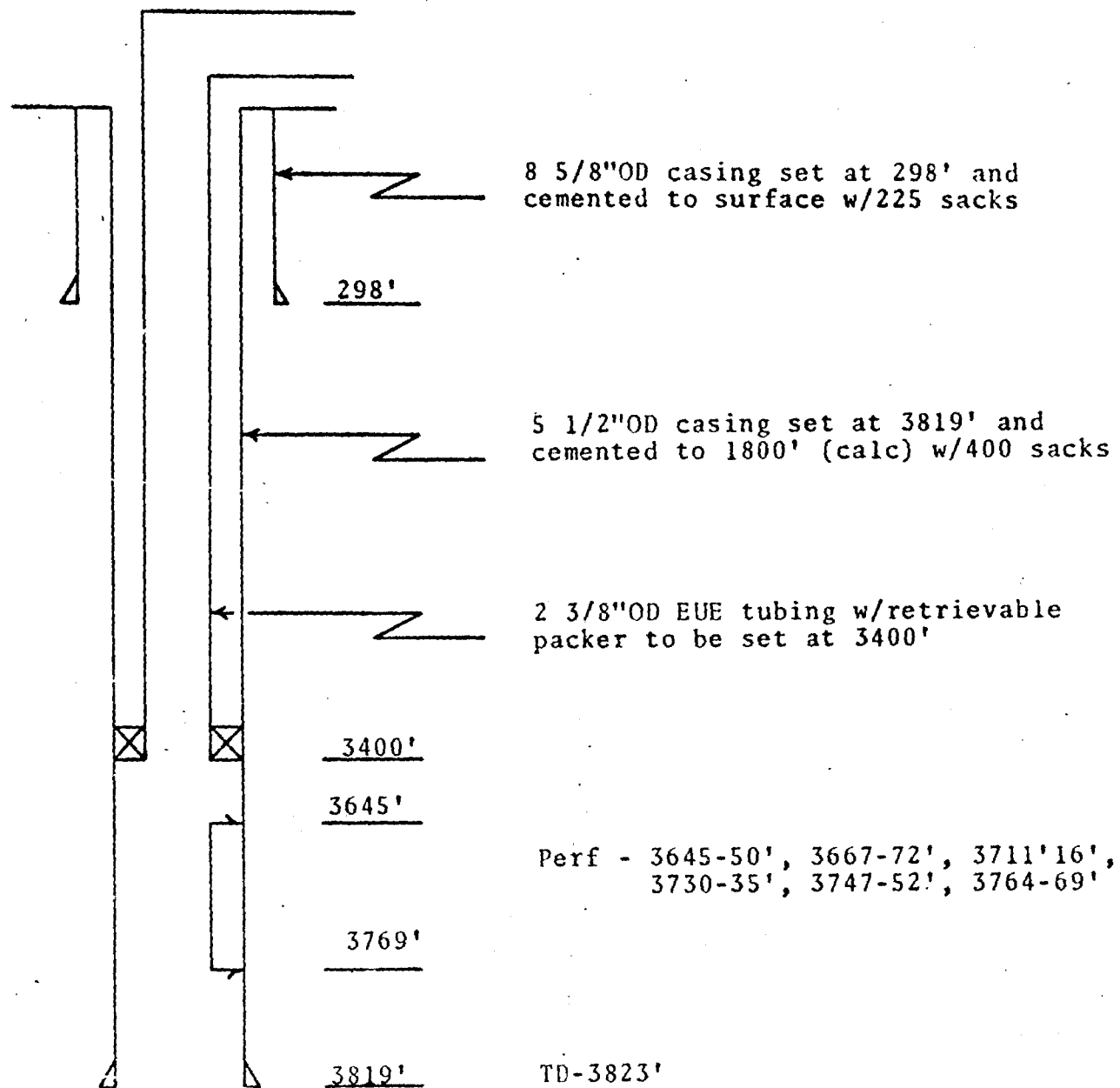
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to set at 3400'.
3. Connect up well for injection down the tubing.

WATER INJECTION WELL DATA

Continental - State KK 36 No. 1

Elev. - DF-3503'



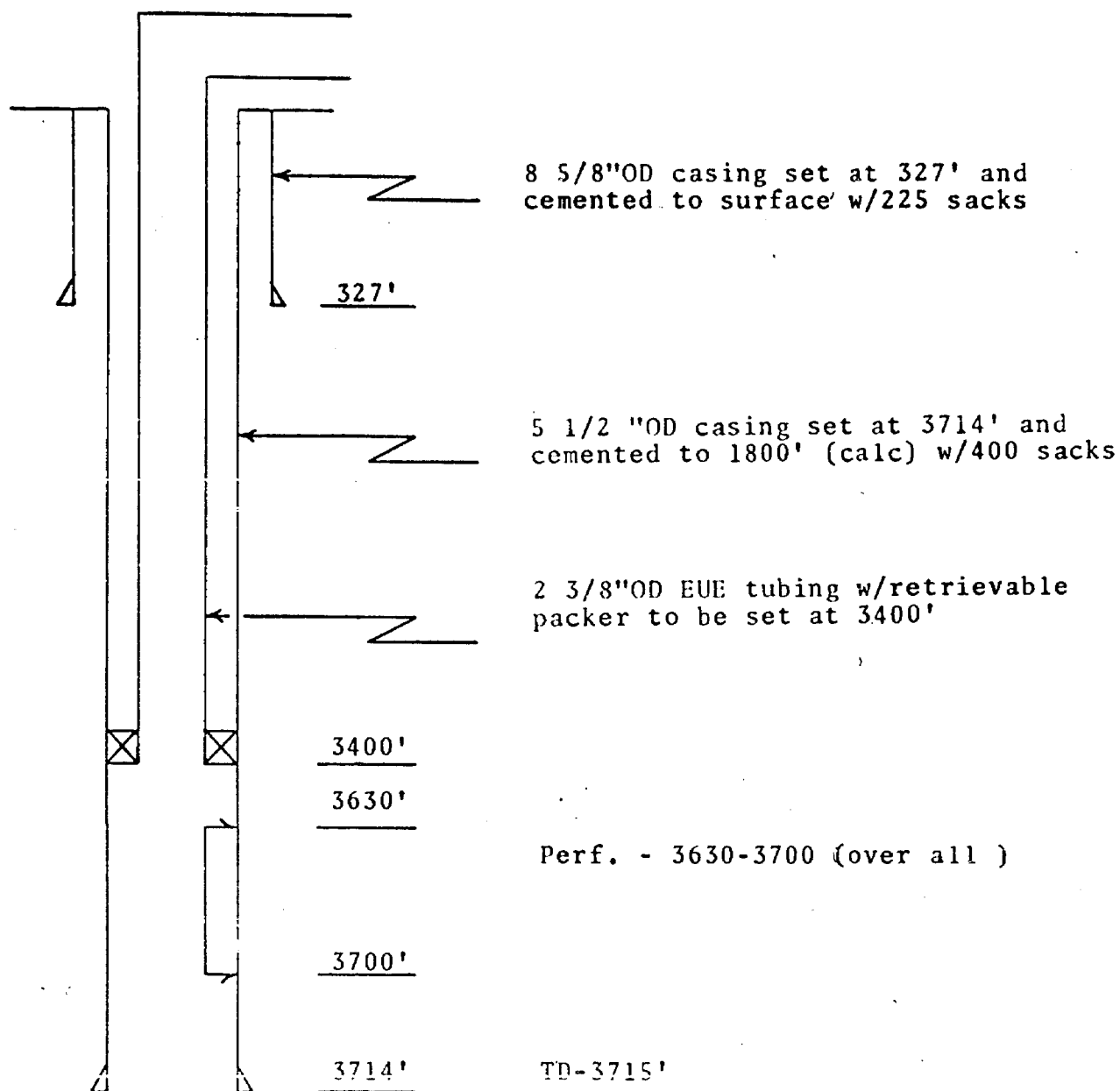
Proposed Procedure

1. Tag bottom tally out. Clean out to 3772'
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State KK-36 No. 2

Elev. - BHF - 3505'



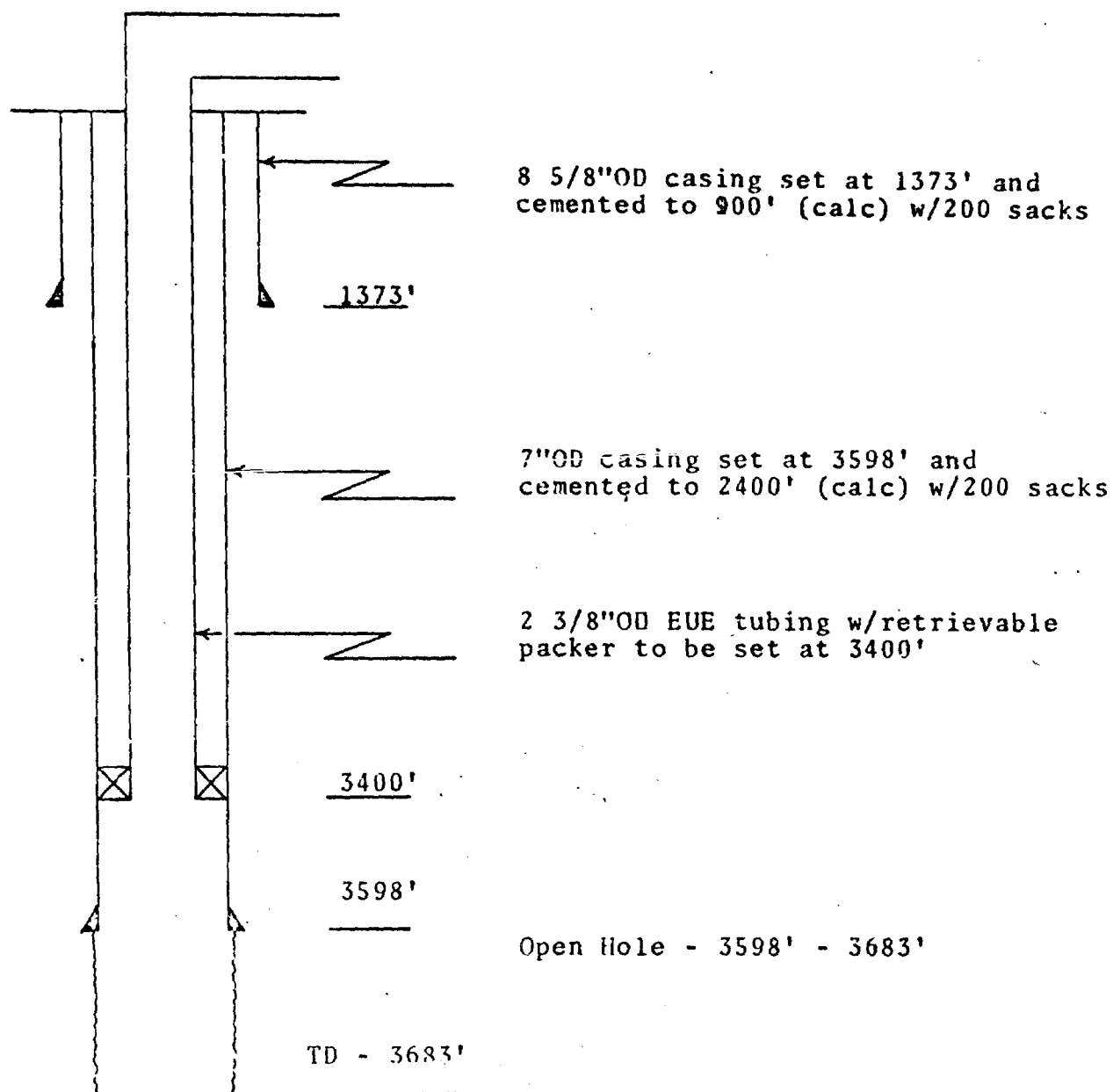
Proposed Procedure

1. Tag bottom tally out. Clean out to 37031'
2. Run tubing w/packer to be set at 3400'
3. Connect upwell for injection down tubing.

WATER INJECTION WELL DATA

Continental - State KM-36 No. 1

Elev. BHF - 3506'



Proposed Procedure

1. Tag bottom tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

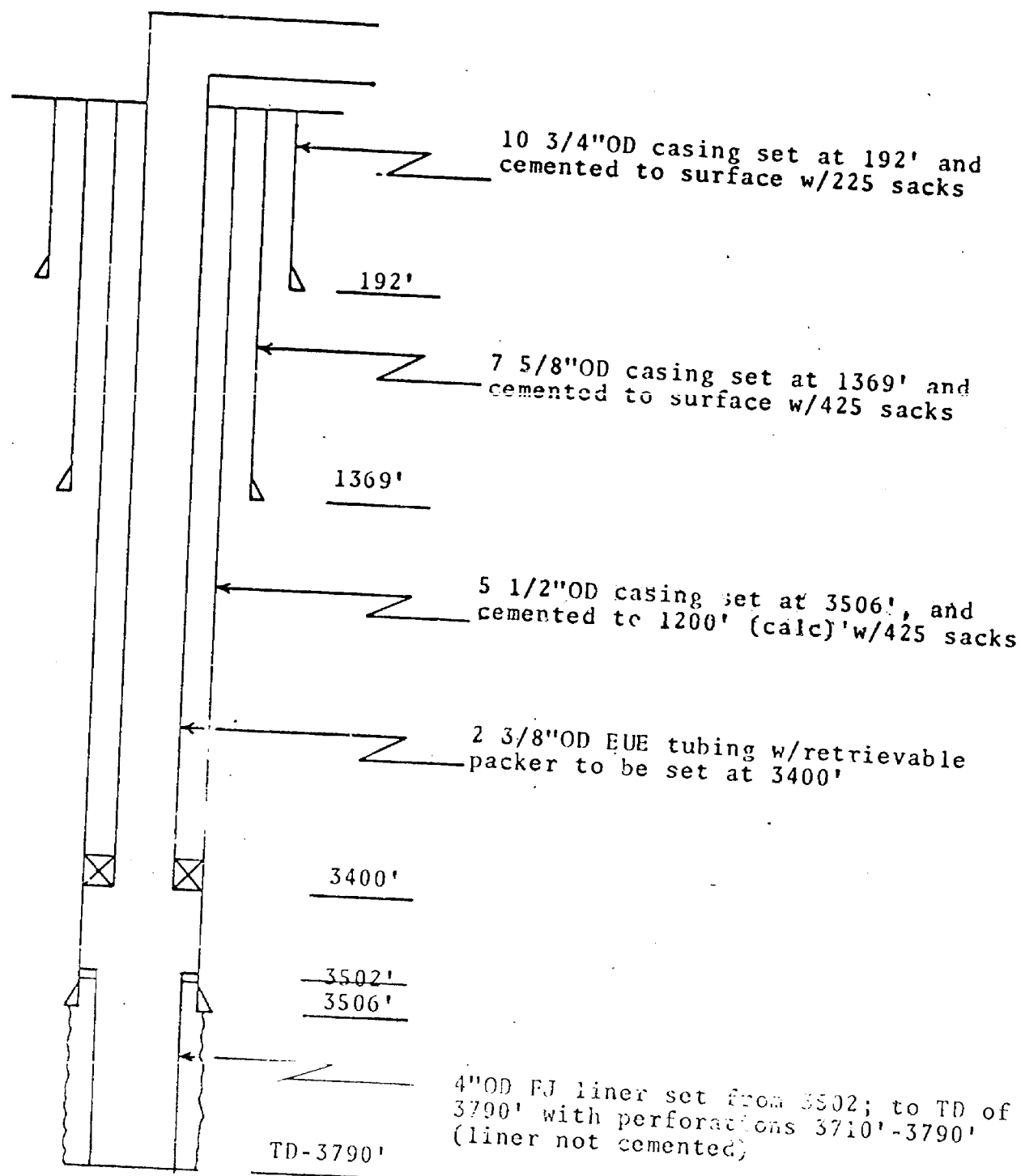
Future Work

1. Deepen to 3773'

WATER INJECTION WELL DATA

Continental - Meyer B-31 No. 1

Elev. DF-3500'



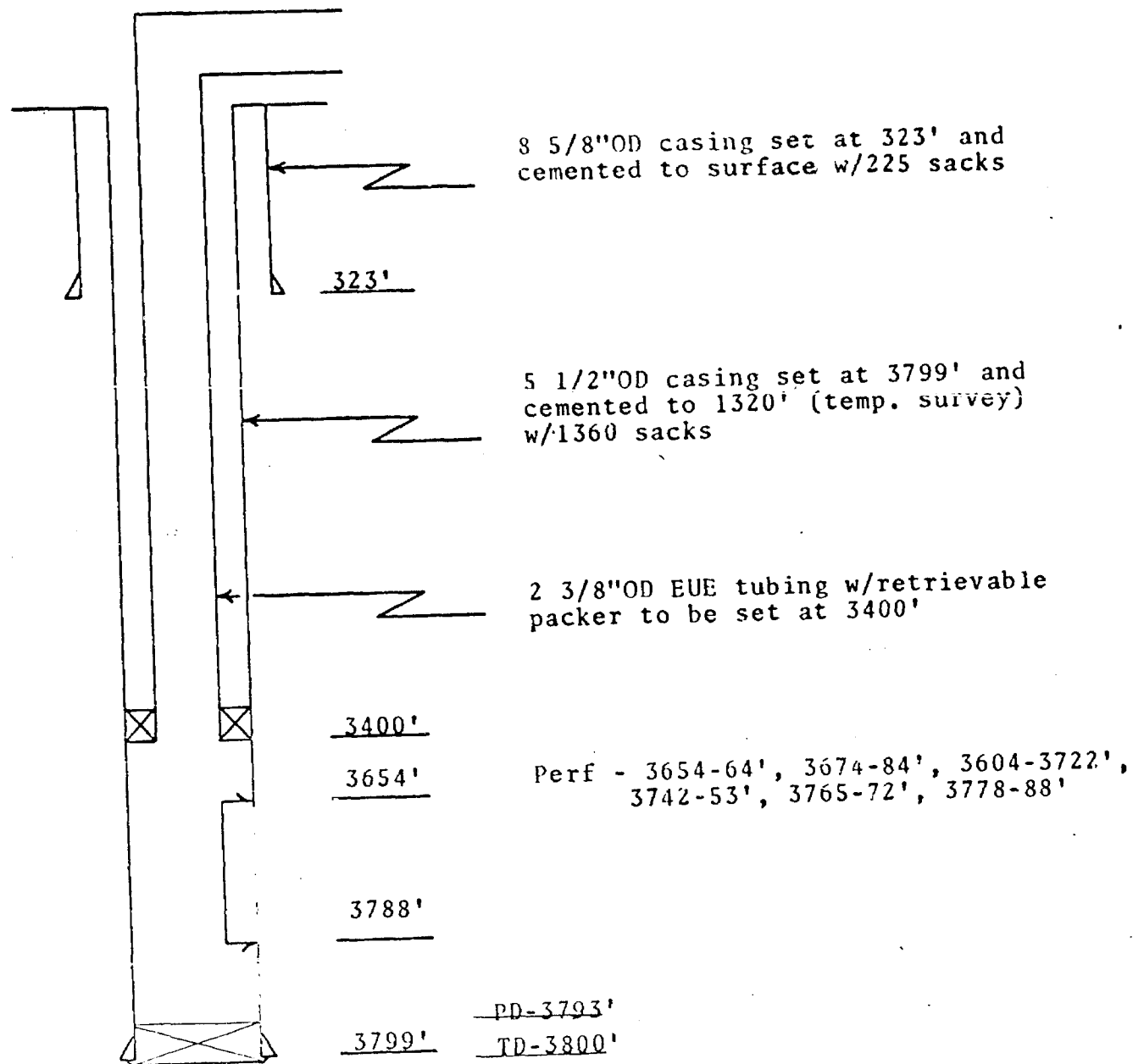
Proposed Procedure

1. Tag bottom and tally out. Clean out to TD.
2. Run tubing w/pack. to be set at 3400'
3. Connect up well for injection down the tubing.

WATER INJECTION WELL DATA

Continental - Meyer B-31 No. 3

Elev. - BHF-3502'
DF-3512'



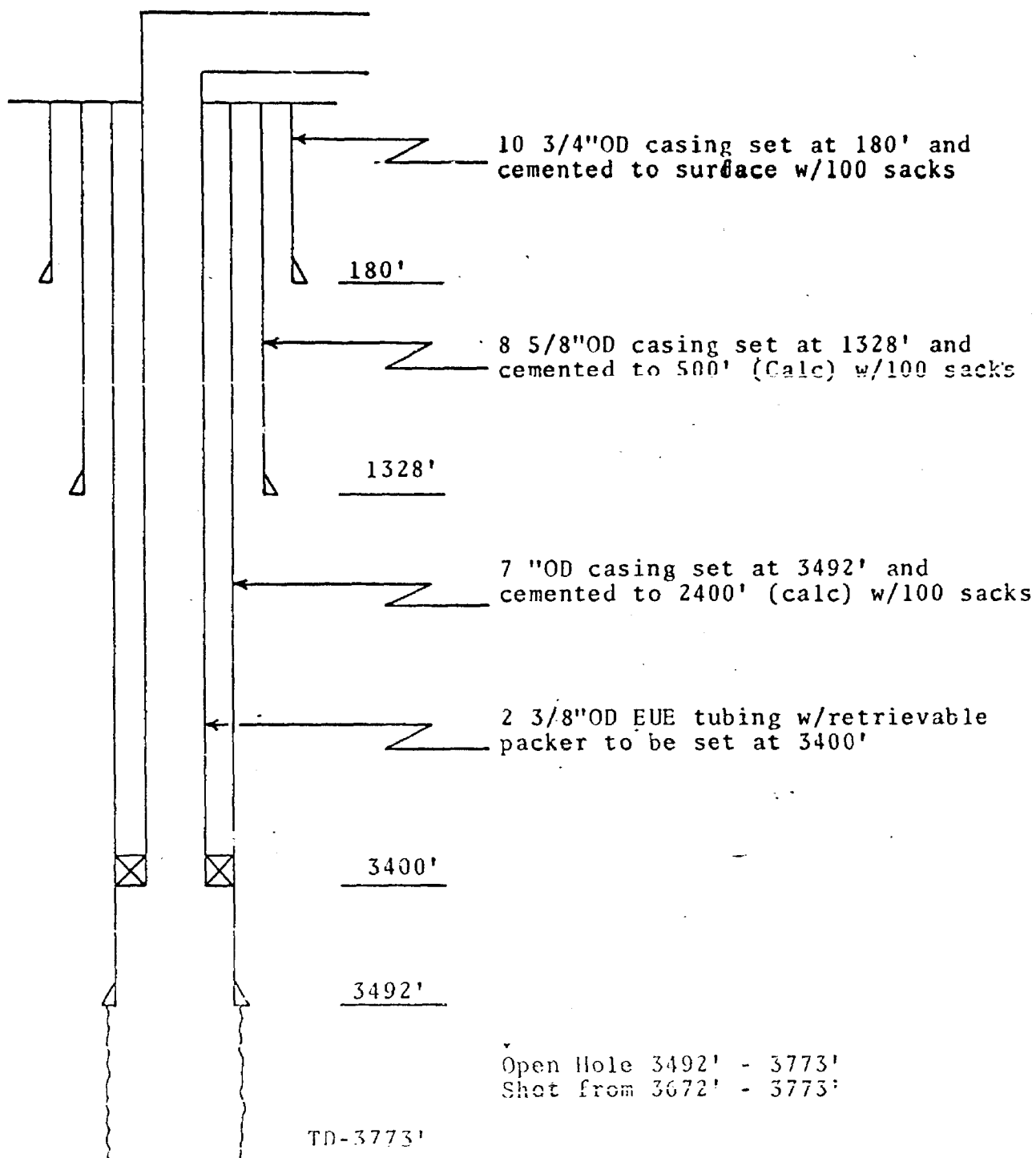
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3790'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Anadarko - Mae Currie No. 1

Elev. - BHF-3504'



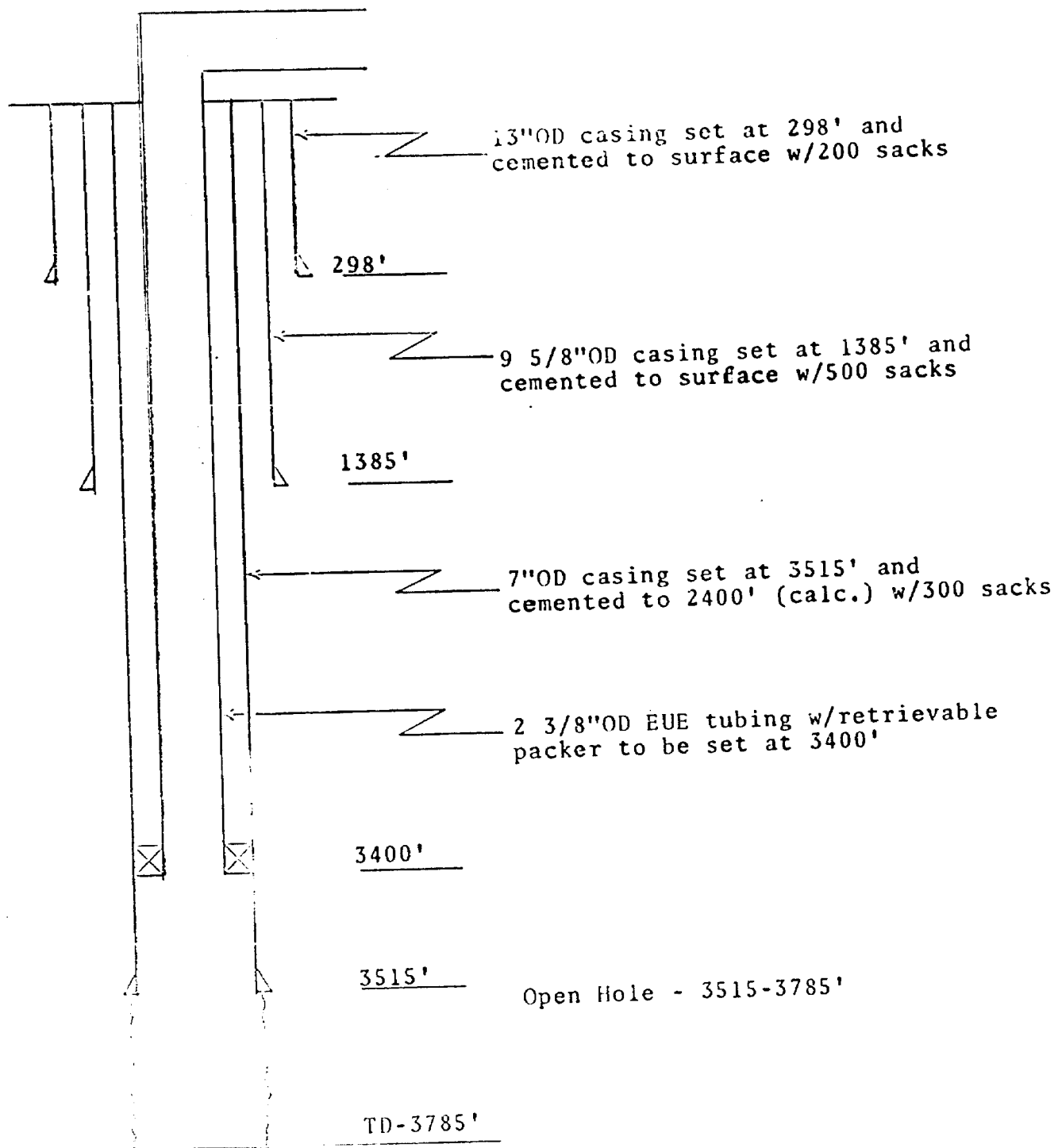
Proposed Procedure

1. Tag bottom tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Pan Am - Hill "A" No. 2

Elev. - BHF - 3492'



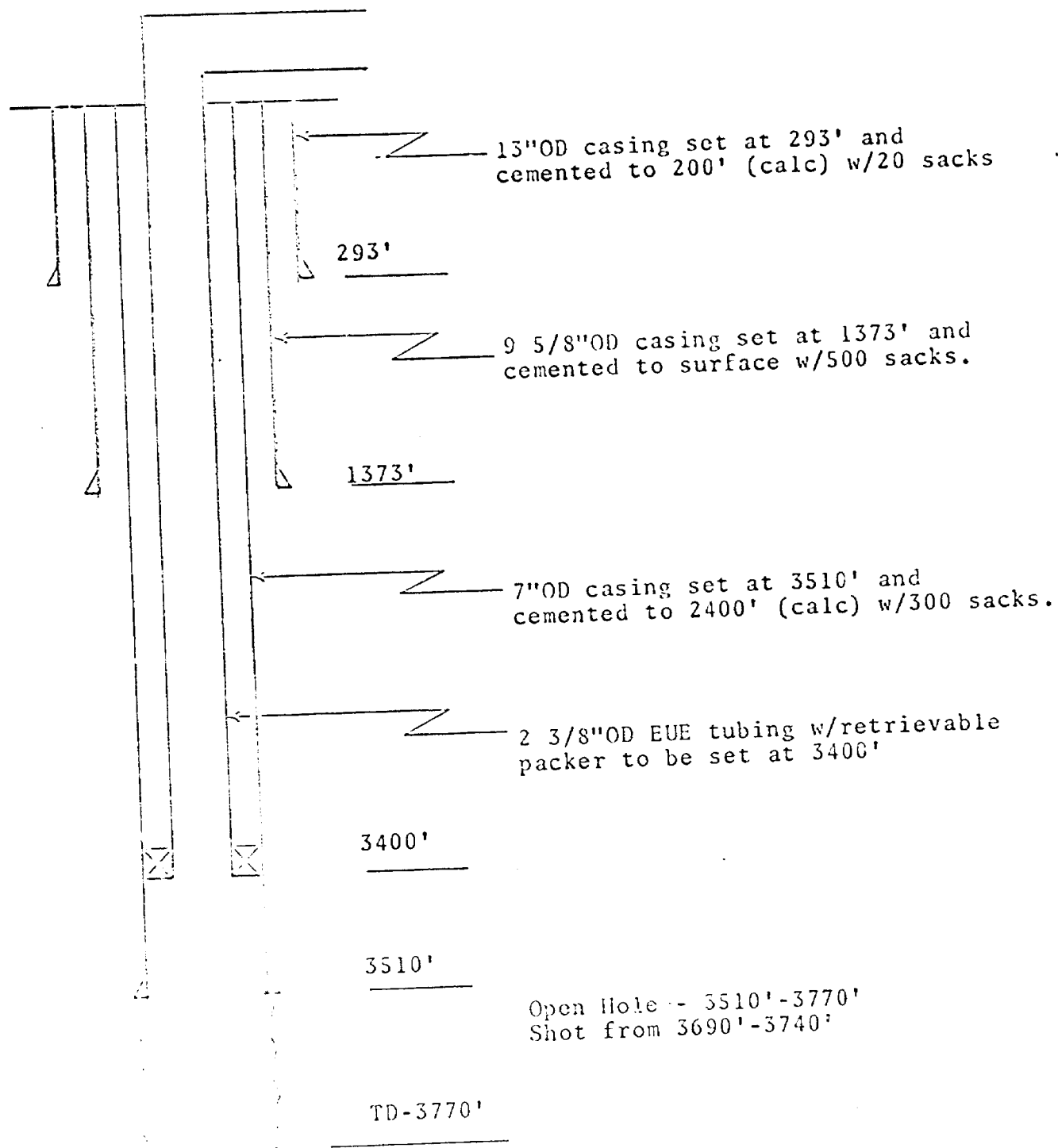
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Pan Am - Hill "A" No. 4

Elev. - BHF-3489'



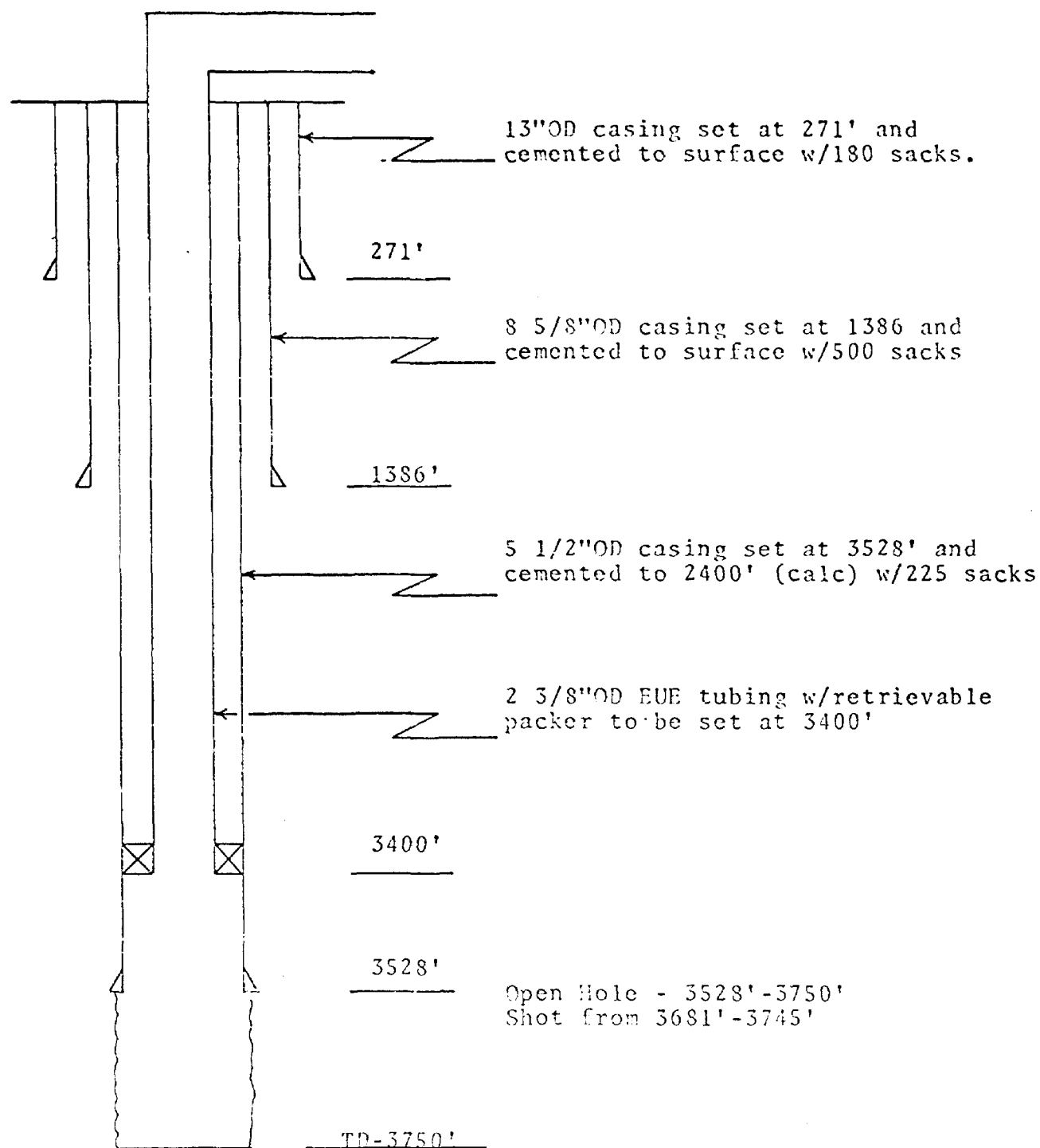
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3745'.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Pan Am - Hill "A" No. 6

Elev. - BH-3488'
DF-3501'



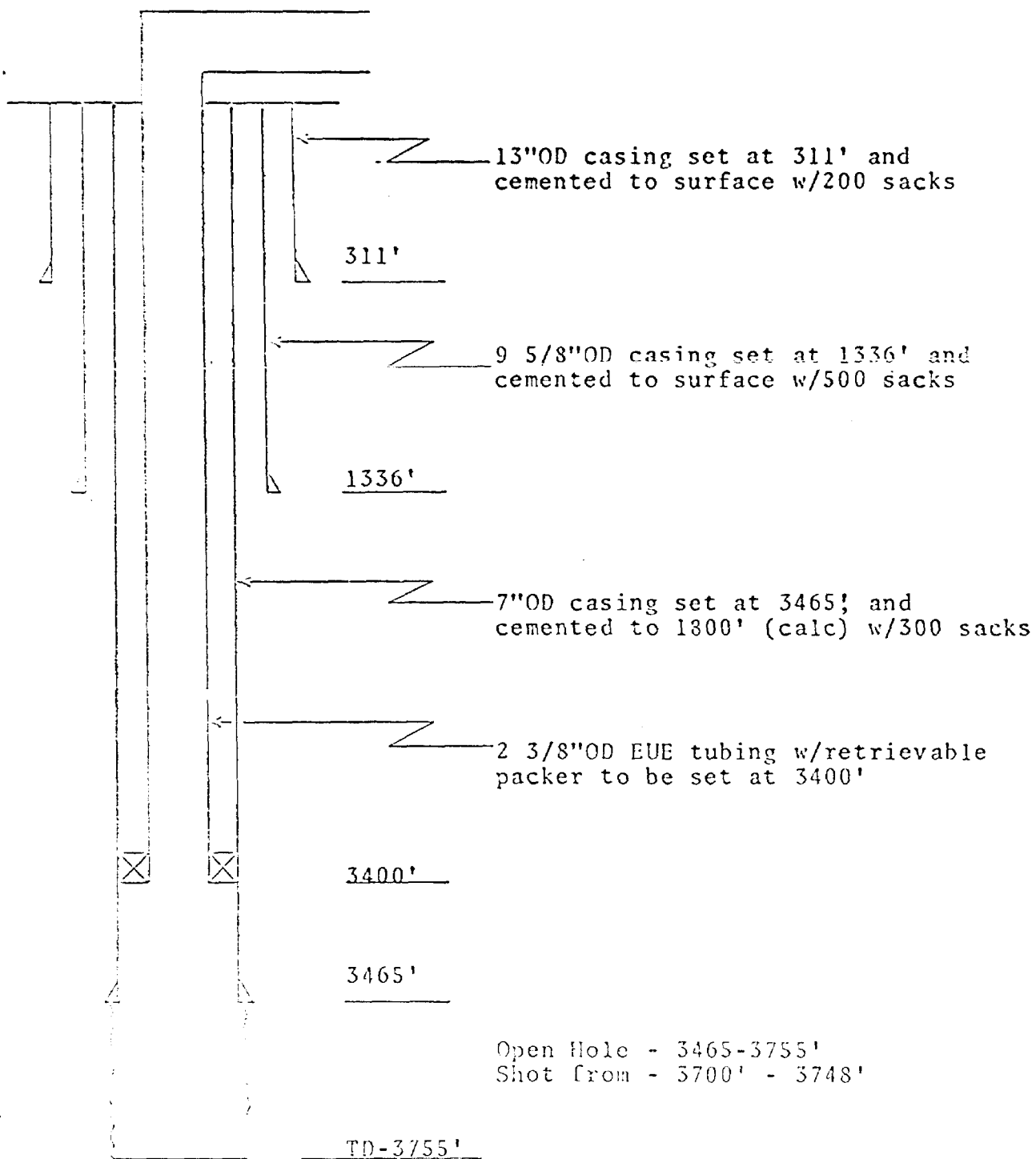
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Pan Am - Hill "C" No. 3

Elev. - BHF-3457'
DF-3472'



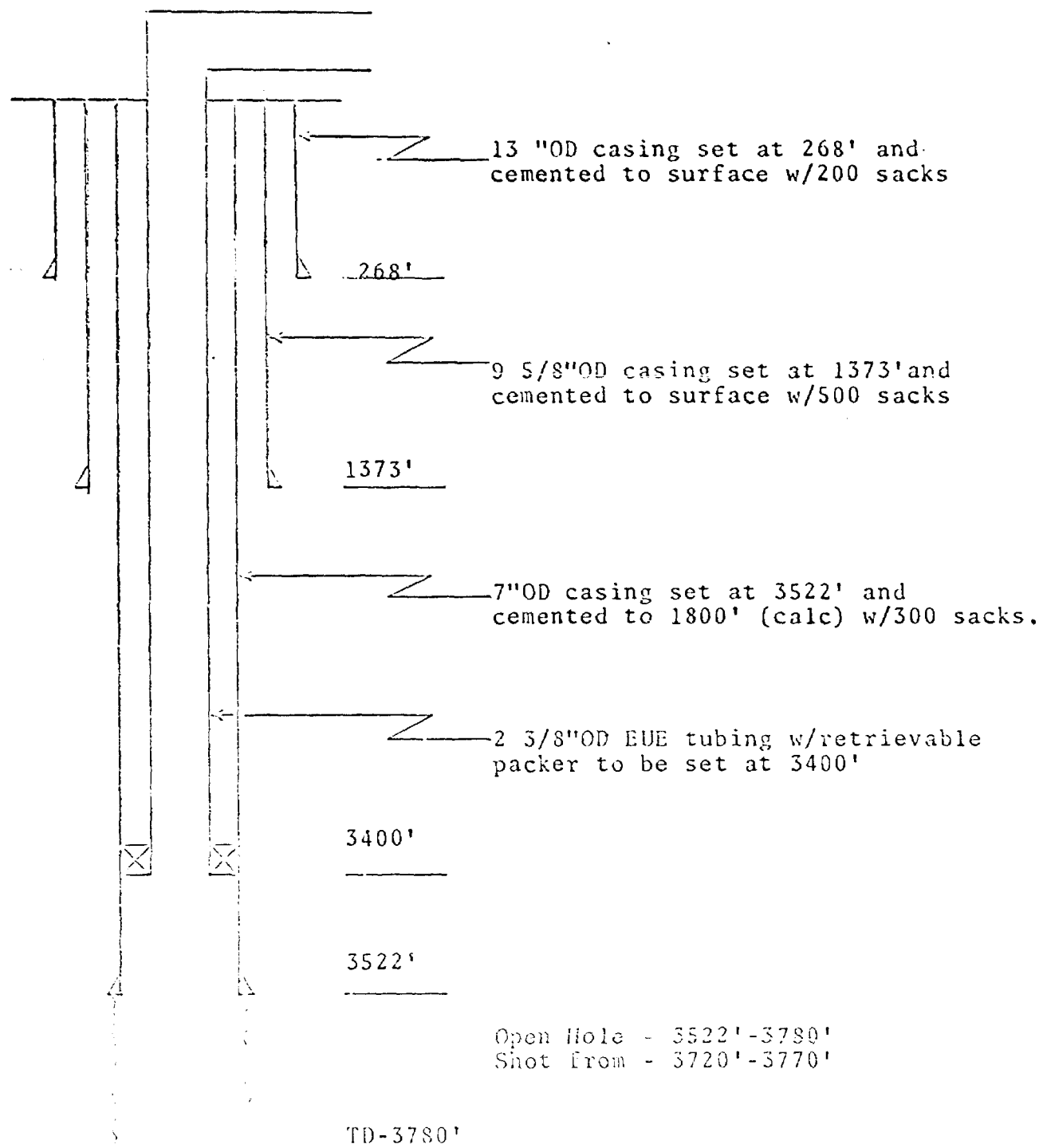
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3750'.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Pan Am - Hill "C" No. 4

Elev. - BHF-3479'



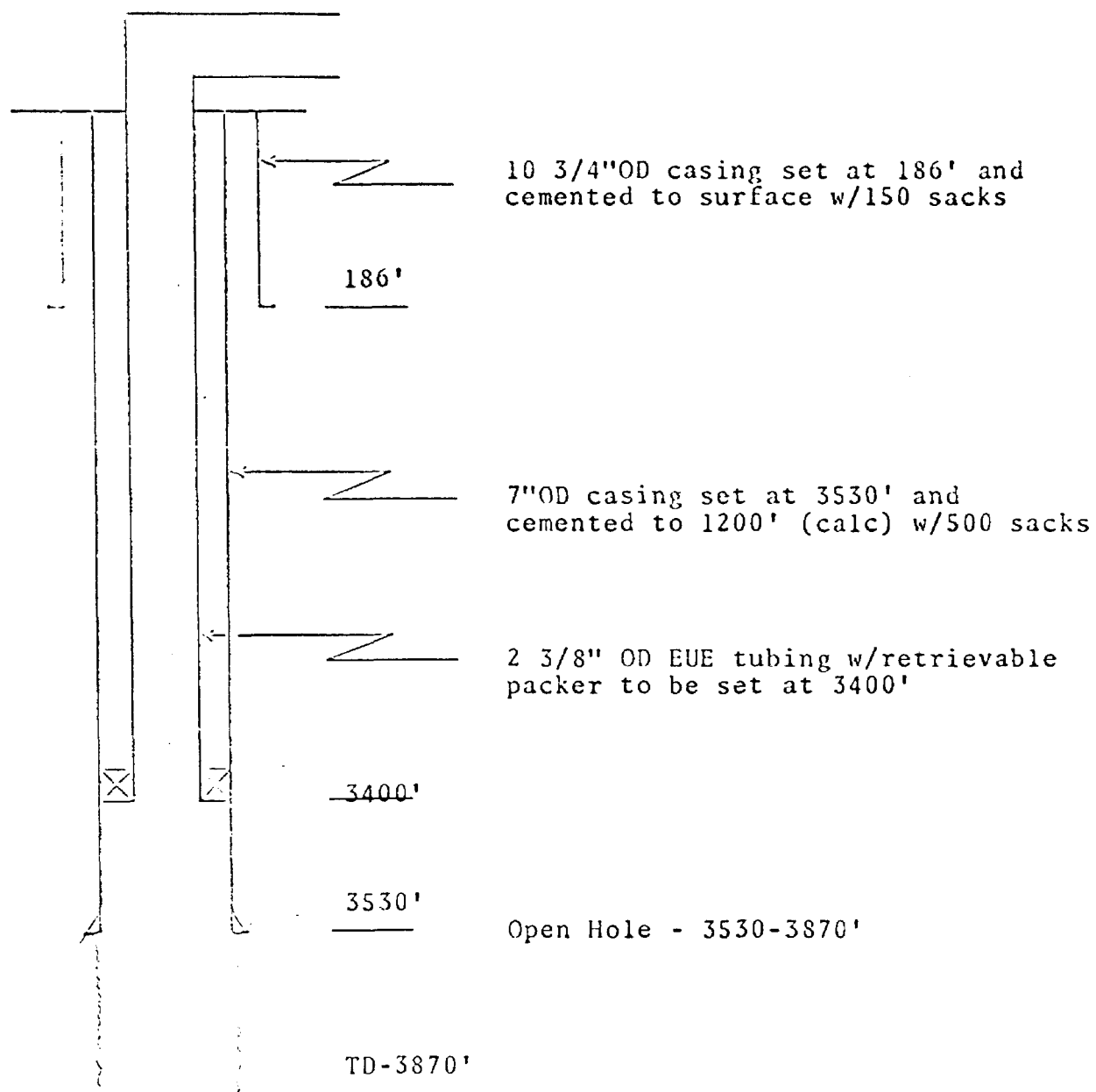
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3775'.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Skelly Oil - Hill No. 1

Elev. - BHF-3493'



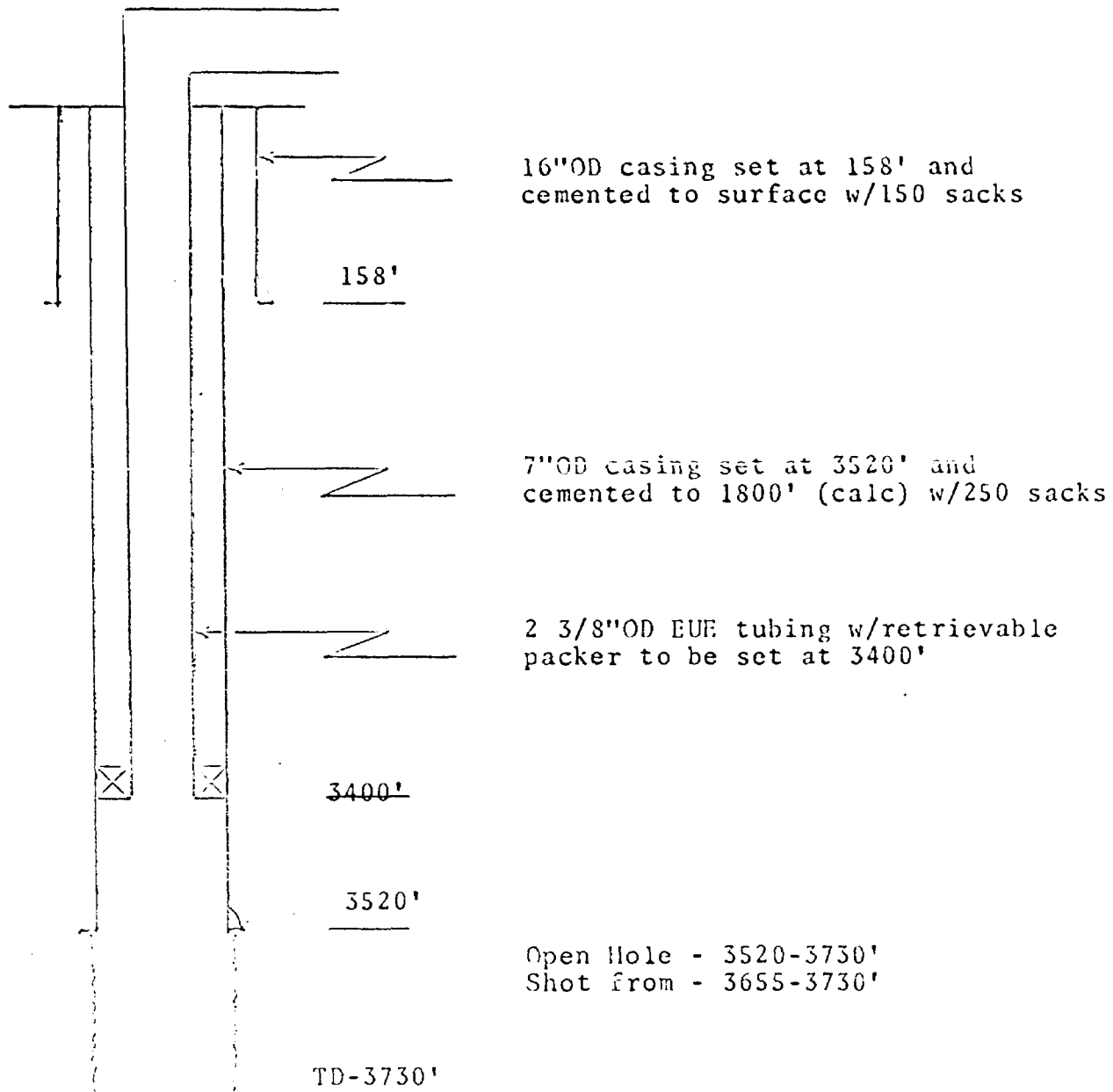
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Skelly Oil - Hill No. 3

Elev. BHF-3495'



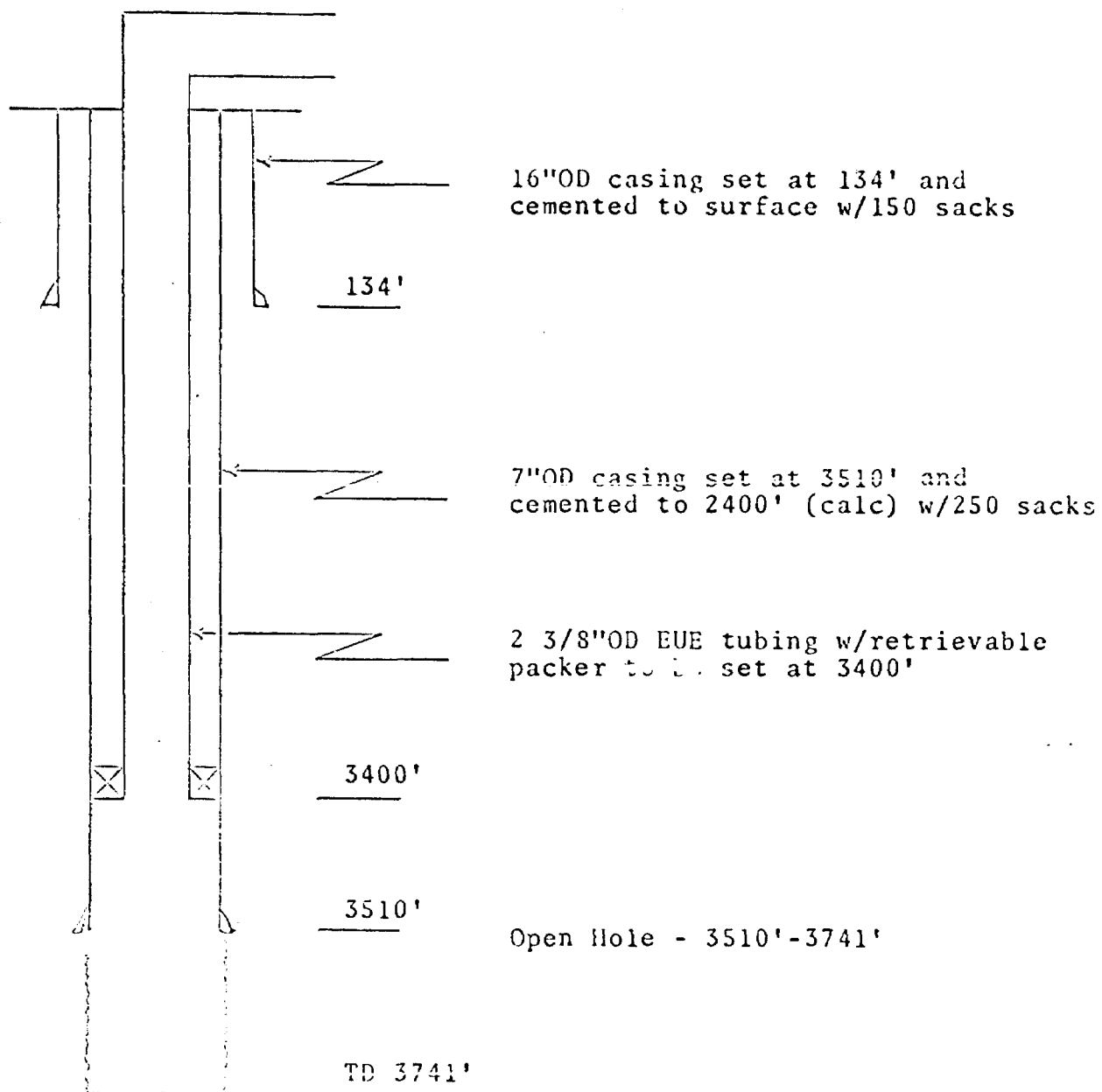
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Skelly Oil - Hill No. 5

Elev. - BHF-3471'



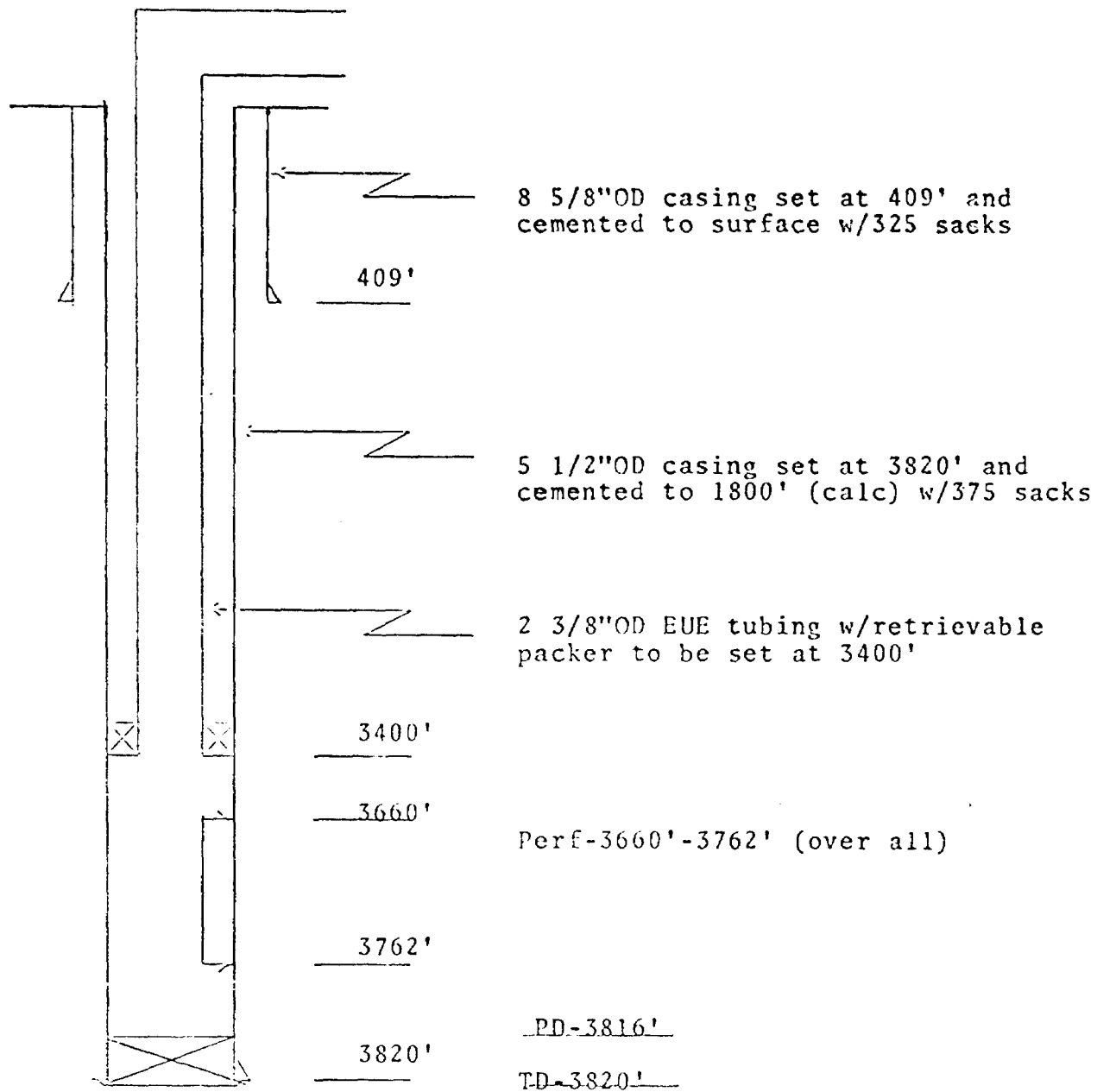
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Gulf Oil - Bell Ramsay No. 1

Elev. - BHF-3513'



Proposed Procedure

1. Tag bottom - tally out. Clean out to 3765'.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

EUMONT-HARDY UNIT
SCHEDULE OF PARTICIPATION PARAMETERS

<u>Operator</u> <u>Lease</u>	<u>Cum. Prod.</u> <u>to 9-1-63</u>	<u>% Total</u> <u>Unit Cum.</u> <u>Prod.</u>	<u>Floodable</u> <u>Acre-Feet</u>	<u>% Total</u> <u>Floodable</u> <u>Acre-Feet</u>	<u>Total Unit</u> <u>Participation</u>
AMBASSADOR OIL CORP. Currie	73,615	1.57335	44	0.11830	1.69165
CONTINENTAL OIL CO.-NMPU					
Hawk "E"	36,531	0.78077	44	0.11830	0.89907
Meyer B-31	195,903	4.18697	652	1.75293	5.93990
State 25	47,275	1.01039	707	1.90079	2.91118
State 25 "A"	20,083	0.42923	300	0.80656	1.23579
TOTAL N.M.F.U.	299,792	6.40736	1,703	4.57858	10.98594
CONTINENTAL OIL CO.-100%					
State A-36	474,041	10.13153	5,071	13.63355	23.76508
State F-1	140,173	2.99587	222	0.59686	3.59273
State H-1	36,070	0.77091	333	0.89528	1.66619
State H-2	10,781	0.23042	300	0.90656	1.03698
State H-3	-	-	80	0.21508	0.21508
TOTAL CONTINENTAL 100%	661,065	14.12873	6,006	16.14733	30.27606
GULF OIL CORP.					
Bell Ramsey "J"	23,799	0.50865	114	0.30649	0.81514
PAN AMERICAN PETROLEUM CORP.					
Hill "A"	632,752	13.52361	2,222	5.97392	19.49753
Hill "C"	279,823	5.98057	1,031	2.77188	8.75245
Thompson	57,429	1.22741	298	0.80118	2.02859
TOTAL PAN AMERICAN	970,004	20.73159	3,551	9.54698	30.27857
SKELLY OIL COMPANY					
Hill	477,194	10.19891	2,374	6.38258	16.58149
TWO STATES OIL COMPANY					
Hill "A"	209,180	4.47074	748	2.01102	6.48176
Hill "B"	59,114	1.26342	204	0.54846	1.81188
TOTAL TWO STATES	268,294	5.73416	952	2.55948	8.29364
UNIT-OWNED					
Hill "F"	33,559	0.71725	134	0.36026	1.07751
TOTAL UNIT	2,807,322	60.00000	14,878	40.00000	100.00000

BEFORE EXAMINER UTZ
 OIL CONSERVATION COMMISSION
 EXHIBIT NO. 1-1
 CASE NO. 21150-21404

EUMONT-HARDY UNIT
OF PARTICIPATION PARAMETERS

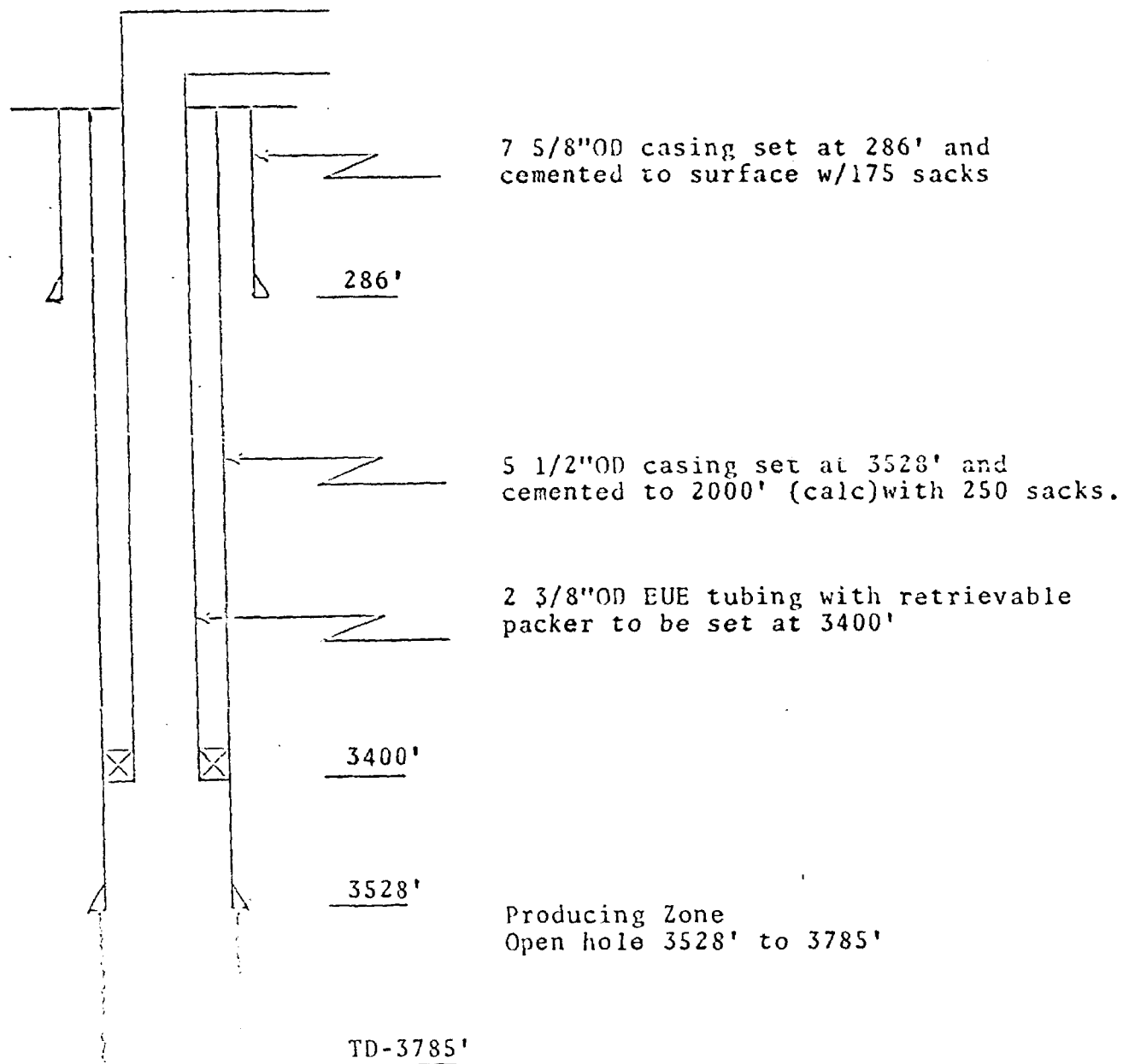
Total Unit Cum. Prod.	Floodable Acre-Feet	% Total Floodable Acre-Feet	Total Unit Participation
57335	44	0.11830	1.69165
78077	44	0.11830	0.89907
18697	652	1.75293	5.93990
01039	707	1.90079	2.91118
42923	300	0.80656	1.23579
40736	1,703	4.57858	10.98594
13153	5,071	13.63355	23.76508
99587	222	0.59686	3.59273
77091	333	0.89528	1.66619
23042	300	0.80656	1.03698
-	80	0.21508	0.21508
12873	6,006	16.14733	30.27606
50865	114	0.30649	0.81514
52361	2,222	5.97392	19.49753
98057	1,031	2.77188	8.75245
2741	298	0.80118	2.02859
3159	3,551	9.54698	30.27857
9891	2,374	6.38258	16.58149
7074	748	2.01102	6.48176
5342	204	0.54846	1.81188
3416	952	2.55948	8.29364
725	134	0.36026	1.07751
0000	14,878	40.00000	100.00000

BEFORE EXAMINER UTZ
CIVIL CONSERVATION COMMISSION
EXHIBIT NO. 1-1
CASE NO. 8-11-2-1-1

WATER INJECTION WELL DATA

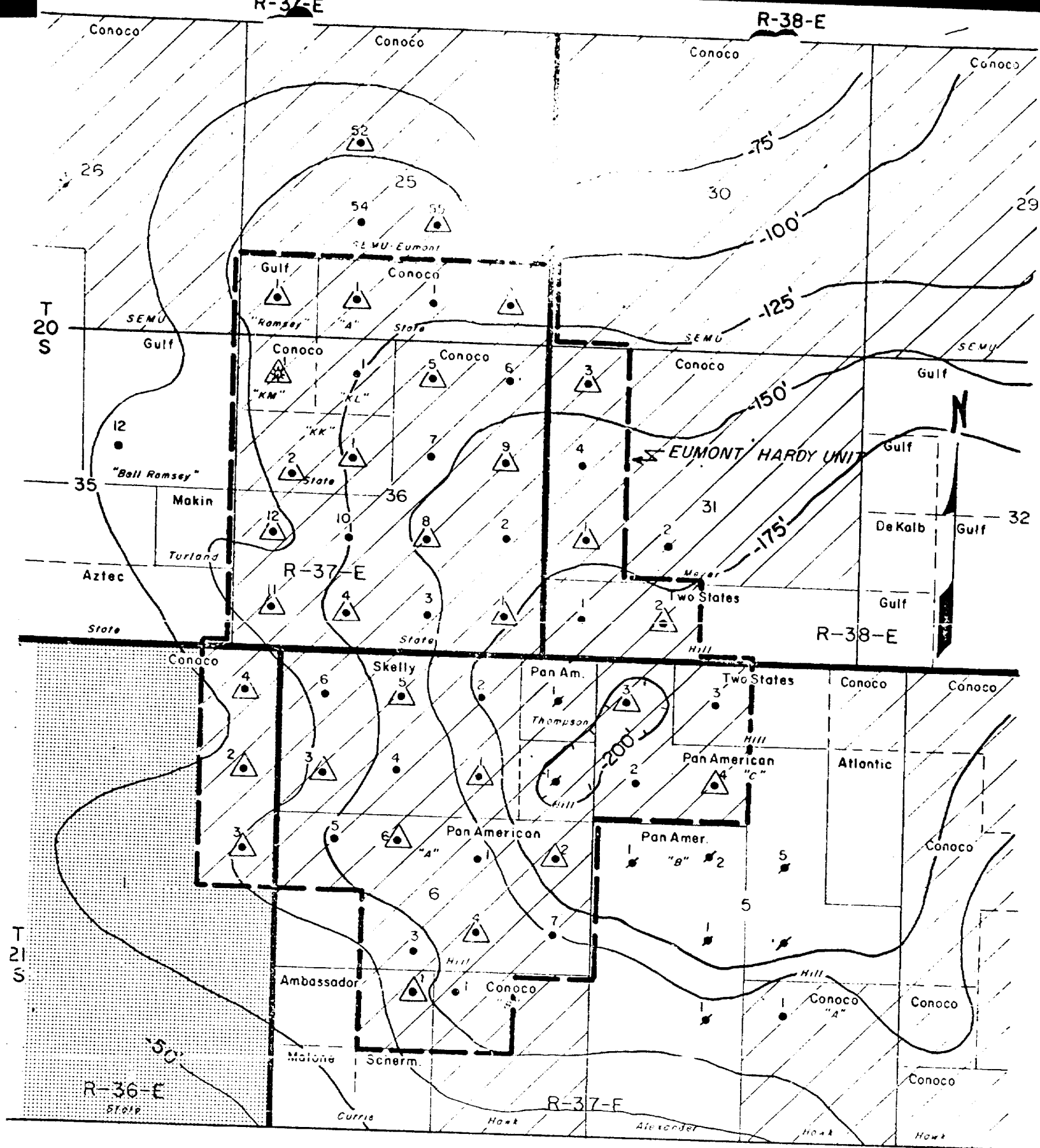
Two State - Hill No. 2

Elev. - DF-3495'



Proposed Procedure

1. Tag bottom and tally out. Clean out to TD of 3785'
2. Run tubing with retrievable packer to be set at 3400'
3. Connect up well for injection down tubing.



CONTINENTAL OIL COMPANY

PRODUCTION DEPARTMENT

HOBBS DISTRICT

EUMONT POOL

Lea County, New Mexico

QUEEN STRUCTURE (PENROSE)

Contour Interval: 25'

1-21-63

SCALE
0 1000 2000' EXHIBIT 6

SEMU-EUMONT LEASE - INJECTION WELL DATA

EXHIBIT N

Company, Lease and Well No.	Total Depth and/or PBD	Surface Casing			Int. Casing			Production Casing		
		Size	Depth	Cement	Size	Depth	Cement	Size	Depth	Cement
<u>Continental Oil Co. et al</u>										
SEMU No. 52	3825'/3820'	8 5/8"	331'	225		None		5 1/2"	3824'	1490
SEMU No. 55	3900'/3898'	8 5/8"	329'	225		None		5 1/2"	3899'	1500

SEMU-EUMONT LEASE - INJECTION WELL DATA

EXHIBIT No. 8

Total Depth
and/or PBD

Surface Casing
Size Depth Cement

Int. Casing
Size Depth Cement

Production Casing
Size Depth Cement

Producing Int.
(P) Perf.
(OH) Open Hole

. et al

3825'/3820'
3900'/3898'

8 5/8" 331' 225
8 5/8" 329' 225

None
None

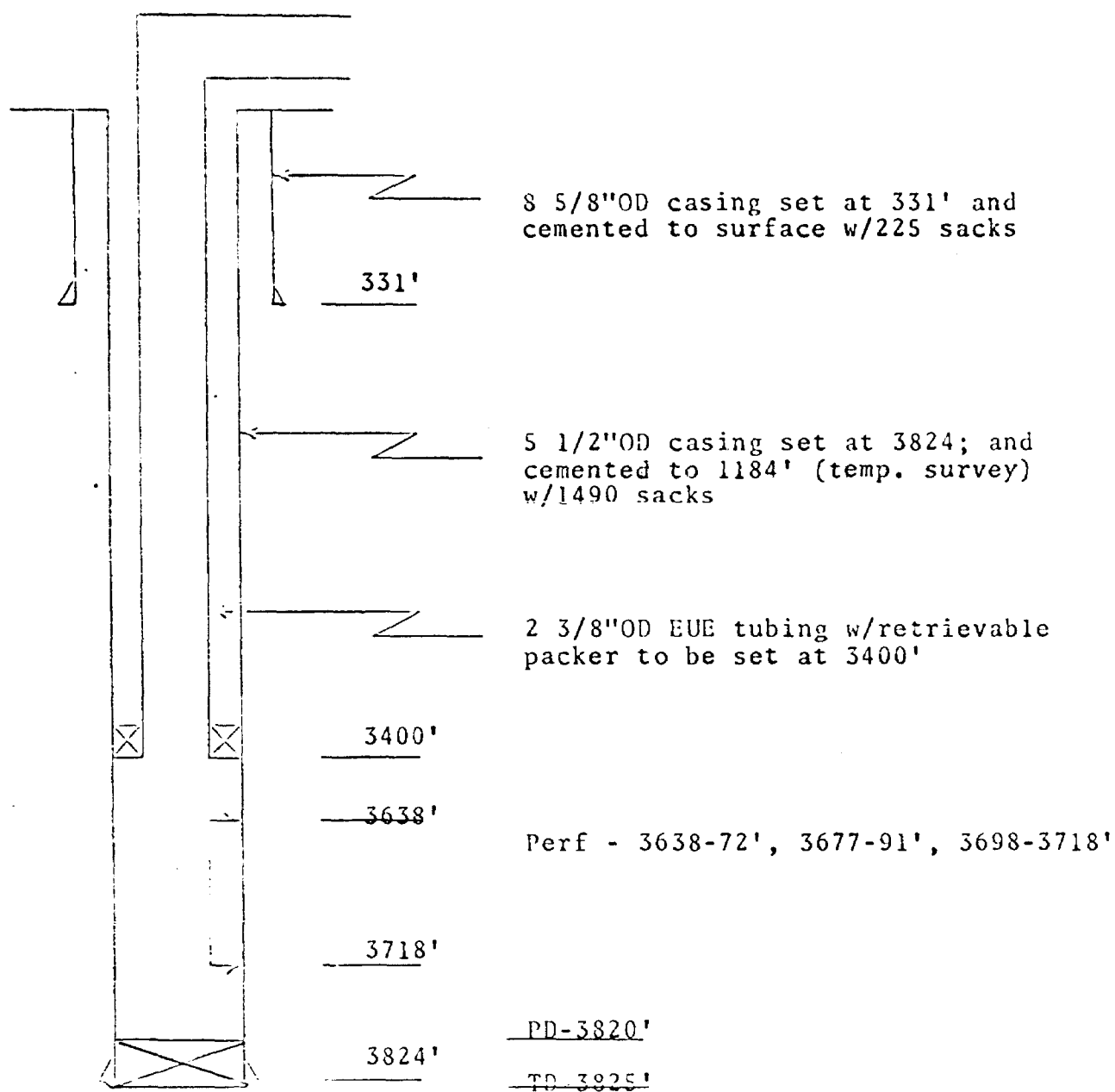
5 1/2" 3824' 1490
5 1/2" 3899' 1500

(P) 3638-3718'
(P) 3660-3778'

WATER INJECTION WELL DATA

Continental - SEMU No. 52

Elev. - BHF - 3518'
DF - 3528'



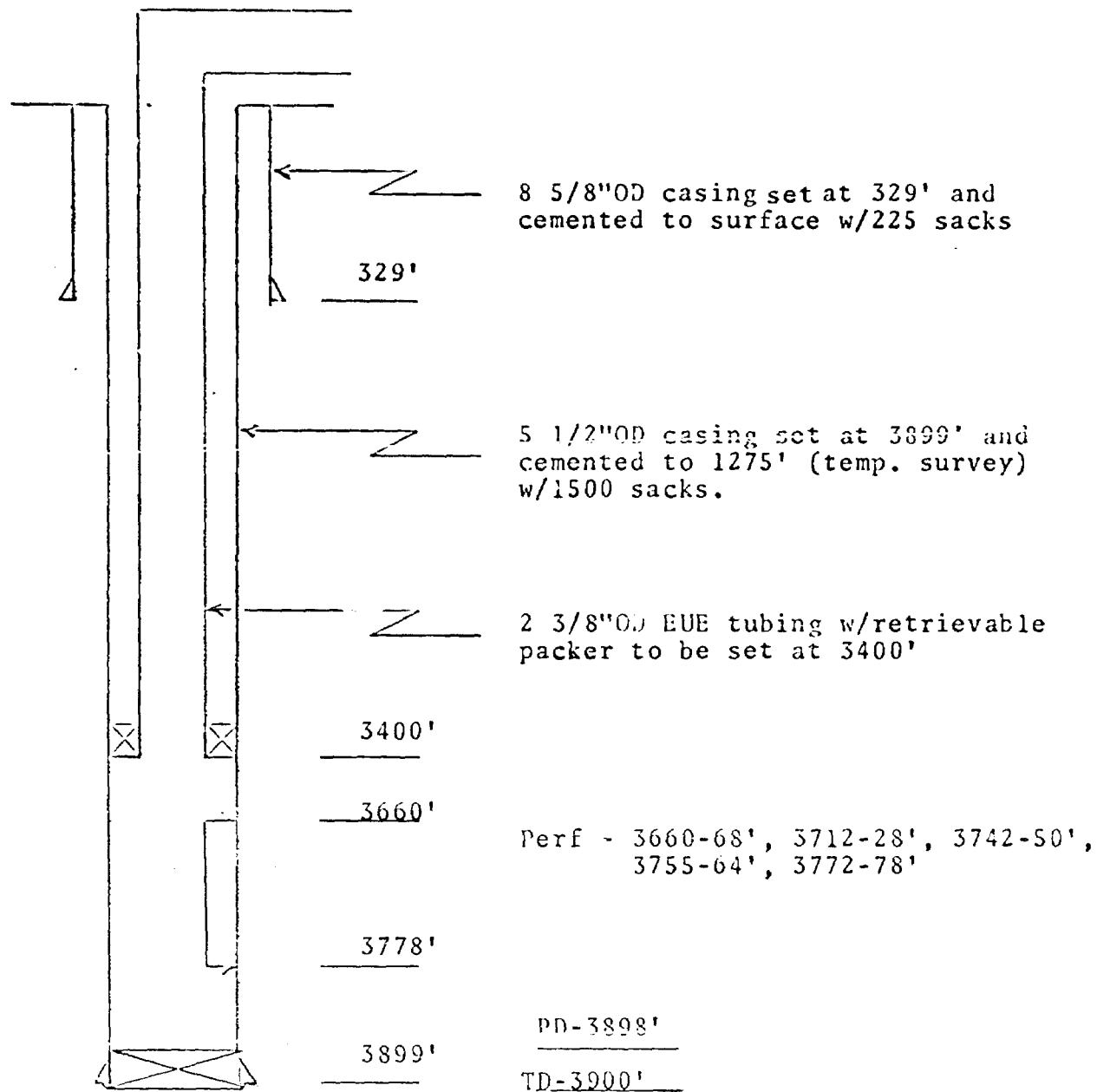
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3722'.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - SEMU No. 55

Elev. - BHF-3513'
DF-3523'



Proposed Procedure

1. Tag bottom tally out. Clean out to 3781'.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

BEFORE THE OIL CONSERVATION COMMISSION

OF THE
STATE OF NEW MEXICO

3428 +
3429

IN THE MATTER OF THE APPLICATION OF
CONTINENTAL OIL COMPANY FOR APPROVAL
OF THE EUMONT-HARDY UNIT AGREEMENT
EMBRACING 1930.23 ACRES, MORE OR LESS,
LOCATED IN TOWNSHIP 20 SOUTH, RANGES
37 AND 38 EAST AND TOWNSHIP 21 SOUTH
RANGES 36 AND 37 EAST, NMPM, LEA COUNTY,
NEW MEXICO; FOR PERMISSION TO INSTALL
AND OPERATE A WATERFLOOD WITHIN THE
BOUNDARIES OF SAID UNIT AREA; AND FOR
PERMISSION TO PRODUCE THE UNIT WELLS
INTO A CENTRAL TANK BATTERY.

A P P L I C A T I O N

Comes now Applicant, Continental Oil Company, and
respectfully requests approval of the Eumont-Hardy Unit Agree-
ment, permission to install and operate a waterflood within
said unit, and permission to produce the unit wells into a
central tank battery. The Eumont-Hardy Unit Agreement embraces
the following described acreage:

New Mexico Prime Meridian

Township 20 South, Range 37 East

Section 25: S/2 S/2
Section 36: All

Township 20 South, Range 38 East

Section 31: Lots 1, 2, 3,
and 4, SE/4 SW/4

Township 21 South, Range 36 East

Section 1: Lots 1, 8, 9

Township 21 South, Range 37 East

Section 5: Lots 3, 4, 5,
and 6
Section 6: Lots 1 through 12,
14, 15, 16,
NE/4 SW/4, NW/4 SE/4

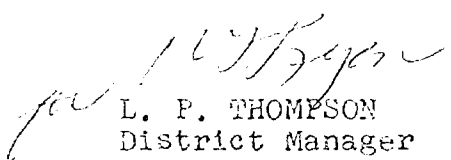
Containing 1930.23 acres, more or less, in Lea County, New Mexico,
and in support thereof Applicant would show:

1. That the Eumont-Hardy Unit Agreement is attached hereto and marked Exhibit I.
2. Designation of Unit Area and preliminary approval of the Unit Agreement by the U. S. Geological Survey was given March 16, 1966.
3. That the attached lease plat marked Exhibit II shows the Eumont-Hardy Unit and surrounding area.
4. That production in the Unit Area is at an advanced stage of depletion and that recovery by primary methods is at or near the economic limit.
5. That engineering investigations indicate that waterflooding the Eumont-Hardy Unit Area will be physically and economically feasible.
6. That agreement between the Working Interest Owners has proceeded to the extent that a logical and systematic secondary recovery operation is assured.
7. That the formation to be unitized and waterflooded is the Yates, Sever Rivers and Queen formations which are specifically indicated on the radioactivity log of the Continental Oil Company State A-36 No. 10 well attached hereto and marked Exhibit III.
8. That all proposed injection wells are or will be completed in such a manner that injected water will be confined to the unitized formation. The present status of all proposed injection wells is shown on the tabulation of injection well data attached hereto and marked Exhibit IV.

9. That applicant proposes to inject a total of approximately 12,000 barrels of water per day into the 28 proposed injection wells on an 80-acre five-spot pattern. Said water will be obtained from the Cass-Pennsylvanian Pool approximately two miles northwest of the Unit boundary and/or the E-M-E Salt Water Disposal system.
10. That the said waterflood will be installed and operated in conformance with Rule 701E.
11. That the producing operations can be carried on more efficiently if all Unit wells are produced into a central tank battery, which will be served by automatic custody transfer equipment.
12. That the proposed unitization and secondary recovery will result in the recovery of hydrocarbons which would not be recovered by primary methods and is therefore in the interest of conservation and prevention of waste.

Wherefore, Applicant respectfully requests that this matter be set for hearing before the Commission's duly qualified Examiner and that upon hearing an order be entered approving the Eumont-Hardy Unit Agreement, granting permission to install and operate a waterflood within the Unit Area and permitting the production of the Unit wells into a central tank battery as described herein above.

Respectfully Submitted,


L. P. THOMPSON
District Manager
Hobbs District

LPT-JS

UNIT AGREEMENT

EUMONT-HARDY UNIT

LEA COUNTY, NEW MEXICO

Exhibit I

UNIT AGREEMENT
FOR THE DEVELOPMENT AND OPERATION OF THE
EUMONT-HARDY UNIT
LEA COUNTY, NEW MEXICO

NO. _____

THIS AGREEMENT, entered into as of the _____ day of _____, 1966, by and between the parties subscribing, ratifying or consenting hereto, and herein referred to as "parties hereto";

WITNESSETH: That,

WHEREAS, the parties hereto are the owners of working, royalty or other oil or gas interests in the Unit Area subject to this Agreement; and

WHEREAS, the Commissioner of Public Lands of the State of New Mexico is authorized by an Act of the Legislature (Sec. 1, Chap. 88, Laws 1943 as amended by Sec. 1 of Chap. 176, Laws of 1961, Chap. 7 Art. 11, Section 39, N.M.S. 1953 anno) to consent to or approve this Agreement on behalf of the State of New Mexico, insofar as it covers and includes lands and mineral interests of the State of New Mexico; and

WHEREAS, the Commissioner of Public Lands of the State of New Mexico is authorized by an Act of the Legislature (Sec. 3, Chap. 88, Laws of 1943, as amended by Sec. 1, Chap. 162, Laws of 1951, Chap. 7, Art. 11, Sec. 41, N.M.S. 1953 anno) to amend with the approval of the lessee, any oil and gas lease embracing State lands so that the length of the term of said lease may coincide with the term of such unitized development and operation of State lands; and

WHEREAS, the Oil Conservation Commission of the State of New Mexico is authorized by law (Chap. 72, Laws of 1935, as

amended by Chap. 193, Laws of 1937, Chap. 166, Laws of 1941, and Chap. 168, Laws of 1949, Chapter 65, Art. 3, Sec. 14, N.M.S., 1953 anno) to approve this Agreement, and the conservation provisions hereof; and

WHEREAS, the Mineral Leasing Act of February 25, 1920, 41 Stat. 437, as amended, 30 U.S.C. Sections 181 et seq., authorizes Federal lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating a cooperative or unit plan of development or operation of any oil or gas pool, field or like area, or any part thereof for the purpose of more properly conserving the natural resources thereof whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

WHEREAS, the parties hereto hold sufficient interests in the Eumont-Hardy Unit Area covering the land hereinafter described to give reasonably effective control of operation therein; and

WHEREAS, it is the purpose of the parties hereto, to enable institution and consummation of secondary recovery operations, conserve natural resources, prevent waste and secure the other benefits obtainable through development and operation of the area subject to this Agreement under the terms, conditions, and limitations herein set forth;

NOW, THEREFORE, in consideration of the premises and the promises herein contained, the parties hereto commit to this Agreement their entire respective interests in the below-defined Unit Area, and agree severally among themselves as follows:

SECTION 1. ENABLING ACT AND REGULATIONS. The Mineral Leasing Act of February 25, 1920, as amended, supra, and all

valid pertinent regulations, including operating and unit plan regulations, theretofore issued thereunder and valid pertinent and reasonable regulations hereafter issued thereunder are accepted and made a part of this Agreement as to Federal lands, provided such regulations are not inconsistent with the terms of this Agreement; and as to non-Federal lands, the oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the State in which the non-Federal land is located, are hereby accepted and made a part of this Agreement.

SECTION 2. UNIT AREA AND DEFINITIONS. The area described by tracts in Exhibit "B" and depicted on Exhibit "A" attached hereto is hereby designated and recognized as constituting the Unit Area containing 1930.23 acres, more or less, in Lea County, New Mexico. Said land is described as follows:

<u>T20S-R37E</u>		
Section 25:	S/2 S/2	160.00
Section 36:	All	640.00
<u>T20S-R38E</u>		
Section 31:	Lots 1, 2, 3 and 4, SE/4 SW/4	200.40
<u>T21S-R36E</u>		
Section 1:	Lots 1, 8 and 9	116.90
<u>T21S-R37E</u>		
Section 5:	Lots 3, 4, 5 and 6	154.87
Section 6:	Lots 1 through 12, 14, 15 and 16, NW/4 SE/4, NE/4 SW/4	658.06

For the purpose of this Agreement, the following terms and expressions as used herein shall mean:

(a) "Commissioner" is defined as the Commissioner of Public lands of the State of New Mexico.

(b) "Commission" is defined as the Oil Conservation Commission of the State of New Mexico.

(c) "Director" is defined as the Director of the United States Geological Survey.

(d) "Secretary" is defined as the Secretary of the Interior of the United States of America.

(e) "Department" is defined as the Department of the Interior of the United States of America.

(f) "Supervisor" is defined as the Oil and Gas Supervisor of the United States Geological Survey.

(g) "Unitized Formation" is defined as the Yates, Seven Rivers and Queen formations, found between the subsurface depths of 2,700 feet and 3,776 feet, as shown on the Lane Wells Radioactivity Log run May 7, 1957, in the Continental Oil Company State "A" 36 No. 10 Well located 1,980 feet from the South line and 1,980 feet from the West line of Section 36, Township 20 South, Range 37 East, NMPM.

(h) "Unitized Substances" means all oil, gas, gaseous substances, sulphur contained in gas, condensate, distillate and all associated and constituent liquid or liquefiable hydrocarbons within or produced from the Unitized Formation.

(i) "Tract" is defined as each parcel of land described as such and given a Tract number in Exhibit "B"

(j) "Tract Participation" is defined as that percentage of Unitized Substances produced from the Unitized Formation which is allocated to a Tract under this Agreement.

(k) "Unit Participation," of each Working Interest Owner, is defined as the sum of the percentages obtained by multiplying such Working Interest Owner's fractional Working Interest in each Tract by the Tract Participation of such Tract.

(l) "Working Interest" is defined as the right to search for, produce and acquire Unitized Substances whether held as an incident of ownership of mineral fee simple title, under an oil and gas lease, or otherwise held.

(m) "Working Interest Owner" is defined as and shall mean any party hereto owning a Working Interest, including a carried working interest owner, whether by virtue of a lease, operating agreement, fee title or otherwise, whose interest is chargeable with and obligated to pay or bear, either in cash or out of production, or otherwise, all or a portion of the cost of drilling, developing and producing the Unitized Substances from the Unitized Formation and operating therefor hereunder.

(n) "Royalty Interest" or "Royalty" is defined as an interest other than a Working Interest in or right to receive a portion of the Unitized Substances or the proceeds thereof and includes the royalty interest reserved by the lessor by an oil and gas lease and any overriding royalty interest, oil payment

interest, or any other payment or burden which does not carry with it the right to search for and produce Unitized Substances.

(o) "Royalty Owner" is defined as and shall mean the owner of a Royalty Interest.

(p) "Unit Operating Agreement" is defined as and shall mean any agreement or agreements (whether one or more) entered into (separately or collectively) by and between the Unit Operator and the Working Interest Owners as provided in Section 9, infra, and shall be styled "Unit Operating Agreement, Eumont-Hardy Unit, Lea County, New Mexico."

(q) "Paying Quantities" is defined as production of Unitized Substances in quantities sufficient to pay for the cost of producing same from wells on the unitized land.

(r) "Tract Cumulative Production to September 1, 1963" is defined as the barrels of oil produced from a Tract from the date of first production until September 1, 1963, as shown on the Schedule of Participation Parameters Revised November 4, 1965.

(s) "Unit Area Cumulative Production to September 1, 1963" is defined as the sum of Tract cumulative production to September 1, 1963, for all Tracts committed to this Unit Agreement.

(t) "Tract Floodable Acre-Feet" is defined as the volume of Unitized Formation contained within a Tract which will contribute recoverable oil by waterflooding as determined by the Eumont-Hardy Unit Engineering Subcommittee and as shown on the Schedule of Participation Parameters Revised November 4, 1965.

(u) "Unit Area Floodable Acre-Feet" is defined as the sum of Tract floodable acre-feet for all Tracts committed to this Unit Agreement.

SECTION 3. EXHIBITS. Exhibit "A" attached hereto is a map showing the Unit Area and, to the extent known to the Unit Operator, the boundaries and identity of Tracts and Leases in said Unit Area. Exhibit "B" attached hereto is a schedule showing, to the extent known to the Unit Operator, the acreage comprising each Tract, percentage ownership of each Working Interest Owner in each Tract, and the percentage of participation each Tract has in the Unit Area, together with the Royalty Interests in each Tract and the ownership thereof. Nothing herein or in said schedule or map shall be construed as a representation by any party hereto as to the ownership of any interest other than such interest or interests

as are shown in said map or schedule as owned by such party.

Exhibits "A" and "B" shall be revised by the Unit Operator whenever changes render such revision necessary, or when requested by the Supervisor or Commissioner; and at least two copies of such revision shall be filed with the Commissioner, and not less than six copies thereof shall be filed with the Supervisor.

SECTION 4. EXPANSION. The above-described Unit Area may when practicable be expanded to include therein any additional Tract or Tracts regarded as reasonably necessary or advisable for the purposes of this Agreement. Such expansion shall be effected in the following manner:

(a) The Working Interest Owner or Owners of a Tract or Tracts desiring to commit such Tract or Tracts hereto shall file an application therefor with Unit Operator requesting such admission.

(b) Unit Operator shall circulate a notice to each Working Interest Owner of the proposed expansion, setting out the basis for admission, the proposed participation to be assigned to each such Tract, and other pertinent data. After negotiation (at Working Interest Owners' meeting or otherwise), if 90 per cent of the Working Interest Owners (on the basis of unit participation) have agreed to such commitment of such Tract or Tracts, then Unit Operator shall, after preliminary concurrence by the Director and the Commissioner:

- (1) Prepare a notice of proposed expansion describing the contemplated changes in the boundaries of the Unit Area, the reason therefor, the basis for admission of the additional Tract or Tracts, the unit participation to be assigned each such Tract and the proposed effective date thereof, preferably 7:00 a.m. of the first day of the month following final approval thereof as herein provided; and
- (2) Furnish copies of said notice to the Commissioner, the Supervisor, each Working Interest Owner, lessee, and lessor whose interests are affected (mailing copy of such notice to the last known address of each such Working Interest Owner), advising such parties that thirty (30) days will be allowed for submission to the Unit Operator of any objection to such proposed expansion; and

- (3) File, upon the expiration of said thirty (30) day period as set out in (2) immediately above, provided that objections of not more than 10 per cent of the voting interests of the Working Interest Owners have been filed thereto, with the Commissioner, Director and the Commission, the following:

Provided, however, if a dissenting Working Interest Owner owns more than a 10 per cent voting interest, it must be joined in such dissent by at least one other Working Interest Owner;

(i) Evidence of mailing said notice of expansion; (ii) An application for such expansion in sufficient numbers for appropriate approval and distribution; and (iii) An instrument containing the appropriate joinders in compliance with the participation requirements of Section 14 (TRACTS QUALIFIED FOR UNIT PARTICIPATION) and Section 32 (NON-JOINDER AND SUBSEQUENT JOINDER), infra; and (iv) A copy of any objections received.

The expansion shall, after due consideration of all pertinent information and upon approval by the Commissioner, the Director and the Commission, become effective as of the date prescribed in the notice thereof or on such other appropriate date as set by the Commissioner, the Director and the Commission in the order or instrument approving such expansion. The revised Tract Participations of the respective Tracts included within the Unit Area prior to such enlargement shall remain in the same ratio one to another.

SECTION 5. UNITIZED LAND AND UNITIZED SUBSTANCES.

All oil and gas in and under the land effectively committed to this Agreement within and producible from the Unitized Formation are herein called "Unitized Substances." All land committed to this Agreement as to the Unitized Formation shall constitute land referred to herein as Unitized Land or "Land subject to this Agreement."

SECTION 6. UNIT OPERATOR. Continental Oil Company, a Delaware corporation, is hereby designated as Unit Operator, and, by signing this instrument as Unit Operator, it agrees and consents to accept the duties and obligations of Unit Operator for the operation, development and production of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interests in Unitized Substances, and the term "Working Interest Owner" when used herein shall include or refer to Unit Operator as the owner of a Working Interest when such an interest is owned by it.

Unit Operator shall have a lien upon the interests of Working Interests Owners in the Unit Area to the extent provided in the Unit Operating Agreement.

SECTION 7. RESIGNATION OR REMOVAL OF UNIT OPERATOR.

Unit Operator shall have the right to resign at any time, but such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator and terminate Unit Operator's rights as such for a period of six (6) months after written notice of intention to resign has been given by Unit Operator to all Working Interest Owners, the Commissioner and the Director, and until all unit wells are placed in a condition satisfactory to the Supervisor and the Commission for suspension, abandonment, or operations, whichever is intended by the Unit Operator, unless a new Unit Operator shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by 75 per cent of the committed Working Interest Owners (on the basis of unit participation) exclusive

of the Working Interest Owner who is the Unit Operator. Such removal shall be effective upon notice thereof to the Commissioner and the Director.

In all such instances of effective resignation or removal, until a successor to Unit Operator is selected and approved as hereinafter provided, the Working Interest Owners shall be jointly responsible for the performance of the duties of the Unit Operator and shall, not later than thirty (30) days before such resignation or removal becomes effective, appoint a Unit Manager to represent them in any action to be taken hereunder.

The resignation or removal of Unit Operator under this Agreement shall not terminate its right, title or interest as the owner of a Working Interest or other interest in Unitized Substances; but, upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all equipment, books, and records, materials, appurtenances and any other assets, used in conducting the Unit operations and owned by the Working Interest Owners (including any and all data and information which it might have gained or assembled by reason of its operation of the Unitized Land) to the new duly qualified successor Unit Operator or to the Unit Manager if no such new Unit Operator is elected, to be used for the purpose of conducting Unit operations hereunder. Nothing herein shall be construed as authorizing removal of any material, equipment and appurtenances needed for the preservation of any wells. Nothing herein contained shall be construed to relieve or discharge any Unit Operator who resigns or is removed hereunder for

any liability or duties accruing or performable by it prior to the effective date of such resignation or removal.

SECTION 8. SUCCESSOR UNIT OPERATOR. Whenever the Unit Operator shall tender its resignation as Unit Operator or shall be removed as hereinabove provided, the Working Interest Owners shall select a successor Unit Operator by a majority vote of the Working Interest Owners (on the basis of Unit Participation); provided no Working Interest Owner who has been removed as Unit Operator may vote for self-succession. Such selection shall not become effective until (a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator; and (b) the selection shall have been approved by the Commissioner and filed with the Supervisor. If no successor Unit Operator or Unit Manager is selected and qualified as herein provided, the Commissioner and the Director, at their election, may declare this Agreement terminated.

SECTION 9. ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT. Costs and expenses incurred by Unit Operator in conducting Unit operations hereunder shall be paid, apportioned among, and borne by the Working Interest Owners in accordance with the Unit Operating Agreement; however, no such Unit Operating Agreement shall be deemed either to modify any of the terms and conditions of this Unit Agreement or to relieve the Unit Operator of any right or obligation established under this Agreement, and in case of any inconsistency or conflict between this Agreement and the Unit Operating Agreement, this Agreement shall prevail. Required copies of any Unit Operating Agreement executed pursuant to this Section

shall be filed with the Commissioner and the Supervisor prior to approval of this Agreement.

SECTION 10. RIGHTS AND OBLIGATIONS OF UNIT OPERATOR.

Except as otherwise specifically provided herein, the exclusive right, privilege and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, storing, allocating and distributing the Unitized Substances are hereby delegated to and shall be exercised by the Unit Operator as herein provided. The parties hereto, to the extent they have the right to do so, grant to Unit Operator the use of brine or water, or both, from any formation in and under the Unit Area for injection into the Unitized Formation. Upon request, acceptable evidence of title to said rights shall be deposited with said Unit Operator and, together with this Agreement, shall constitute and define the rights, privileges, and obligations of Unit Operator. Nothing herein, however, shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that under this Agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

SECTION 11. EASEMENTS OR USE OF SURFACE.

(a) The parties hereto, to the extent of their rights and interests, hereby grant to Working Interest Owners the right to use as much of the surface of the land within the Unit Area as may reasonably be necessary for Unit Operations; provided that nothing herein shall be construed as leasing or otherwise conveying to Working Interest Owners a site for a

water, gas injection, processing or other plant, or camp site.

(b) Working Interest Owners shall have free use of water from the Unit Area for Unit Operations, except water from any well, lake, pond, or irrigation ditch of a Royalty Owner.

(c) Working Interest Owners shall pay the owner for damages to growing crops, timber, fences, improvements, and structures on the Unit Area that result from Unit Operations.

SECTION 12. PLAN OF OPERATIONS. It is recognized and agreed by the parties hereto that all of the land subject to this Agreement is reasonably proved to be productive of Unitized Substances in paying quantities and that the object and purpose of this Agreement is to formulate and to put into effect a secondary recovery project in order to effect the greatest recovery of Unitized Substances, prevent waste and conserve natural resources consistent with good engineering practices expected of a prudent operator. The parties hereto agree that the Unit Operator may, subject to the consent and approval of a plan of operation by the Working Interest Owners, the Supervisor, and the Commissioner, inject into the Unitized Formation, through any well or wells completed therein, brine, water, air, gas, oil and any one or more other substances whether produced from the Unitized Land or not, and that the location of input wells and the rates of injection therein shall be governed by standards of good geologic and petroleum engineering practices and conservation methods. After commencement of secondary operations, Unit Operator shall furnish the Commissioner and the Supervisor monthly injection and production reports for each well in the Unit. The Working Interest Owners, the Supervisor, and the Commissioner shall be furnished periodical

reports on the progress of the plan of operation and any revisions or changes thereto; provided, however, that any major revisions of the plan of operation involving a basic deviation from the initial plan of operation shall be subject to the consent and approval of the Working Interest Owners, the Supervisor, and the Commissioner.

The initial plan of operation shall be filed with the Supervisor and the Commissioner concurrently with the filing of this Unit Agreement for final approval. Said initial plan of operation and all revisions thereof shall be as complete and adequate as the Supervisor and the Commissioner may determine to be necessary for timely operation consistent herewith. Thereafter, from time to time before the expiration of any existing plan, the Unit Operator shall submit for like approval a plan for an additional specified period of operation. Reasonable diligence shall be exercised in complying with the obligations of the approved plan of operation.

Notwithstanding anything to the contrary herein contained, the Unit Operator shall commence operations for the secondary recovery of Unitized Substances from the Unit Area within six (6) months after the effective date of this Agreement, or any extension thereof approved by the Commissioner and the Supervisor. After such operations are commenced, Unit Operator shall carry on such operations as would a reasonably prudent operator under the same or similar circumstances.

SECTION 13. TRACT PARTICIPATION. In Exhibit "B" attached hereto, there are listed and numbered the various tracts within the Unit Area and set forth opposite each Tract is the Tract Participation of each Tract in the Unit Area calculated on the basis of 100 per cent commitment. The Tract Participation

of each Tract was determined by the following formula:

Percentage of Tract Participation = 60% X

$$\frac{\text{Tract Cumulative Production to September 1, 1963}}{\text{Unit Area Cumulative Production to September 1, 1963}}$$

+

$$40\% \times \frac{\text{Tract Floodable Acre-Feet}}{\text{Unit Area Floodable Acre-Feet}}$$

In the event less than all of the Tracts within the Unit Area are committed to this Agreement as of the effective date hereof, Unit Operator shall, as soon as practicable after said effective date, prepare a revised Exhibit "B" setting forth the committed Tracts and showing the revised Tract Participation of each committed Tract, which Tract Participation shall be calculated and determined by using the factors and formulas set forth above, but applying the same only to the committed Tracts. Unit Operator shall promptly file copies of such revised Exhibit "B" with the Commissioner and the Supervisor; and, unless such revised Exhibit "B" is disapproved by the Commissioner or the Supervisor within thirty (30) days after such filing, the revised Exhibit "B" shall be effective as of the effective date of this Agreement and shall thereafter govern the allocation of all Unitized Substances, subject, however, to any further revision or revisions of Exhibit "B" in accordance with the provisions hereof.

Any Tract within the Unit Area not committed on the effective date hereof may thereafter be committed hereto in the following manner: The owner or owners of the Working Interest in such Tract shall initiate a request directed to Unit Operator for the commitment thereof hereto and such owner or owners, committed Working Interest Owners, and Unit Operator shall thereupon seek to determine the basis therefor, including

a Tract Participation for such Tract and any appropriate adjustments of investments. When such matters have been agreed upon by the required vote of Working Interest Owners, as provided for in the Unit Operating Agreement, and upon compliance with the applicable provisions of Sections 14 (TRACTS QUALIFIED FOR UNIT PARTICIPATION) and 32 (NON-JOINDER AND SUBSEQUENT JOINDER), then Unit Operator shall file with the Commissioner and the Supervisor the required copies of the instruments of joinder and a revised Exhibit "B," showing the revised Tract Participation, and upon approval by both the Commissioner and the Director or the Supervisor, such commitment shall be effective at 7 a.m., on the first day of the month following such approval. In any such event, the revised Tract Participations of the respective Tracts entitled to participation prior to such subsequent commitment shall remain in the same ratio one to another.

SECTION 14. TRACTS QUALIFIED FOR UNIT PARTICIPATION.

Qualification of Tracts. On and after the effective date hereof, the tracts within the Unit Area that shall be entitled to participate in the production of Unitized Substances therefrom shall be the tracts that are qualified as follows:

(a) Each Tract as to which Working Interest Owners owning one hundred per cent (100%) of the Working Interest have become parties to this Agreement and as to which Royalty Owners owning seventy-five per cent (75%) or more of the Royalty Interest have become parties to this Agreement.

(b) Each Tract as to which Working Interest Owners owning one hundred per cent (100%) of the Working Interest have become parties to this Agreement, and as to

which Royalty Owners owning less than seventy-five per cent (75%) of the Royalty Interest have become parties to this Agreement, and as to which:

- (i) all Working Interest Owners in such Tract have joined in a request for the inclusion of such Tract in the Unit Area, and as to which
- (ii) eighty per cent (80%) of the combined voting interests of Working Interest Owners in all Tracts that meet the requirements of Section 14 (1) (a) have voted in favor of the inclusion of such Tract.

For the purpose of this Section 14 (1) (b), the voting interest of a Working Interest Owner shall be equal to the ratio that its Unit Participation attributable to Tracts that qualify under Section 14 (1) (a) bears to the total Unit Participation of all Working Interest Owners attributable to all Tracts that qualify under Section 14 (1) (a).

(c) Each Tract as to which Working Interest Owners owning less than one hundred per cent (100%) of the Working Interest have become parties to this Agreement, regardless of the percentage of Royalty Interest therein that is committed hereto; and as to which:

- (i) the Working Interest Owner who operates the Tract and all of the other Working Interest Owners in such Tract who have become parties to this Agreement have joined in a request for commitment of such Tract

in the Unit Area, and have executed and delivered an indemnity agreement indemnifying and agreeing to hold harmless the other Working Interest Owners in the Unit Area, their successors and assigns, against all claims and demands that may be made by the owners of Working Interests in such Tract who are not parties to this Agreement, and which arise out of the commitment of the Tract to this Unit Agreement; and as to which

- (ii) eighty per cent (80%) of the combined voting interest of Working Interest Owners in all Tracts that meet the requirements of Section 14 (1) (a) and 14 (1) (b) have voted in favor of the commitment of such Tract and to accept the indemnity agreement.

For the purpose of this Section 14(1)(c), the voting interest of each Working Interest Owner shall be equal to the ratio that its Unit Participation attributable to Tracts that qualify under Sections 14(1)(a) and 14(1)(b) bears to the total Unit Participation of all Working Interest Owners attributable to all Tracts that qualify under Sections 14(1)(a) and 14(1)(b). Upon the commitment of such a Tract to this Unit Agreement, the Unit Participation that would have been attributed to the non-subscribing owners of the Working Interest in such Tract, had they become parties to this Agreement and the Unit

Operating Agreement, shall be attributed to the Working Interest Owners in such Tract who have become parties to such agreements, in proportion to their respective Working Interests in the Tract.

SECTION 15. ALLOCATION OF UNITIZED SUBSTANCES. All Unitized Substances produced and saved (less, save and except any part of such Unitized Substances used in conformity with good operating practices on Unitized Land for drilling, operating, camp, and other production or development purposes and for pressure maintenance or unavoidable loss) shall be apportioned among and allocated to the committed Tracts within the Unitized Land in accordance with the respective Tract Participation effective hereunder during the respective periods such Unitized Substances were produced, as set forth in the then effective schedule of participation in Exhibit "B." The amount of Unitized Substances so allocated to each Tract, and only that amount (regardless of whether it be more or less than the amount of the actual production of Unitized Substances from the well or wells, if any, on such Tract), shall, for all intents, uses and purposes, be deemed to have been produced from such Tract.

The Unitized Substances allocated to each Tract shall be distributed among, or accounted for to, the parties executing, consenting to, or ratifying this Agreement entitled to share in the production from such Tract in the same manner, in the same proportions, and upon the same conditions as they would have participated and shared in the production from such Tracts, or in the proceeds thereof, had this Agreement not been entered into, and with the same legal force and effect.

No Tract committed to this Agreement and qualified for participation as above provided shall be subsequently excluded from participation hereunder on account of depletion of Unitized Substances; and nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the effective date of the joinder of any Tract.

If the Working Interest and the Royalty Interest in any Tract are or become divided with respect to separate parcels or portions of such Tract and owned severally by different persons, the Tract Participation assigned to such Tract shall, in the absence of a recordable instrument executed by all owners and furnished to Unit Operator fixing the divisions of ownership, be divided among such parcels or portions in proportion to the number of surface acres in each.

The Unitized Substances allocated to each Tract shall be delivered in kind to the respective Working Interest Owners and parties entitled thereto by virtue of the ownership of oil and gas rights therein. Each Working Interest Owner and the parties entitled thereto shall have the continuing right to receive such production in kind at a common point within the Unit Area and to sell or dispose of the same as it sees fit. Each such party shall have the right to construct, maintain and operate all necessary facilities for that purpose on Unitized Land, provided the same are so constructed, maintained and operated as not to interfere with operations carried on pursuant hereto. Subject to Section 16 (ROYALTY SETTLEMENT) hereof, any extra expenditure incurred by Unit Operator by reason of the delivery in kind of any portion of

the Unitized Substances shall be borne by the party receiving the same in kind.

In the event any party hereto shall fail to take or otherwise adequately dispose of its proportionate share of the Unitized Substances as and when produced, then so long as such conditions continue, Unit Operator, for the account and at the expense of such party, and in order to avoid curtailing the operation of the Unit Area, may sell or otherwise dispose of such production to itself or others on a day-to-day basis at not less than the prevailing market price in the area for like production; and the account of such party shall be charged therewith as having received such production. The net proceeds, if any, of the Unitized Substances so disposed of by Unit Operator shall be paid to the party entitled thereto; provided, however, Unit Operator shall not make a sale into interstate commerce of any Working Interest Owner's share of gas production without first giving such Working Interest Owner sixty (60) days' notice of such intended sale.

The Working Interest Owners of each Tract shall be responsible for the payment of all Royalty on or affecting such Tract; and each such party shall hold each other party hereto harmless against all claims, demands and causes of action for such Royalty.

If, after the effective date of this Agreement, there is any Tract or Tracts that are subsequently committed hereto, as provided in Section 4 (EXPANSION) and Section 13 (TRACT PARTICIPATION) hereof, or if any Tract is excluded from the Unit Area as provided for in Section 31 (LOSS OF TITLE), the schedule of participation as shown in the current Exhibit "B" shall be revised by the Unit Operator and distributed to the

Working Interest Owners, the Commissioner, the Supervisor, and the Director to show the new percentage participation of all the then effectively committed tracts; and the revised schedule, upon approval by the Commissioner, the Supervisor, with respect to such revision under Section 31 (LOSS OF TITLE) or the Director, with respect to such revision under Section 4 (EXPANSION), shall govern all the allocation of production from and after the effective date thereof until the effective date of a new schedule so approved. The Tract Participations of all Tracts participating prior to any such revision shall remain in the same ratio one to the other.

SECTION 16. ROYALTY SETTLEMENT. The State of New Mexico and the United States of America and all Royalty Owners who, under an existing contract, are entitled to take in kind a share of the Unitized Substances produced from any Tract unitized hereunder, shall continue to be entitled to such right to take in kind their share of the Unitized Substances allocated to such Tract; and Unit Operator shall make deliveries of such Royalty share taken in kind in conformity with the applicable contracts, laws and regulations. Settlement for Royalty Interest not taken in kind shall be made by Working Interest Owners responsible therefor under existing contracts, laws and regulations, on or before the last day of each month for Unitized Substances produced during the preceding calendar month; provided, however, that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any Royalty due under their leases, except that such Royalty shall be computed in accordance with the terms of this Unit Agreement.

If gas obtained from lands not subject to this Agreement is introduced into the Unitized Formation, for use in repressuring, stimulation or production or increasing ultimate recovery in conformity with a plan approved pursuant to Section 12 (PLAN OF OPERATIONS), a like amount of gas, less appropriate deductions for loss from any cause, may be withdrawn from the Unitized Formation, Royalty free as to dry gas but not as to the products extracted therefrom; provided such withdrawal shall be pursuant to such conditions and formulas as may be prescribed or approved by the Supervisor and the Commissioner; and provided, further, that such right of withdrawal shall terminate as of the effective date of termination of the Unit Agreement.

All Royalty due the State of New Mexico and the United States of America and the other Royalty Owners hereunder shall be computed and paid on the basis of all Unitized Substances allocated to the respective Tract or Tracts committed hereto, in lieu of actual production from such Tract or Tracts.

Royalty due the United States shall be computed as provided in the operating regulations and paid in value or delivered in kind as to all Unitized Substances on the basis of the amounts thereof allocated to Unitized Federal Land as provided herein at the rates specified in the respective Federal leases, or at such lower rate or rates as may be authorized by law or regulation; provided that for leases on which the royalty rate depends on the daily average production per well, said average production shall be determined in accordance with the operating regulations as though the Unitized Land were a single consolidated lease.

Royalty due the State of New Mexico shall be computed and paid on the basis of the amounts allocated to Unitized State Land as provided herein at the rate specified in the State Oil and Gas Lease.

Each Royalty Owner (other than the State of New Mexico and the United States of America) that executes this Agreement represents and warrants that it is the owner of a Royalty Interest in a Tract or Tracts within the Unit Area as its interest appears in Exhibit "B" attached hereto. If any Royalty Interest in a Tract or Tracts should be lost by title failure or otherwise in whole or in part, during the term of this Agreement, then the Royalty Interest of the party representing himself to be the owner thereof shall be reduced proportionately and the interest of all parties in the affected Tract or Tracts shall be adjusted accordingly.

SECTION 17. RENTAL SETTLEMENT. Rentals or minimum royalties due on leases committed hereto shall be paid by Working Interest Owners responsible therefor under existing contracts, laws and regulations, provided that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental or minimum royalty in lieu thereof, due under their leases. Rental for lands of the State of New Mexico subject to this Agreement shall be paid at the rate specified in the respective leases from the State of New Mexico. Rental or minimum royalty for lands of the United States of America subject to this Agreement shall be paid at the rate specified in the respective leases from the United States of America, unless rental or minimum royalty is waived, suspended, or reduced by law or by approval of the Secretary or his duly authorized representative.

SECTION 18. CONSERVATION. Operations hereunder and production of Unitized Substances shall be conducted to provide for the most economical and efficient recovery of said substances without waste, as defined by or pursuant to Federal and State laws and regulations.

SECTION 19. DRAINAGE. The Unit Operator shall take appropriate and adequate measures to prevent drainage of Unitized Substances from Unitized Land by wells on land not subject to this Agreement.

SECTION 20. LEASES AND CONTRACTS CONFORMED AND EXTENDED. The terms, conditions and provisions of all leases, subleases and other contracts relating to exploration, drilling, development or operation for oil or gas on lands committed to this Agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect; and the parties hereto hereby consent that the Secretary and the Commissioner, respectively, shall, and by their approval hereof, or by the approval hereof by their duly authorized representatives, do hereby establish, alter, change or revoke the drilling, producing, rental, minimum royalty and royalty requirements of Federal and State leases committed hereto and the regulations in respect thereto to conform said requirements to the provisions of this Agreement.

Without limiting the generality of the foregoing, all leases, subleases and contracts are particularly modified in accordance with the following:

(a) The development and operation of lands subject to this Agreement under the terms hereof shall be deemed full

performance of all obligations for development and operation with respect to each and every part or separately owned tract subject to this Agreement, regardless of whether there is any development of any particular part or Tract of the Unit Area, notwithstanding anything to the contrary in any lease, operating agreement or other contract by and between the parties hereto, or their respective predecessors in interest, or any of them.

(b) Drilling, producing or secondary recovery operations performed hereunder upon any Tract of Unitized Lands shall be accepted and deemed to be performed upon and for the benefit of each and every Tract of Unitized Land; and no lease shall be deemed to expire by reason of failure to drill or produce wells situated on land therein embraced.

(c) Suspension of drilling or producing operations on all Unitized Land pursuant to direction or consent of the Commissioner and the Supervisor or their duly authorized representatives shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every Tract of Unitized Land.

(d) Each lease, sublease, or contract relating to the exploration, drilling, development or operation for oil and gas, which by its terms might expire prior to the termination of this Agreement, is hereby extended beyond any such term so provided therein, so that it shall be continued in full force and effect for and during the term of this Agreement.

(e) Termination of this Agreement shall not affect any lease which, pursuant to the terms thereof or any applicable laws, shall continue in force and effect thereafter.

(f) Any Federal lease for a fixed term of twenty (20) years or any renewal thereof, or any part of such lease which is made subject to this Agreement, shall continue in force beyond the term provided therein until the termination hereof. Any other Federal lease committed hereto shall continue in force beyond the term so provided therein or by law as to the land committed so long as such lease remains subject hereto, provided that production is had in paying quantities under this Unit Agreement prior to the expiration date of the term of such lease; or, in the event actual drilling operations are commenced on Unitized Land in accordance with the provisions of this Agreement, prior to the end of the primary term of such lease, and are being diligently prosecuted at that time, such lease shall be extended for two years and so long thereafter as oil or gas is produced in paying quantities in accordance with the provisions of the Mineral Leasing Act Revision of 1960.

(g) Any lease embracing lands of the State of New Mexico which is made subject to this Agreement shall continue in force beyond the term provided therein as to the lands committed hereto until the termination hereof.

(h) Any lease embracing lands of the State of New Mexico having only a portion of its land committed hereto shall be segregated as to that portion committed and that not committed, and the terms of such lease shall apply separately to such segregated portions commencing as of the effective date hereof. Provided, however, that notwithstanding any of the provisions of this Agreement to the contrary, such lease shall continue in full force and effect beyond the terms provided therein as to all lands embraced in such lease if oil or gas is, or has heretofore been, discovered in paying quantities on some part of the lands embraced in such lease committed to this Agreement or, so long as a portion of the Unitized Substances produced from the Unit Area is, under the terms of this Agreement, allocated to the portion of the lands covered by such lease committed to this Agreement, or, at any time during the term hereof, as to any lease that is then valid and subsisting and upon which the lessee or the Unit Operator is then engaged in bona fide drilling, reworking, or secondary recovery operations on any part of the lands embraced in such lease, then the same as to all lands embraced therein shall remain in full force and effect so long as such operations are diligently prosecuted, and, if they result in the production of oil or gas, said lease shall continue in full force and effect as to all of the lands embraced therein, so long thereafter as oil or gas in paying quantities is being produced from any portion of said lands.

(i) The segregation of any Federal lease committed to this Agreement is governed by the following provisions in the fourth paragraph of Sec. 17(j) of the Mineral Leasing Act, as amended by the Act of September 2, 1960 (74 Stat. 781-784): "Any (Federal) lease heretofore or hereafter committed to any such (unit) plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the effective date of unitization: Provided, however, That any such lease as to the non-unitized portion shall continue in force and effect for the term thereof but for not less than two years from the date of such segregation and so long thereafter as oil or gas is produced in paying quantities."

SECTION 21. MATHEMATICAL ERRORS. It is hereby agreed by all parties to this Agreement that Unit Operator is empowered to correct any mathematical or clerical errors which might exist in the pertinent exhibits to this Agreement and file such changes with the Commissioner and Supervisor.

SECTION 22. COVENANTS RUN WITH LAND. The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and

any grant, transfer or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee, or other successor in interest. No assignment or transfer of any Working Interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer; and no assignment or transfer of any Royalty Interest subject hereto shall be binding upon the Working Interest Owner responsible therefor until the first day of the calendar month after said Working Interest Owner is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument of transfer.

SECTION 23. EFFECTIVE DATE AND TERM. This Agreement shall become binding upon each party who executed or ratified it as of the date of execution or ratification by such party and shall become effective as of 7 a.m. on the first day of the month next following:

(a) The execution or ratification of this Agreement and the Unit Operating Agreement by Working Interest Owners sufficiently to effectively commit under Section 14 (TRACTS QUALIFIED FOR UNIT PARTICIPATION) hereof 85% (measured by surface area) of the lands comprising the Unit Area; and

(b) The approval of this Agreement by the Commissioner, the Director, and the Commission; and

(c) The filing of at least one counterpart of this Agreement for record in the office of the county clerk of Lea County, New Mexico, by the Unit Operator; and provided, further, that if (a), (b), and (c) above are not accomplished on or before July 1, 1967, this Agreement shall ipso facto expire on said date (hereinafter called "expiration date") and thereafter be of no further force or effect, unless prior thereto Working Interest Owners owning a

combined Unit Participation of at least 75% have become parties to this Agreement and have decided to extend the expiration date for a period not to exceed six (6) months. If the expiration date is so extended and requirements of Section 23(a) are not accomplished on or before the extended expiration date, this Agreement shall ipso facto terminate on the extended expiration date and thereafter be of no further effect.

(d) Unit Operator shall, within thirty (30) days after the effective date of this Agreement, file for record with the Supervisor and the Commissioner in the offices where a counterpart of this Agreement is recorded, a certificate to the effect that this Agreement has become effective according to its terms and stating further the effective date.

The term of this Agreement shall be for and during the time that Unitized Substances are, or can be, produced in paying quantities from the Unitized Land and as long thereafter as drilling, reworking or other operations (including secondary recovery operations) are prosecuted thereon without cessation of more than ninety (90) consecutive days, and so long thereafter as Unitized Substances can be produced as aforesaid, unless sooner terminated by Working Interest Owners in the manner hereinafter provided.

This Agreement may be terminated at any time with the approval of the Commissioner, the Director, and the Commission by Working Interest Owners owning ninety (90%) per cent Unit Participation whenever such Working Interest Owners determine that Unit operations are no longer profitable, feasible, or in the interest of conservation. Notice of any such termination shall be given by Unit Operator to all parties hereto.

Upon termination of this Agreement, the further development and operation of the Unit Area as a Unit shall be abandoned, Unit operations shall cease, and thereafter the

parties hereto shall be governed by the terms and provisions of the leases and contracts affecting the separate tracts.

If not otherwise covered by the leases **unitized** under this Agreement, Royalty Owners hereby grant Working Interest Owners a period of six (6) months after termination of this Agreement in which to salvage, sell, distribute or otherwise dispose of the personal property and facilities used in connection with Unit operations.

SECTION 24. RATE OF PROSPECTING, DEVELOPMENT AND PRODUCTION. All production and the disposal thereof shall be in conformity with allocations and quotas made or fixed by any duly authorized person or regulatory body under any Federal or State statute. The Director is hereby vested with authority to alter or modify from time to time, in his discretion, the rate of prospecting and development and within the limits made or fixed by the Commission to alter or modify the quantity and rate of production under this Agreement, such authority being hereby limited to alteration or modification in the public interest, the purpose thereof and the public interest to be served thereby to be stated in the order of alteration or modification; provided, further, that no such alteration or modification shall be effective as to any land of the State of New Mexico as to the rate of prospecting and development in the absence of the specific written approval thereof by the Commissioner and as to any lands of the State of New Mexico or privately owned lands subject to this Agreement as to the quantity and rate of production in the absence of specific written approval thereof by the Commission.

Powers in this Section vested in the Director and Commissioner shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less

than fifteen (15) days from notice.

SECTION 25. NON-DISCRIMINATION. In connection with the performance of work under this Agreement, the operator agrees to comply with all of the provisions of Section 202 (1) to (7) inclusive, of Executive Order 11246, as amended (30 F.R. 12319), which are hereby incorporated by reference in this Agreement.

SECTION 26. APPEARANCES. Unit Operator shall have the right to appear for or on behalf of any and all interests affected hereby before the Commissioner, the Department, and the Commission, and to appeal from any order issued under the rules and regulations of the Commissioner, the Department, or the Commission, or to apply for relief from any of said rules and regulations or in any proceedings relative to operations before the Commissioner, the Department, or the Commission, or any other legally constituted authority; provided, however, that any other interested party shall also have the right at his or its own expense to be heard in any such proceeding.

SECTION 27. NOTICES. All notices, demands, objections or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if made in writing and personally delivered to the party or parties or sent by postpaid certified mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party or parties may have furnished in writing to the party sending the notice, demand or statement.

SECTION 28. NO WAIVER OF CERTAIN RIGHTS. Nothing in this Agreement contained shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense as to the validity or invalidity of any law of the State wherein said Unitized Lands are located, or rules or regulations issued thereunder in any way affecting such party, or as a waiver by any such party of any right beyond his or its authority to waive.

SECTION 29. EQUIPMENT AND FACILITIES - FIXTURES ATTACHED TO REALTY. Each Working Interest Owner has hereto placed and used on its Tract or Tracts committed to this Agreement various well and lease equipment and other property, equipment and facilities. It is also recognized that additional equipment and facilities may hereafter be placed and used upon the Unit Area as now or hereafter constituted. Therefore, for all purposes of this Agreement, any and all such equipment shall be considered to be personal property and not fixtures attached to realty. Accordingly, said well and lease equipment and personal property is hereby severed from the mineral estates affected by this Agreement, and it is agreed that any and all such equipment and personal property shall be and remain personal property for all purposes.

SECTION 30. UNAVOIDABLE DELAY. All obligations under this Agreement requiring the Unit Operator to commence or continue secondary recovery operations or to operate on or produce Unitized Substances from any of the lands covered by this Agreement shall be suspended while, but only so long as, the Unit Operator, despite the exercise of due care and diligence, is prevented from complying with such obligations,

in whole or in part, by strikes, acts of God, Federal, State or municipal law or agency, unavoidable accident, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of the Unit Operator, whether similar to matters herein enumerated or not.

SECTION 31. LOSS OF TITLE. In the event title to the Working Interest in any Tract of Unitized Land shall fail so as to render the Tract inoperable under this Agreement and the true owner cannot be induced to join this Unit Agreement, such Tract shall be automatically regarded as not committed hereto effective as of 7:00 a.m., on the first day after such title failure is determined; and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title. In the event of a dispute as to title as to any Royalty, Working Interest or other interest subject thereto, payment or delivery on account thereof may be withheld without liability or interest until the dispute is finally settled; provided that, as to State or Federal land or leases, no payments of funds due the State of New Mexico or the United States of America shall be withheld, but such funds shall be deposited as directed by the Commissioner or the Supervisor (as the case may be), to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

Unit Operator as such is relieved from any responsibility for any defect or failure of any title hereunder.

SECTION 32. NON-JOINDER AND SUBSEQUENT JOINDER.

Joinder by any Royalty Owner, at any time, must be accompanied

by appropriate joinder of the corresponding Working Interest Owner in order for the interest of such Royalty Owner to be regarded as effectively committed. Joinder to the Unit Agreement by a Working Interest Owner, at any time, must be accompanied by appropriate joinder to the Unit Operating Agreement in order for such interest to be regarded as effectively committed to this Unit Agreement.

Any oil or gas interest in the Unitized Formation underlying the Unit Area not committed hereto prior to submission of this Agreement to the Commissioner and the Director for final approval may thereafter be committed hereto upon compliance with the applicable provisions of this Section and of Section 14 (TRACTS QUALIFIED FOR UNIT PARTICIPATION) hereof, at any time up to the effective date hereof on the same basis of participation as provided in said Section 14, by the owner or owners thereof subscribing, ratifying, or consenting in writing to this Agreement and, if the interest is a Working Interest, by the owner of such interest subscribing also to the Unit Operating Agreement.

It is understood and agreed, however, that, from and after the effective date hereof, the right of subsequent joinder by a Working Interest Owner as provided in this Section shall be governed by the provisions of Section 4 (EXPANSION) and of Section 13 (TRACT PARTICIPATION). Except as may be otherwise herein provided, subsequent joinders, as to Tracts within the Unit Area, shall be effective as of 7:00 a.m. of the first day of the month following the filing with the Commissioner and the Supervisor of duly executed counterparts

of any and all documents necessary to establish effective commitment of his interest to this Agreement.

SECTION 33. OIL IN LEASE TANKAGE ON EFFECTIVE DATE.

Unit Operator shall make a proper and timely gauge of all lease and other tanks on Unitized Land in order to ascertain the amount of merchantable oil above the pipeline connection in such tanks as of 7:00 a.m. on the effective date hereof. All such oil which has then been produced legally shall be and remain the property of the Working Interest Owner entitled thereto the same as if the Unit had not been formed; and such Working Interest Owner shall promptly remove said oil from the Unitized Land. Any such oil not so removed shall be sold by Unit Operator for the account of such Working Interest Owner, subject to the payment of all Royalty to Royalty Owners under the terms and provisions of the Unit Agreement and any applicable lease or leases and other contracts.

SECTION 34. COUNTERPARTS. This Agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties and may be ratified or consented to by separate instrument in writing specifically referring hereto, and shall be binding upon all those parties who have executed such a counterpart, ratification or consent hereto with the same force and effect as if all parties had signed the same document, and regardless of whether or not it is executed by all other parties owning or claiming an interest in the lands within the above-described Unit Area.

SECTION 35. TAXES. Each party hereto shall, for its own account, render and pay its share of any taxes levied

against or measured by the amount or value of the Unitized Substances produced from the Unitized Land; provided, however, that, if it is required or if it be determined that the Unit Operator or the several Working Interest Owners must pay or advance said taxes for the account of the parties hereto, it is hereby expressly agreed that the parties so paying or advancing said taxes shall be reimbursed therefor by the parties hereto, including Royalty Owners, who may be responsible for the taxes on their respective allocated share of said Unitized Substances. No such taxes shall be charged to the United States or to the State of New Mexico, nor to any lessor who has a contract with a lessee which requires his lessee to pay such taxes.

SECTION 36. CONFLICT OF SUPERVISION. Neither the Unit Operator nor the Working Interest Owners, nor any of them, shall be subject to any forfeiture, termination or expiration of any rights hereunder or under any leases or contracts subject hereto, or to any penalty or liability on account of delay or failure in whole or in part to comply with any applicable provisions thereof to the extent that the said Unit Operator or the Working Interest Owners, or any of them, are hindered, delayed or prevented from complying therewith by reason of failure of the Unit Operator to obtain, in the exercise of due diligence, the concurrence of proper representatives of the United States and proper representatives of the State of New Mexico in and about any matters or things concerning which it is required herein that such concurrence be obtained. The parties hereto, including the Commission, agree that all powers and authority

vested in the Commission in and by any provisions of this Agreement are vested in the Commission and shall be exercised by it pursuant to the provisions of the laws of the State of New Mexico and subject in any case to appeal or judicial review as may now or hereafter be provided by the laws of the State of New Mexico.

SECTION 37. NO PARTNERSHIP. It is expressly agreed that the relation of the parties hereto is that of independent contractors and nothing in this Agreement contained, express or implied, or any operations conducted hereunder, shall create or be deemed to have created a partnership or association between the parties hereto or any of them.

SECTION 38. BORDER AGREEMENTS. Subject to the approval of the Commissioner and the Supervisor, the Unit Operator, with concurrence of 75% of the voting interest of the Working Interest Owners, may enter into a border-protection agreement or agreements with the Working Interest Owners of adjacent lands along the exterior boundary of the Unit Area with respect to the operations in the border area for the maximum ultimate recovery, conservation purposes and proper protection of the parties and interests.

SECTION 39. LIMITATION OF APPROVALS. Notwithstanding anything herein contained to the contrary, if no Federal lands are committed to this Agreement, then no consents or approvals provided herein shall be required of the Department, the Secretary, the Director, or the Supervisor; and it shall not be necessary to file any instrument hereunder with said officers or agencies unless and until Federal Lands are so committed

to this Agreement; likewise, if no State lands are committed to this Agreement, then no consents or approvals provided herein shall be required of the Commissioner, and it shall not be necessary to file any instrument hereunder with said officer unless and until State lands are so committed to this Agreement; likewise, if no fee lands are committed to this Agreement, then no consents or approvals provided herein shall be required of the Commission; and it shall not be necessary to file any instrument hereunder with said office unless and until fee lands are so committed to this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and have set opposite their respective names the date of execution.

ATTEST:

Secretary

Date: _____

CONTINENTAL OIL COMPANY

By _____
Its _____

UNIT OPERATOR AND
WORKING INTEREST OWNER

ATTEST:

Date: _____

PAN AMERICAN PETROLEUM CORPORATION

By _____
Its _____

ATTEST:

Date: _____

THE ATLANTIC REFINING COMPANY

By _____
Its _____

ATTEST:

Date: _____

ATTEST:

Date: _____

ATTEST:

Date: _____

ATTEST:

Date: _____

ATTEST:

Date: _____

ATTEST:

Date: _____

ATTEST:

Date: _____

CHEVRON OIL COMPANY

By _____

By _____
Its Attorneys in Fact

GULF OIL CORPORATION

By _____
Its _____

TWO STATES OIL COMPANY

By _____
Its _____

SKELLY OIL COMPANY

By _____
Its _____

AMBASSADOR OIL CORPORATION

By _____
Its _____

KEY STATES OIL COMPANY

By _____
Its _____

TEXAS PACIFIC OIL COMPANY

By _____
Its _____

HERMAN R. CRILE

STATE OF _____

X
X
X

COUNTY OF _____

The foregoing instrument was acknowledged before me
this _____ day of _____, 1966, by _____,
_____ of CONTINENTAL OIL COMPANY, a Delaware
corporation, on behalf of said corporation.

Notary Public

County, _____

My Commission Expires:

STATE OF _____

X
X
X

COUNTY OF _____

The foregoing instrument was acknowledged before me
this _____ day of _____, 1966, by _____,
_____ of PAN AMERICAN PETROLEUM CORPORATION, a
corporation, on behalf of said corporation.

Notary Public

County, _____

My Commission Expires:

STATE OF _____

X
X
X

COUNTY OF _____

The foregoing instrument was acknowledged before me
this _____ day of _____, 1966, by _____,
_____ of THE ATLANTIC REFINING COMPANY, a
corporation, on behalf of said corporation.

Notary Public

County, _____

My Commission Expires:

STATE OF _____ X
COUNTY OF _____ X

The foregoing instrument was acknowledged before me
this _____ day of _____, 1966, by _____
and _____,
Attorneys in Fact for **CHEVRON OIL COMPANY**, a _____
corporation, on behalf of said corporation.

Notary Public

County, _____

My Commission Expires:

STATE OF _____ X
COUNTY OF _____ X

The foregoing instrument was acknowledged before me
this _____ day of _____, 1966, by _____,
_____ of **GULF OIL CORPORATION**, a _____
corporation, on behalf of said corporation.

Notary Public

County, _____

My Commission Expires:

STATE OF _____ X
COUNTY OF _____ X

The foregoing instrument was acknowledged before me
this _____ day of _____, 1966, by _____,
_____ of **TWO STATES OIL COMPANY**, a _____
corporation, on behalf of said corporation.

Notary Public

County, _____

My Commission Expires:

STATE OF _____ X
COUNTY OF _____ X

The foregoing instrument was acknowledged before me
this _____ day of _____, 1966, by _____,
_____ of SKELLY OIL COMPANY, a _____
corporation, on behalf of said corporation.

Notary Public
_____ County, _____

My Commission Expires:

STATE OF _____ X
COUNTY OF _____ X

The foregoing instrument was acknowledged before me
this _____ day of _____, 1966, by _____,
_____ of AMBASSADOR OIL CORPORATION, a _____
corporation, on behalf of said corporation.

Notary Public
_____ County, _____

My Commission Expires:

STATE OF _____ X
COUNTY OF _____ X

The foregoing instrument was acknowledged before me
this _____ day of _____, 1966, by _____,
_____ of KEY STATES OIL COMPANY, a _____
corporation, on behalf of said corporation.

Notary Public
_____ County, _____

My Commission Expires:

STATE OF _____ X
COUNTY OF _____ X

The foregoing instrument was acknowledged before me
this _____ day of _____, 1966, by HERMAN R.
CRILE.

Notary Public

County, _____

My Commission Expires:

STATE OF _____ X
COUNTY OF _____ X

The foregoing instrument was acknowledged before me this
_____ day of _____, 1966, by _____,
_____ of TEXAS PACIFIC OIL COMPANY, a
_____ corporation, on behalf of said corporation.

Notary Public

County, _____

My Commission Expires:

EXHIBIT "B"
EUMONT-HARDY UNIT AGREEMENT

Tr. No.	Description of Land	No. of Acres	Serial No. & Expiration Date	Basic Royalty	Record Lessee	Working Int. Owner and Percentage	Overriding Royalty Ownership
1	Lots 1, 2 & 3, Sec. 31, T20S, R38E	120.38	LC 031696(b) HBP	USA-12.5% SS to 33.33%	Sophia Meyer	Continental Oil 25% Atlantic Refining 25% Pan Am. Petro. Corp. 25% Chevron Oil 25%	None
2	NW/4 SE/4 Sec. 6, T21S, R37E	40.00	LC 031741(b) HBP	USA-12.5% SS to 33.33%	Est. of Wilbur C. Hawk	Continental Oil 25% Atlantic Refining 25% Pan Am. Petro. Corp. 25% Chevron Oil 25%	None
3	Lot 1, Sec. 6 T21S, R37E	37.23	LC 034749 1-1-69	USA-12.5% to 25%	Pan American Petro. Corp.	Pan American Petro. Corp. 100%	None
Three Federal tracts containing 197.61 acres or 10.24% of Unit Area.							
4	SW/4 SW/4 Sec. 25 T20S, R37E	40.00	B-230-1 2-28-38 HBP	State of N. Mex. 12.5%	Gypsy Oil Co.	Gulf Oil Corp. 100% (See Note 1, below)	None
5	Lots 1, 8, 9 Sec. 1, T21S, R36E	116.90	B-1535 HBP	State of N. Mex. 12.5%	Continental Oil Co.	Continental Oil Co. 100%	None
6	NE/4 NW/4 Sec. 36, T20S, R37E	40.00	B-2366 HBP	State of N. Mex. 12.5%	Continental Oil Co.	Continental Oil Co. 100%	None

(1) Subject to 20% net profit interest of Petroleum Land & Royalty Syndicate.

EXHIBIT "B"
EUMONT-HARDY UNIT AGREEMENT

of es	Serial No. & Expiration Date	Basic Royalty	Record Lessee	Working Int.Owner and Percentage	Overriding Royalty Ownership	Tract Partici- pation
38	LC 031696(b) HBP	USA-12.5% SS to 33.33%	Sophia Meyer	Continental Oil 25% Atlantic Refining 25% Pan Am. Petro. Corp. 25% Chevron Oil 25%	None	5.93990%
00	LC 031741(b) HBP	USA-12.5% SS to 33.33%	Est. of Wilbur C. Hawk	Continental Oil 25% Atlantic Refining 25% Pan Am. Petro. Corp. 25% Chevron Oil 25%	None	0.89907%
23	LC 034749 1-1-69	USA-12.5% to 25%	Pan American Petro. Corp.	Pan American Petro. Corp. 100%	None	2.02859%
al tracts containing 197.61 acres or 10.24% of Unit Area.						
00	B-230-1 2-28-36 HBP	State of N. Mex. 12.5%	Gypsy Oil Co.	Gulf Oil Corp. 100% (See Note 1, below)	None	0.81514%
90	B-1535 HBP	State of N. Mex. 12.5%	Conti- nental Oil Co.	Continental Oil Co. 100%	None	3.59273%
00	B-2366 HBP	State of N. Mex. 12.5%	Conti- nental Oil Co.	Continental Oil Co. 100%	None	1.03698%

Subject to 20% net profit interest of Petroleum Land & Royalty Syndicate.

Exhibit "B" (Continued)

Tr. No.	Description of Land	No. of Acres	Serial No. & Expiration Date	Basic Royalty	Record Lessee	Working Int. Owner and Percentage	Overriding Royalty Ownership
7	E/2, SW/4 Sec. 36, T20S, R37E	480.00	B-2656 HBP	State of N. Mex. 12.5%	Continental Oil Co.	Continental Oil Co. 100%	None
8	NW/4 NE/4 Sec. 36, T20S, R37E	40.00	B-11300 HBP	State of N. Mex. 12.5%	Tidewater Oil Co.	Continental Oil Co. 100%	Tidewater Oil 5.46875% to 10.9375%
9	S/2 SE/4 Sec. 25, T20S, R37E	80.00	B-11349 HBP	State of N. Mex. 12.5%	Continental Oil Co.	Continental Oil Co. 25% Atlantic Refining Co. 25% Pan American Petr. 25% Chevron Oil Co. 25%	None
10	SE/4 SW/4 Sec. 25, T20S, R37E	40.00	E-1402 HBP	State of N. Mex. 12.5%	Continental Oil Co.	Continental Oil Co. 25% Atlantic Refining 25% Pan American Petr. 25% Chevron Oil Co. 25%	None
11	S/2 NW/4 Sec. 36, T20S, R37E	80.00	E-5376 HBP	State of N. Mex. 12.5%	Continental Oil Co.	Continental Oil Co. 100%	None
Eight State tracts containing 916.90 acres, or 47.50% of Unit Area.							
12	Lots 9, 10, 11, 12, 14, 15, 16, Sec. 6, T21S, R36E	276.57	HBP (See Appendix, Note 2)		Pan American	Pan American Petro. 100%	None
13	Lots 4, 5, 6, Sec. 5, T21S, R37E	117.37	8-22-39 HBP	E.C. Hill 10.71429% First Natl Bank Tr, U/W Allie M. Lee 1.78571%	The Mid-West Refg. Co.	Pan American Petr. 100%	None

Exhibit "B" (Continued)

No. of Acres	Serial No. & Expiration Date	Basic Royalty	Record Lessee	Working Int. Owner and Percentage	Overriding Royalty Ownership	Tract Participation
480.00	B-2656 HBP	State of N. Mex. 12.5%	Continental Oil Co.	Continental Oil Co. 100%	None	23.76508%
40.00	B-11300 HBP	State of N. Mex. 12.5%	Tidewater Oil Co.	Continental Oil Co. 100%	Tidewater Oil Co. 5.46875% to 10.9375%	0.21508%
30.00	B-11349 HBP	State of N. Mex. 12.5%	Continental Oil Co.	Continental Oil Co. 25% Atlantic Refining Co. 25% Pan American Petr. 25% Chevron Oil Co. 25%	None	2.91118%
40.00	E-1402 HBP	State of N. Mex. 12.5%	Continental Oil Co.	Continental Oil Co. 25% Atlantic Refining 25% Pan American Petr. 25% Chevron Oil Co. 25%	None	1.23579%
80.00	E-5376 HBP	State of N. Mex. 12.5%	Continental Oil Co.	Continental Oil Co. 100%	None	1.66619%
State tracts containing 916.90 acres, or 47.50% of Unit Area.						
276.57	HBP (See Appendix, Note 2)		Pan American	Pan American Petro. 100%	None	19.49753%
117.37	8-22-39 HBP	F.C. Hill 10.71429% First Natl Bank Tr, U/W Allie M. Lee 1.78571%	The Mid-west Refg. Co.	Pan American Petr. 100%	None	8.75245%

Exhibit "B" (Continued)

Tr. No.	Description of Land	No. of Acres	Serial No. Expiration Date	Basic Royalty	Record Lessee	Working Int.Owner and Percentage	Overriding Royalty Ownership
14	Lot 4, SE/4 SW/4, Sec. 31 T20S, R37E	80.02	5-8-46 HBP	(Appendix, Note 3)	Gypsy Oil Co.	Two States Oil Co. 50.0% Herman R. Crile 12.5% Key States Oil Co. 37.5%	Gulf Oil Corp. 6.125%
15	Lot 3, Sec. 5 T21S, R37E	37.50	5-8-46 HBP	(Appendix, Note 4)	Gypsy Oil Co.	Two States Oil Co. 62.5% Herman R. Crile 12.5% Key States Oil Co. 25.0%	Gulf Oil Corp. 6.125%
16	NE/4 SW/4 Sec. 6 T21S, R37E	40.00	7-9-38 HBP	Mae F. Currie & Barney Currie 100%	S. B. Crabtree	Anadarko Prod.Co. 50.0% Texas Pacific Oil 50.00%	Gulf Oil Corp. 6.125% to 16.667%
17	Lots 2, 3, 4, 5, 6, 7, Sec. 6. T21S, R37E	224.26	HBP	(Appendix, Note 5)	Elmer C. & Cora Hill	Skelly Oil Company 100%	None
18	Lot 8, Sec. 6 T21S, R37E	40.00	7-19-65	(Appendix, Note 6)	Roy E. Kimsey, Jr.	Continental Oil Co. 100% as Agent for Eumont-Hardy W.I. Owners	Roy E. Kimsey, Jr. 12.5%

Seven fee tracts containing 815.72 acres, or 42.26% of Unit Area.
Total of 18 tracts containing 1,930.23 acres.

Exhibit "B" (Continued)

No. of Acres	Serial No. Expiration Date	Basic Royalty	Record Lessee	Working Int.Owner and Percentage	Overriding Royalty Ownership	Tract Participi- pation
80.02	5-8-46 HBP	(Appendix, Note 3)	Gypsy Oil Co.	Two States Oil Co. 50.0% Herman R. Crile 12.5% Key States Oil Co. 37.5%	Gulf Oil Corp. 6.125%	6.48176%
37.50	5-8-46 HBP	(Appendix, Note 4)	Gypsy Oil Co.	Two States Oil Co. 62.5% Herman R. Crile 12.5% Key States Oil Co. 25.0%	Gulf Oil Corp. 6.125%	1.81188%
40.00	7-9-38 HBP	Mae F. Currie & Barney Currie 100%	S. B. Crabtree	Anadarko Prod.Co. 50.0% Texas Pacific Oil 50.00%	Gulf Oil Corp. 6.125% to 16.667%	1.69165%
224.26	HBP	(Appendix, Note 5)	Elmer C. & Cora Hill	Skelly Oil Company 100%	None	16.58149%
40.00	7-19-65	(Appendix, Note 6)	Roy E. Kimsey, Jr.	Continental Oil Co. 100% as Agent for Eumont-Hardy W.I. Owners	Roy E. Kimsey, Jr. 12.5%	1.07751%

Seven fee tracts containing 815.72 acres, or 42.26% of Unit Area.
Total of 18 tracts containing 1,930.23 acres.

EUMONT HARDY UNIT
APPENDIX TO EXHIBIT "B"

Note 2 - Basic Royalty Owners Under Tract 12

E. C. Hill and Cora Hill	08.51885
S. P. Johnson, Sr. Estate	00.34722
First National Bank of Nevada, Tr U/W of Allie M. Lee, Dec'd	00.85617
Ward R. Vickery	00.52083
Lloyd W. Vickery	00.52083
Herbert L. Spencer, Veronica D. Spencer and Robert D. Spencer, Tr, The Spencer Trust	01.04166
Vickery Oil Company	00.34722
Elizabeth Hannifin	00.34722
	<u>12.50000%</u>

Note 3 - Basic Royalty Owners Under Tract No. 14

L. G. Hill	06.25000
Southland Royalty Company	03.12500
M. S. Hamilton	01.56250
Margaret W. Faught	00.78125
Lura Flanagan	00.78125
	<u>12.50000%</u>

Note 4 - Basic Royalty Owners Under Tract No. 15

L. G. Hill and Ellen Hill	02.93874
M. S. Hamilton and Virginia Hamilton	01.65563
Jack Hazeltine and Audrey Hazeltine	03.12500
W. G. Phillips	00.29297
A. W. Goal	00.29297
J. W. Glass	00.29297
Essex Royalty Company	02.24610
Lura Flanagan	00.82781
Margaret W. Faught	00.82781
	<u>12.50000%</u>

Note 5 - Basic Royalty Owners Under Tract No. 17

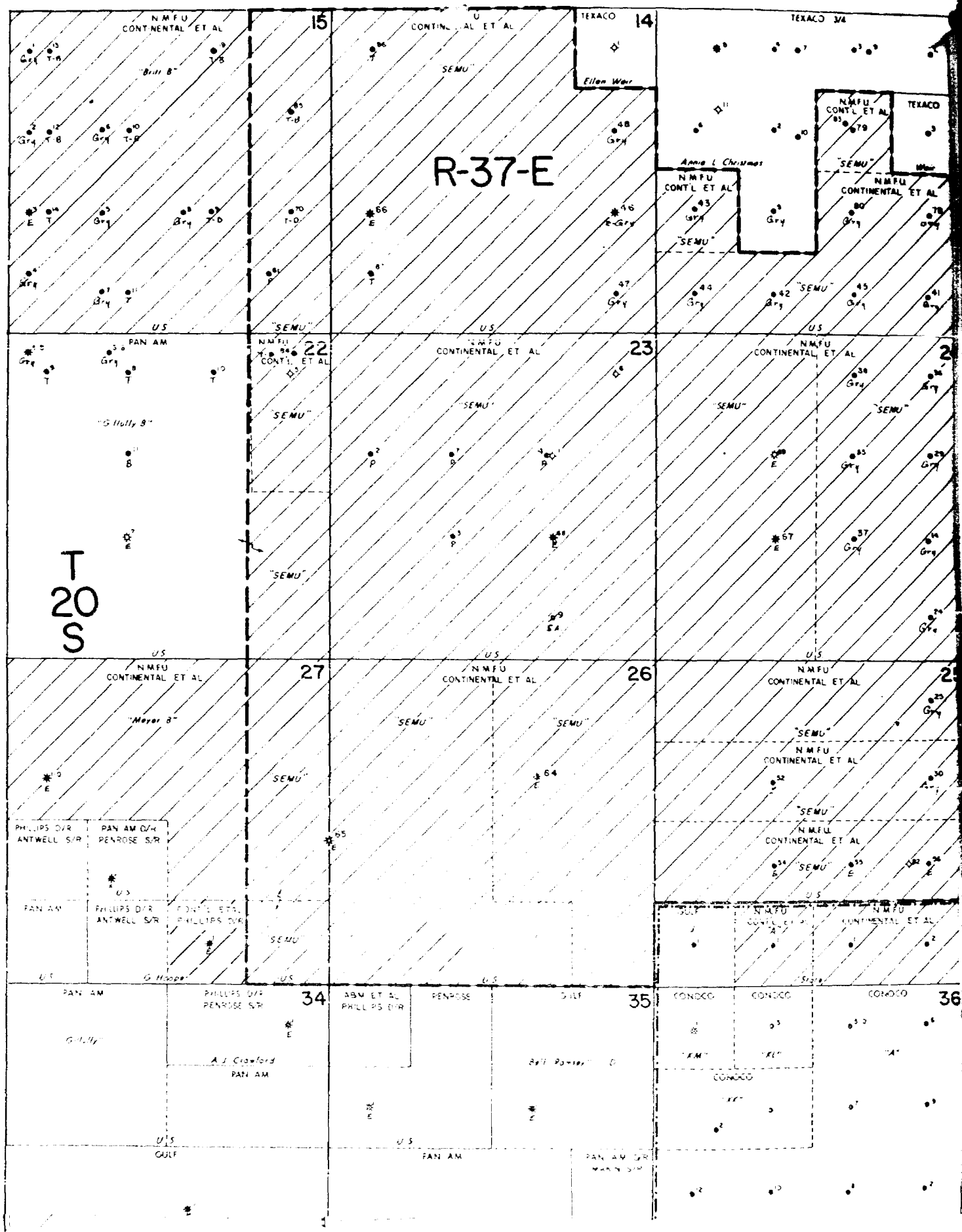
First National Bank of Nevada, Trustee U/W of Allie M. Lee, Dec'd.	00.85616
Elizabeth Hannifin	00.34722
Elmer C. Hill	08.51884
S. P. Johnson, Jr., Exec. Est. of S. P. Johnson, Sr.	00.34722
The Spencer Trust	01.04167
Vickery Oil Company	00.34722
Lloyd W. Vickery	00.52083
Ward R. Vickery	00.52084
	<u>12.50000%</u>

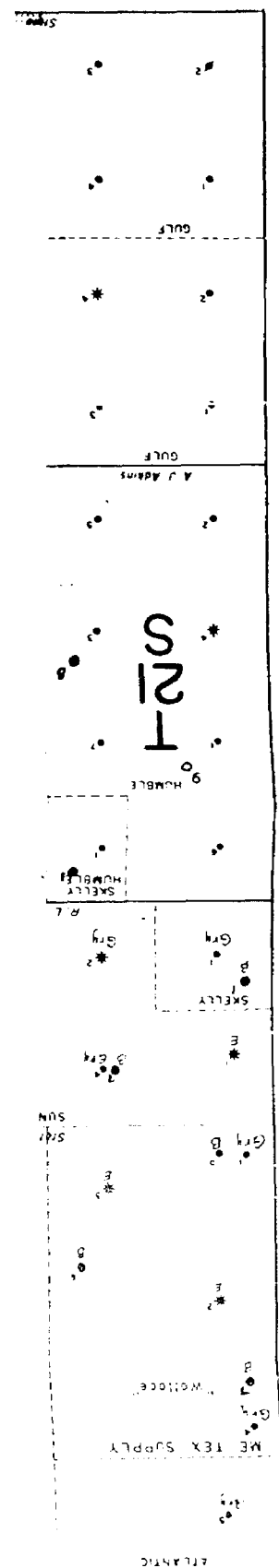
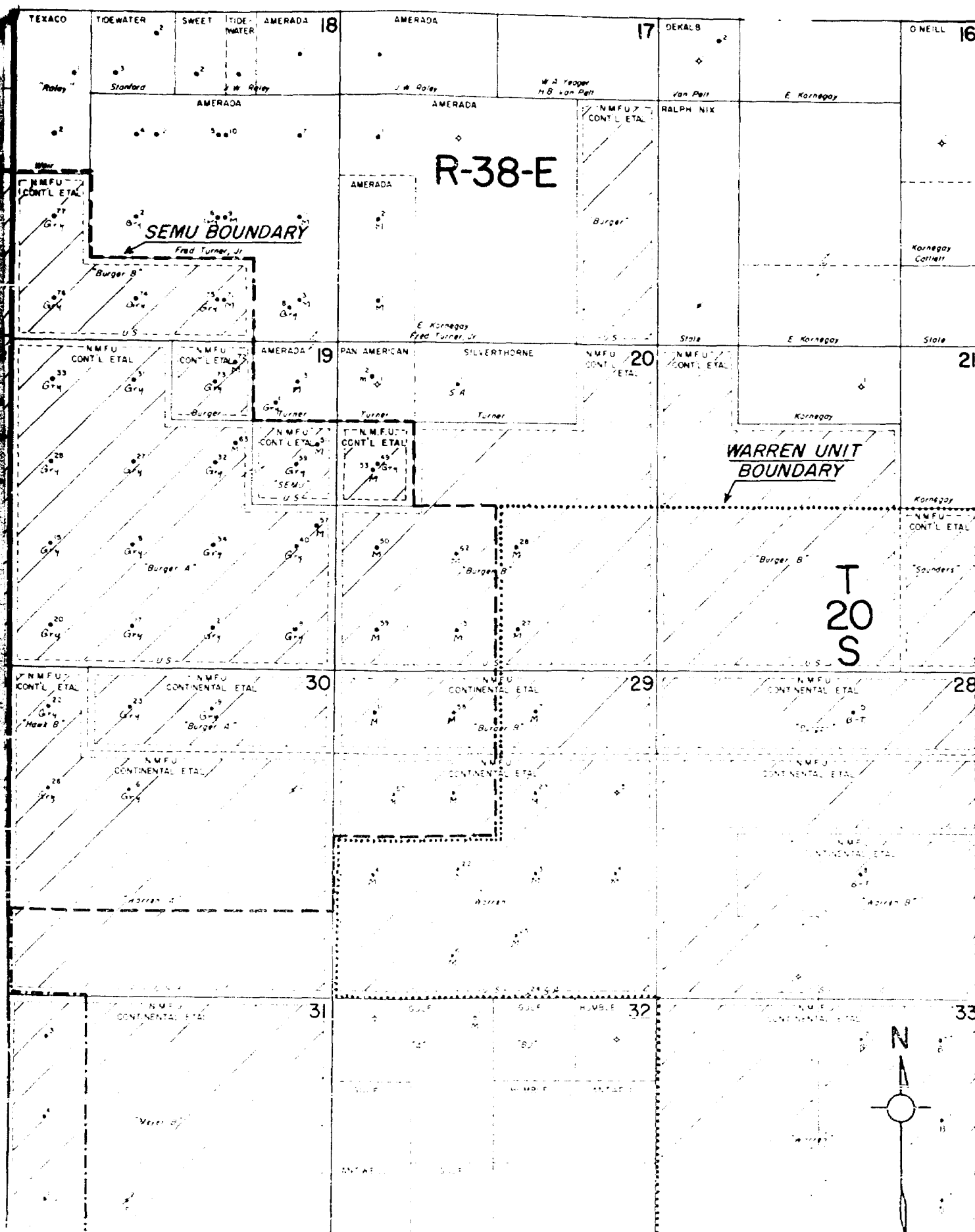
Note 6 - Basic Royalty Owners Under Tract No. 18

E. C. Hill and wife, Cora	08.51883
The Spencer Trust	1.04166
A. M. Lee Estate	0.85616
S. P. Johnson Sr. Estate	0.34723
Elizabeth Hannifin	0.34723
Ward R. Vickery and W. Dean Vickery dba Vickery Oil Company	0.34723
Ward R. Vickery, et ux and Lloyd W. Vickery	1.04166
	<u>12.50000%</u>

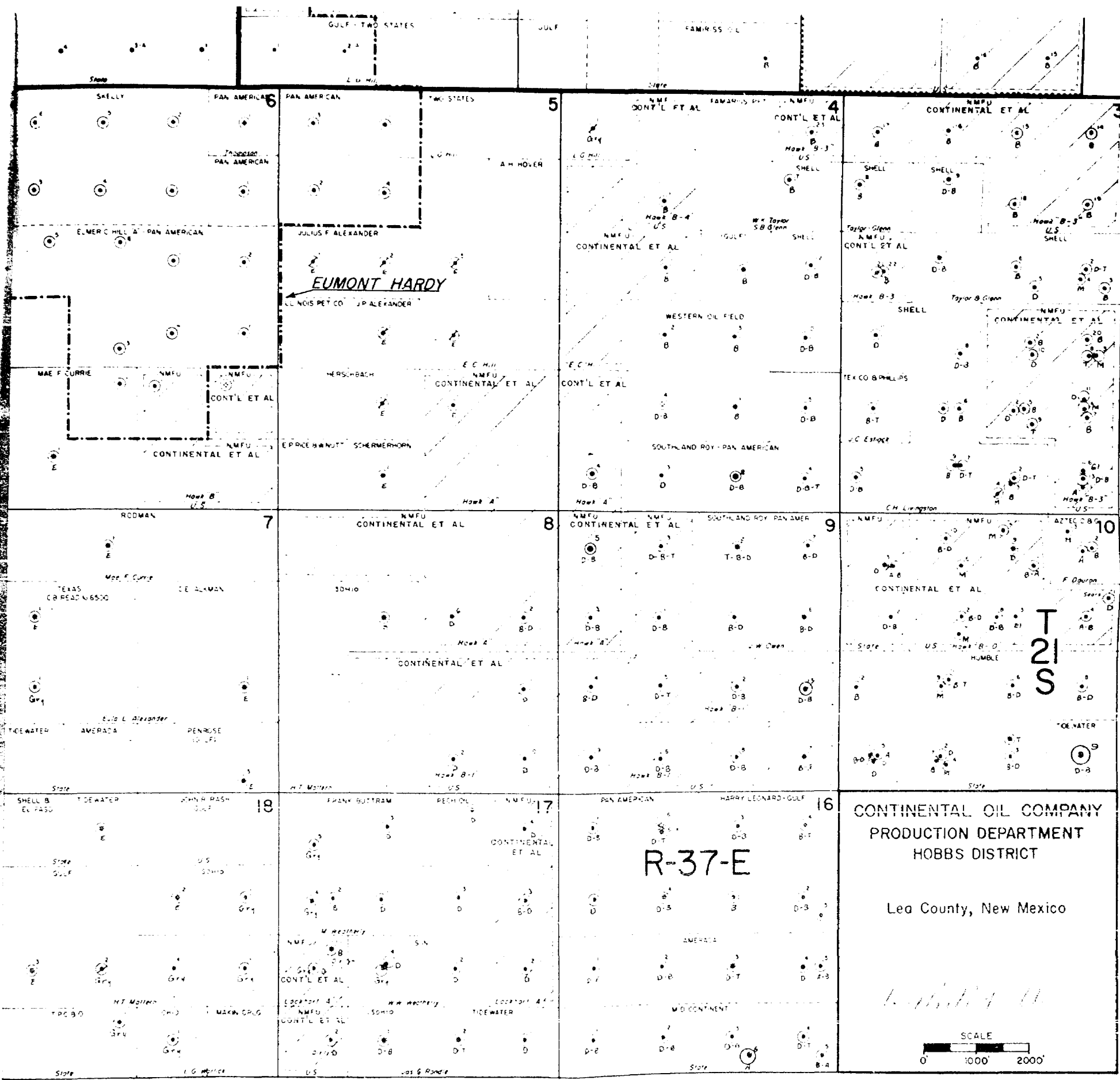
LEGEND

A-Abo
B-Blaine
D-Drinkard
E-Eumont
El-Ellenburger
Gl-Glorieta
Gry-Grayburg
M-McKee



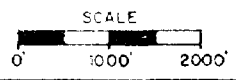


S.A. San Andres
T-1-111



CONTINENTAL OIL COMPANY
PRODUCTION DEPARTMENT
HOBBS DISTRICT

Lea County, New Mexico



Radioactivity Log

COMPANY CONTINENTAL OIL CO. WELL FIELD LOCATION COUNTY STATE	COMPANY: CONTINENTAL OIL CO.	Well Log
	WELL: STATE A-36 No. 10	
	FIELD: T20S, R37E	
	LOCATION: 1980' FS&WL, Sec. 36, T20S, R37E	
	COUNTY: LEA STATE: N.M.	
LOG NO. 2772	DATE: May 7, 1957	ELEV. 3700
		ELEV. 3700
		ELEV. 3700

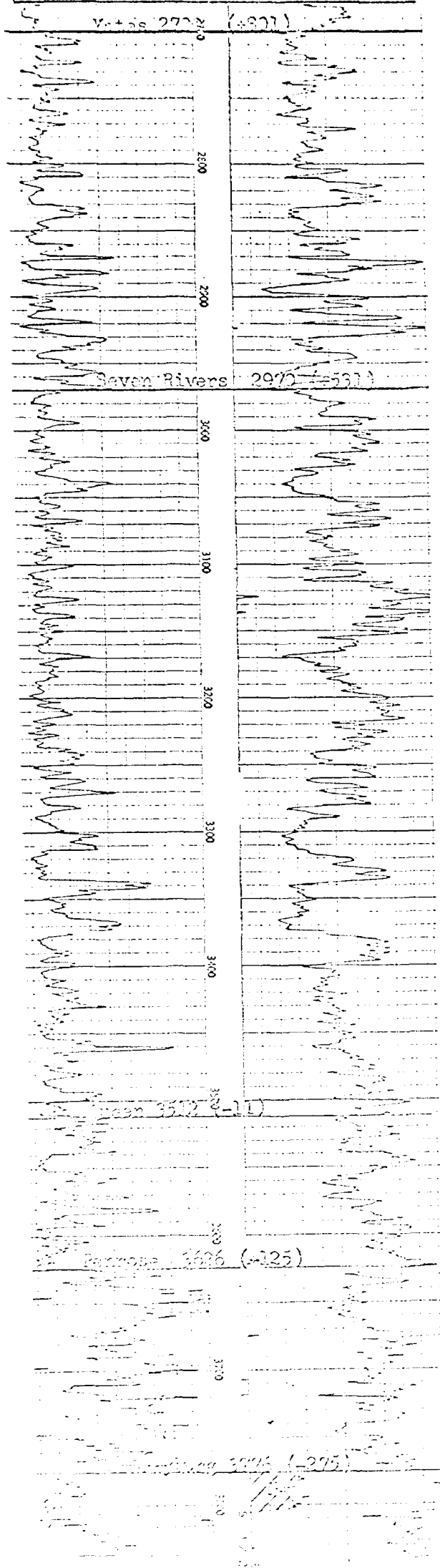
CONTINENTAL OIL COMPANY

State A-36 No. 10

1980' FS&WL, Sec. 36, T20S, R37E

Type log for proposed EUMONT
HARDY UNIT, EUMONT POOL, LEA
COUNTY, NEW MEXICO

Run on May 7, 1957



EUMONT-HARDY POOL UNIT - INJECTION WELL DATA

EXHIBIT No.

Company, Lease and Well No.	Total Depth and/or PBD	Surface Casing			Int. Casing			Production Casing		
		Size	Depth	Cement	Size	Depth	Cement	Size	Depth	Cement
Continental Oil Company										
State 25 No. 2	3800'	8 5/8	311	250		None		5 1/2	3799'	1360
State A-25 No. 1	3800'	8 5/8"	349	225		None		5 1/2	3799	1450
State A-36 No. 1	3845'/3790'	10 3/4"	224'	225	7 5/8"	1378	425	5 1/2	3520	425'
								4" slotted liner 3489'-3790'		
State A-36 No. 4	3810'/3780'		None			None		5 1/2	3515'	900
State A-36 No. 5	3800'/3797'	8 5/8"	331	225		None		5 1/2"	3799'	1506
State A-36 No. 8	3800'/3796'	8 5/8"	323	225		None		5 1/2"	3798'	1313
State A-36 No. 9	3830'/3813'	8 5/8"	290'	225		None		5 1/2"	3829'	250
State A-36 No. 11	3835'	8 5/8"	324'	250		None		5 1/2"	3834'	800
State A-36 No. 12	3800'	8 5/8"	344	250		None		5 1/2"	3799	915
State F-1 No. 2	3807'	10 3/4"	245'	225	7 5/8"	1355'	425	5 1/2"	3496'	425
State F-1 No. 3	3742'	7"	1318'	10		None		5 1/2"	3570'	600
State F-1 No. 4	3780'	7"	1187-1332'	5		None		5 1/2"	3510'	900
State KK-36 No. 1	3823'	8 5/8"	298'	225		None		5 1/2"	3819'	400
State KK-36 No. 2	3715'	8 5/8"	327'	225		None		5 1/2"	3714'	400
State KM-36 No. 1	3683'	8 5/8"	1373'	200		None		7"	3598'	200
Meyer B-31 No. 1	3790'	10 3/4"	192'	225	7 5/8"	1369'	425	5 1/2"	3506'	425
								4" perf. liner 3502-3790'		
Meyer B-31 No. 3	3800'/3793'	8 5/8"	323	225		None		5 1/2"	3799'	1360
Anadarko										
Mae Currie No. 1	3773'	10 3/4"	180	100	8 5/8"	1328'	100	7"	3492'	100
Pan American										
Hill "A" No. 2	3785'	13"	298'	200	9 5/8"	1385'	500	7"	3515'	300
Hill "A" No. 4	3770'	13"	293'	20	9 5/8"	1373'	500	7"	3510'	300
Hill "A" No. 6	3750'	13"	271'	180	8 5/8"	1386'	500	5 1/2"	3528'	225
Hill "C" No. 3	3755'	13"	311'	200	9 5/8"	1336'	500	7"	3465'	300
Hill "C" No. 4	3780'	13"	268'	200	9 5/8"	1373'	500	7"	3522'	300

EUMONT-HARDY POOL UNIT - INJECTION WELL DATA

EXHIBIT No. 5

Total Depth and/or PBD	Surface Casing			Int. Casing			Production Casing			Producing Int. (P) Perf. (OH) Open Hole
	Size	Depth	Cement	Size	Depth	Cement	Size	Depth	Cement	
3800'	8 5/8	311	250	None			5 1/2	3799'	1360	(P) 3656-3794'
3800'	8 5/8"	349	225	None			5 1/2	3799	1450	(P) 3665-3791'
3845'/3790'	10 3/4"	224'	225	7 5/8"	1378	425	5 1/2	3520	425'	(OH) 3520-3790'
							4" slotted liner 3489'-3790'			
3810'/3780'		None		None			5 1/2	3515'	900	(OH) 3515-3780'
3800'/3797'	8 5/8"	331	225	None			5 1/2"	3799'	1506	(P) 3662-3792'
3800'/3796'	8 5/8"	323	225	None			5 1/2"	3798'	1313	(P) 3602-3790
3830'/3813'	8 5/8"	290'	225	None			5 1/2"	3829'	250	(P) 3683-3798'
3835'	8 5/8"	324'	250	None			5 1/2"	3834'	800	(P) 3600-3734'
3800'	8 5/8"	344	250	None			5 1/2"	3799	915	(P) 3610-3744'
3807'	10 3/4"	245'	225	7 5/8"	1355'	425	5 1/2"	3496'	425	(OH) 3496-3807'
3742'	7"	1318'	10	None			5 1/2"	3570'	600	(OH) 3570-3742'
3780'	7"	1187-1332'	5	None			5 1/2"	3510'	900	(OH) 3510-3780'
3823'	8 5/8"	298'	225	None			5 1/2"	3819'	400	(P) 3645-3769
3715'	8 5/8"	327'	225	None			5 1/2"	3714'	400	(P) 3630-3700'
3683'	8 5/8"	1373'	200	None			7"	3598'	200	(OH) 3598-3683'
3790'	10 3/4"	192'	225	7 5/8"	1369'	425	5 1/2"	3506'	425	(OH) 3506-3790'
							4" perf. liner 3502-3790'			
3800'/3793'	8 5/8"	323	225	None			5 1/2"	3799'	1360	(P) 3654-3788'
3773'	10 3/4"	180	100	8 5/8"	1328'	100	7"	3492'	100	(OH) 3492-3773'
3785'	13"	298'	200	9 5/8"	1385'	500	7"	3515'	300	(OH) 3515-3785'
3770'	13"	293'	20	9 5/8"	1373'	500	7"	3510'	300	(OH) 3510-3770'
3750'	13"	271'	180	8 5/8"	1386'	500	5 1/2"	3528'	225	(OH) 3528-3750'
3755'	13"	311'	200	9 5/8"	1336'	500	7"	3465'	300	(OH) 3465-3755'
3780'	13"	268'	200	9 5/8"	1373'	500	7"	3522'	300	(OH) 3522-3780'

Eumont-Hardy Injection Well Data
Page 2

Company, Lease and Well No.	Total Depth and/or PBD	Surface Casing			Int. Casing			Production Casing			Pr (P) (O)
		Size	Depth	Cement	Size	Depth	Cement	Size	Depth	Cement	
<u>Skelly Oil Company</u>											
Hill No. 1	3870'	10 3/4"	186'	150		None		7"	3530'	500	(O)
Hill No. 3	3730'	16"	158'	150		None		7"	3520'	250	(O)
Hill No. 5	3741'	16"	134'	150		None		7"	3510'	250	(O)
<u>Gulf Oil Company</u>											
Bell Ramsay No. 1	3820'/3816'	8 5/8"	409'	325		None		5 1/2"	3820'	375	(P)
<u>Two States</u>											
Hill No. 2	3785'	7 5/8"	286'	175		None		5 1/2"	3528'	250	(O)

EXHIBIT No. 5

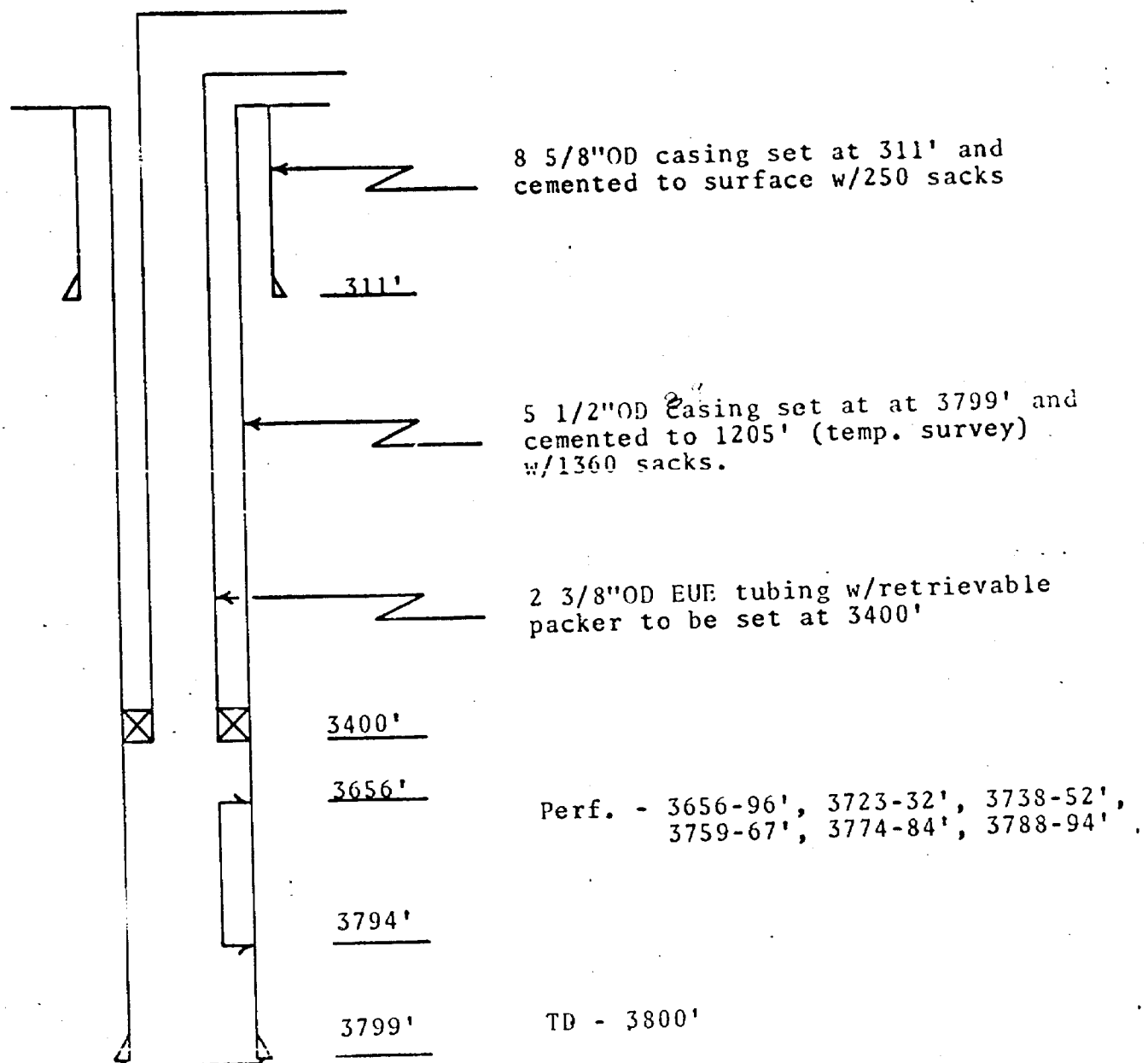
ion Well Data

<u>Total Depth and/or PBD</u>	<u>Surface Casing</u>			<u>Int. Casing</u>			<u>Production Casing</u>			<u>Producing. Int. (P) Perf. (OH) Open Hole</u>
	<u>Size</u>	<u>Depth</u>	<u>Cement</u>	<u>Size</u>	<u>Depth</u>	<u>Cement</u>	<u>Size</u>	<u>Depth</u>	<u>Cement</u>	
3870'	10 3/4"	186'	150		None		7"	3530'	500	(OH) 3530-3870'
3730'	16"	158'	150		None		7"	3520'	250	(OH) 3520-3730'
3741'	16"	134'	150		None		7"	3510'	250	(OH) 3510-3741'
3820'/3816'	8 5/8"	409'	325		None		5 1/2"	3820'	375	(P) 3660-3762'
3785'	7 5/8"	286'	175		None		5 1/2"	3528'	250	(OH) 3528-3785'

WATER INJECTION WELL DATA

Continental - State 25 No. 2

Elev. - BHF-3500'
DF-3510'



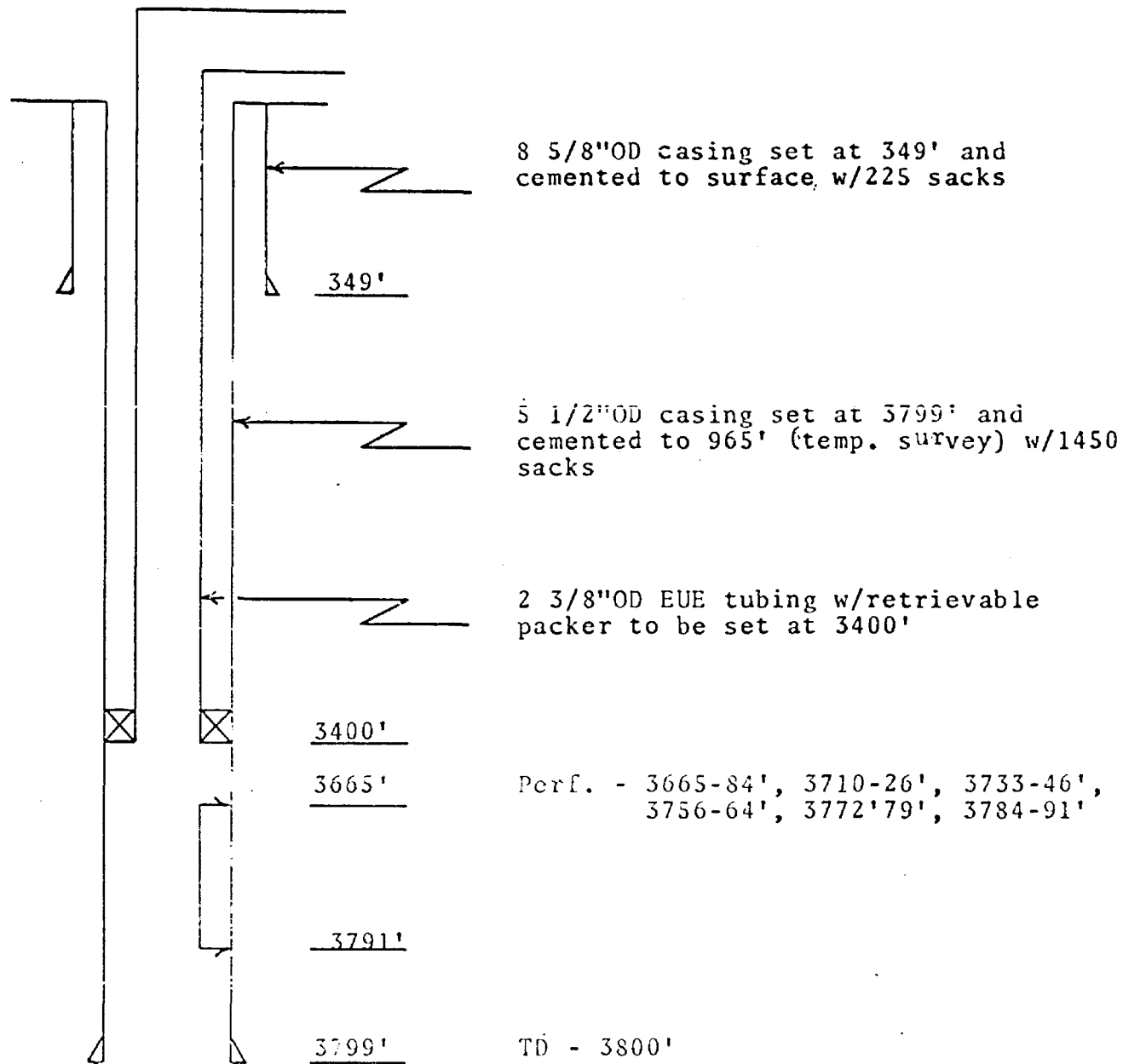
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3796'.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER WELL INJECTION DATA

Continental - State A-25 No. 1

Elev. - BHF-3502'
DF-3512'



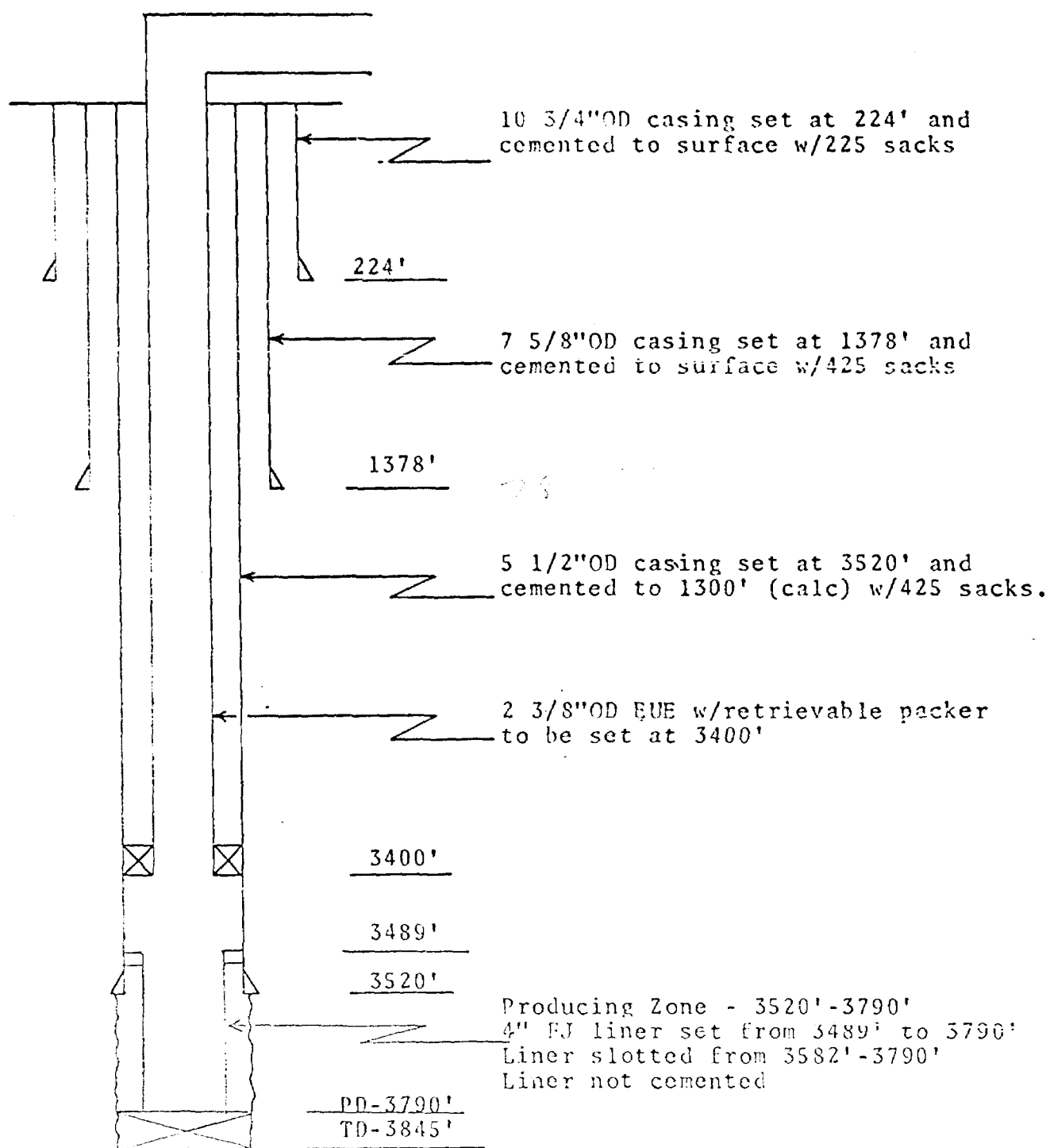
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3795'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No.1

Elev. - BHIF-3496'



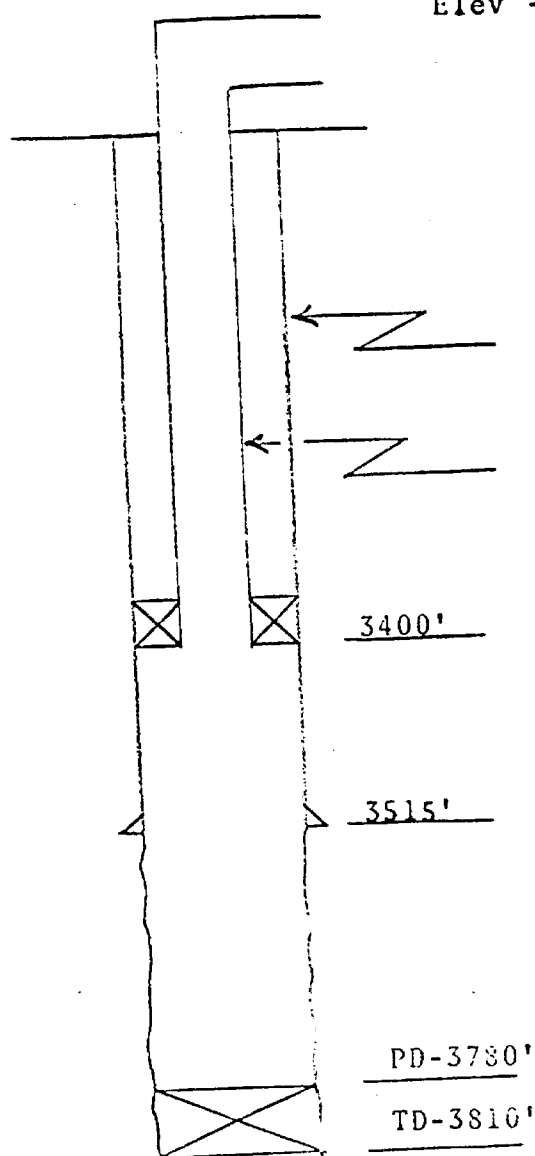
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3790'
2. Run tubing with packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 4

Elev - BHF - 3489'
DF - 3493'



5 1/2"OD casing set at 3515' and
cemented to surface w/900 sacks

2 3/8"OD EUE tubing w/retrievable
packer to be set at 3400'

Open Hole - 3515'-3780'
Shot from 3645' to 3780'

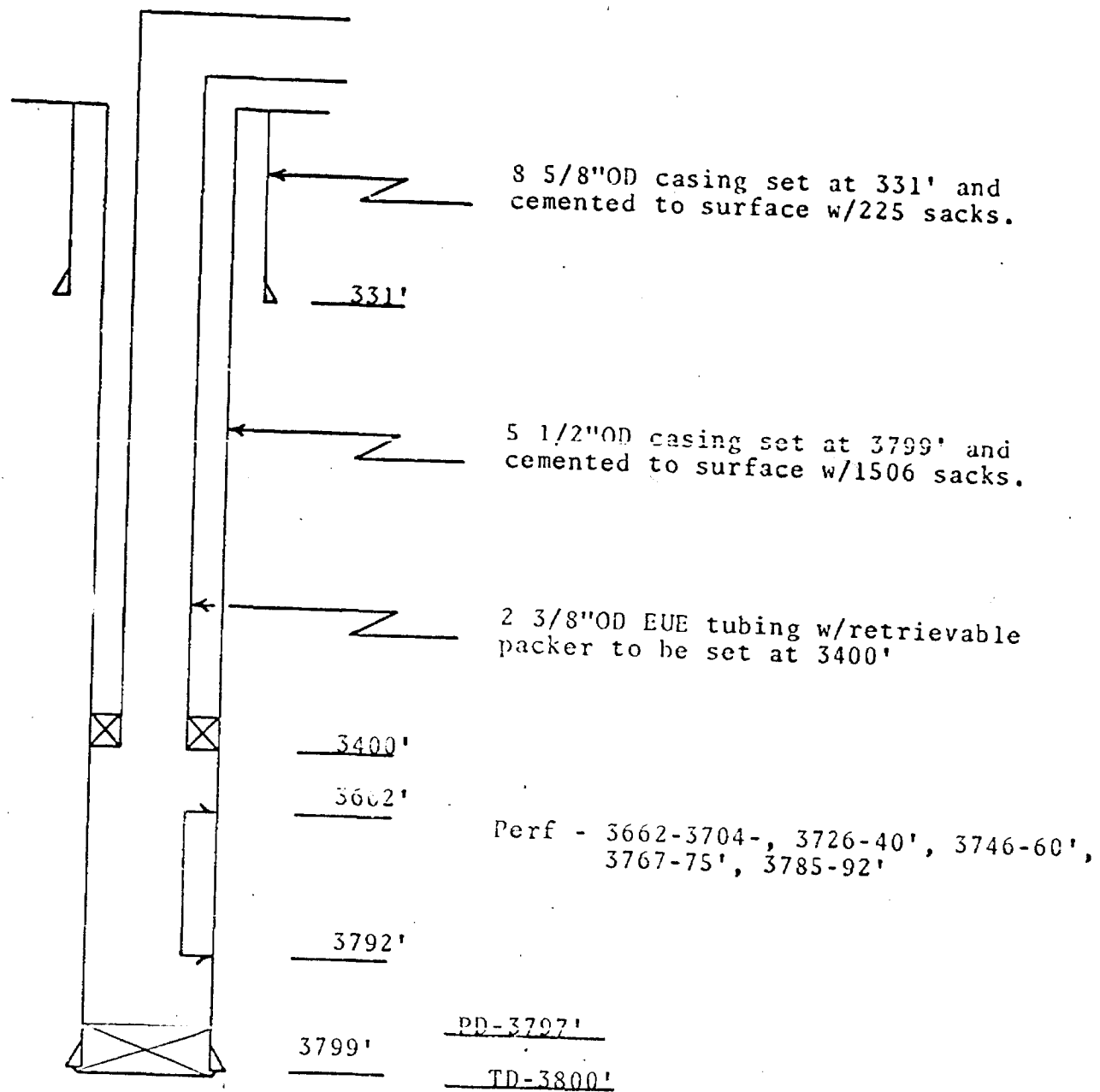
Proposed Procedure

1. Tag bottom - tally out. Clean out to PD of 3780'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 5

Elev. - DF-3507'



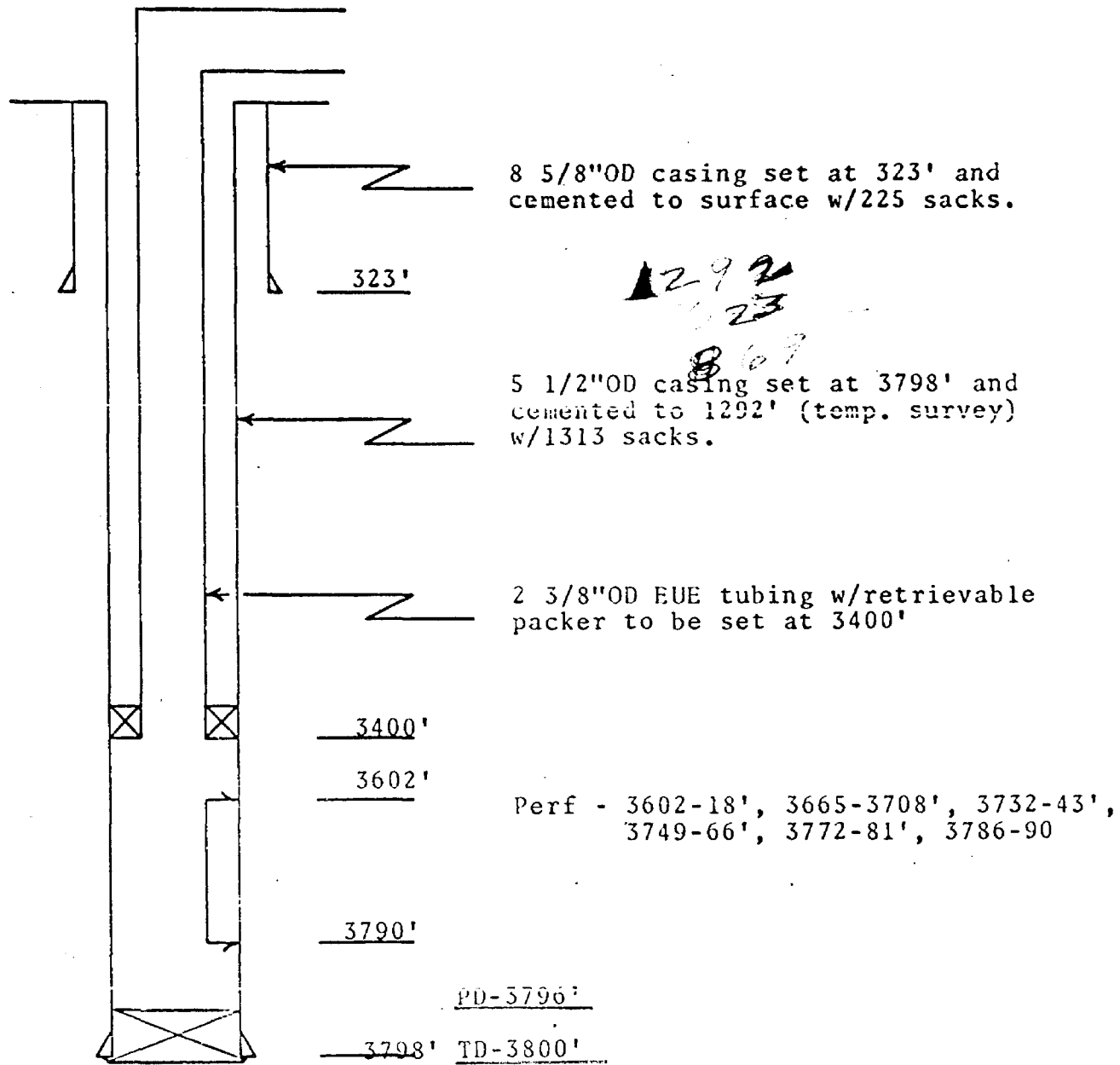
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3795'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 8

Elev - BHF - 3492'
DF - 3502'



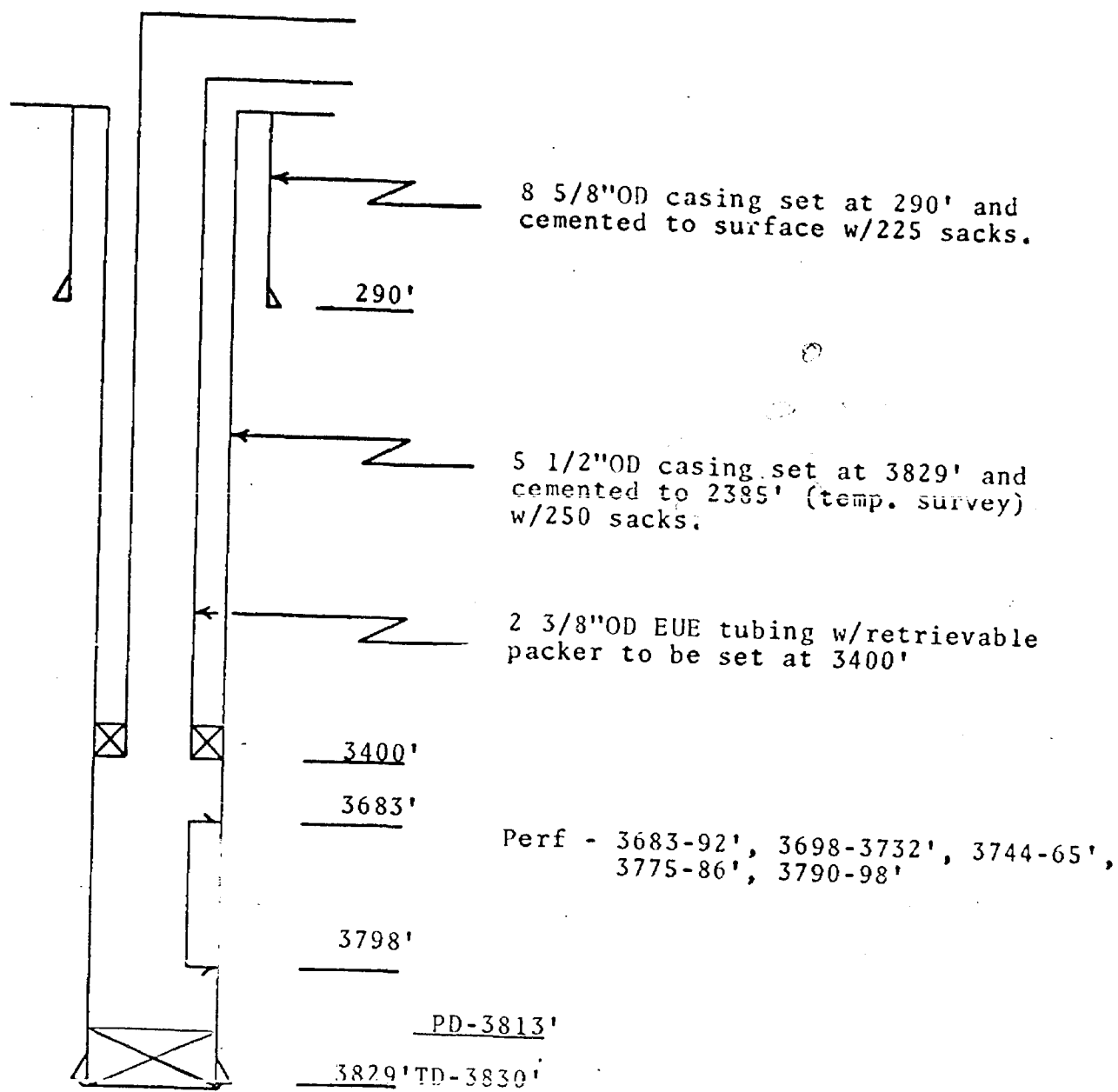
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3792'.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 9

Elev. - BHP-3502'
DF-3512'



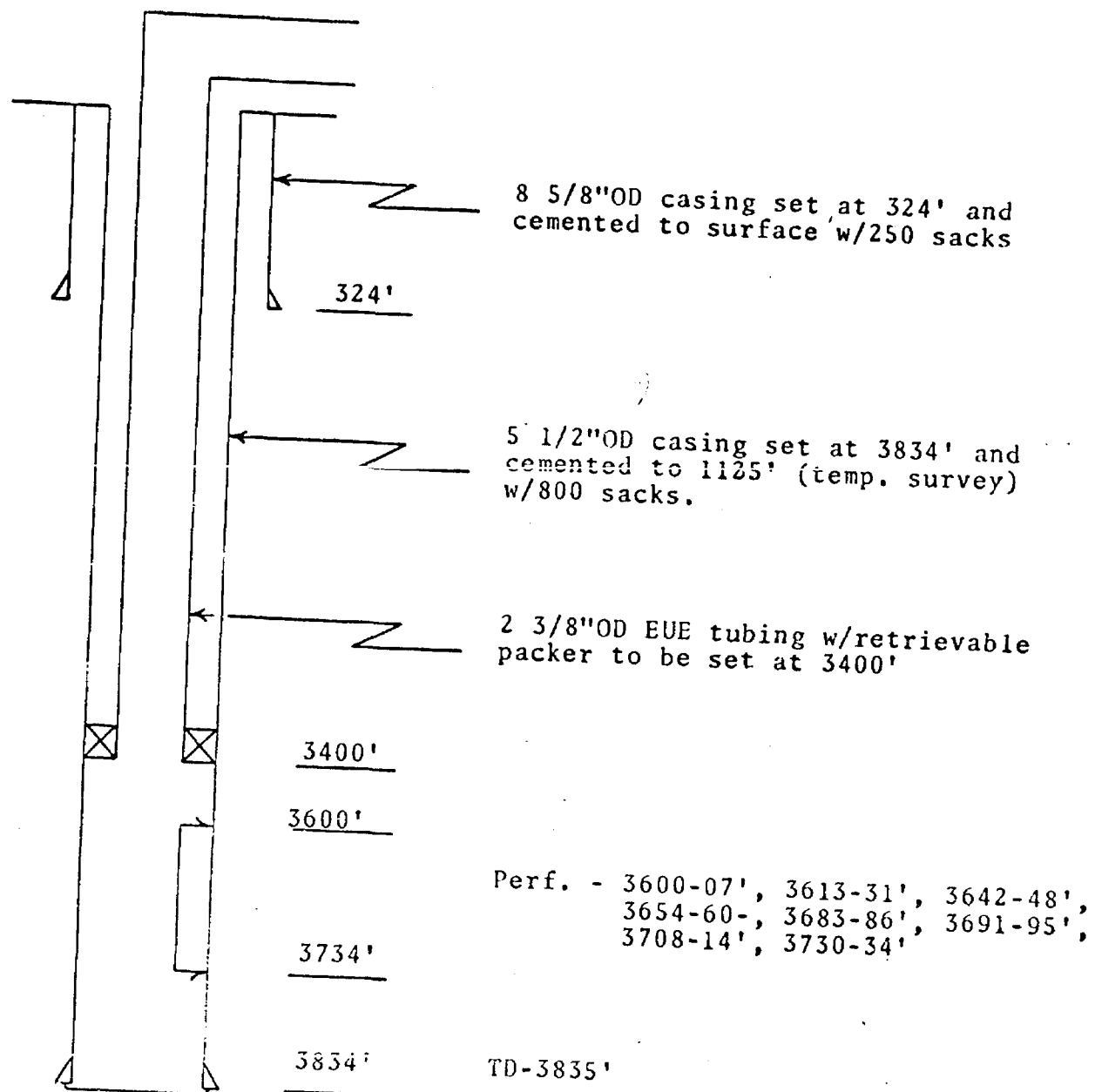
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3800'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 11

Elev. - BHF-3466'
DF-3476'



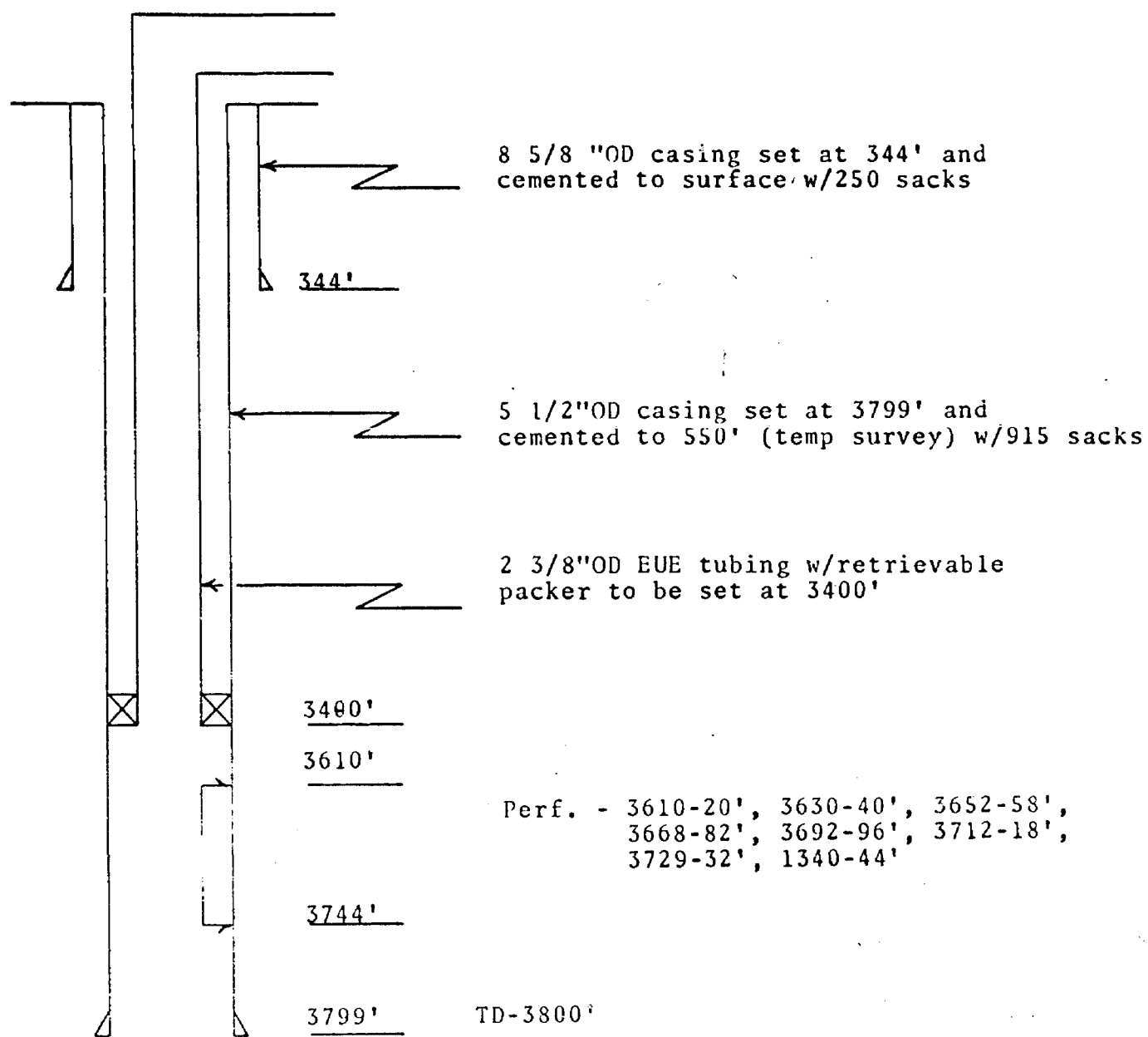
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3737'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State A-36 No. 12

Elev. BHf - 3480'
DF - 3490'



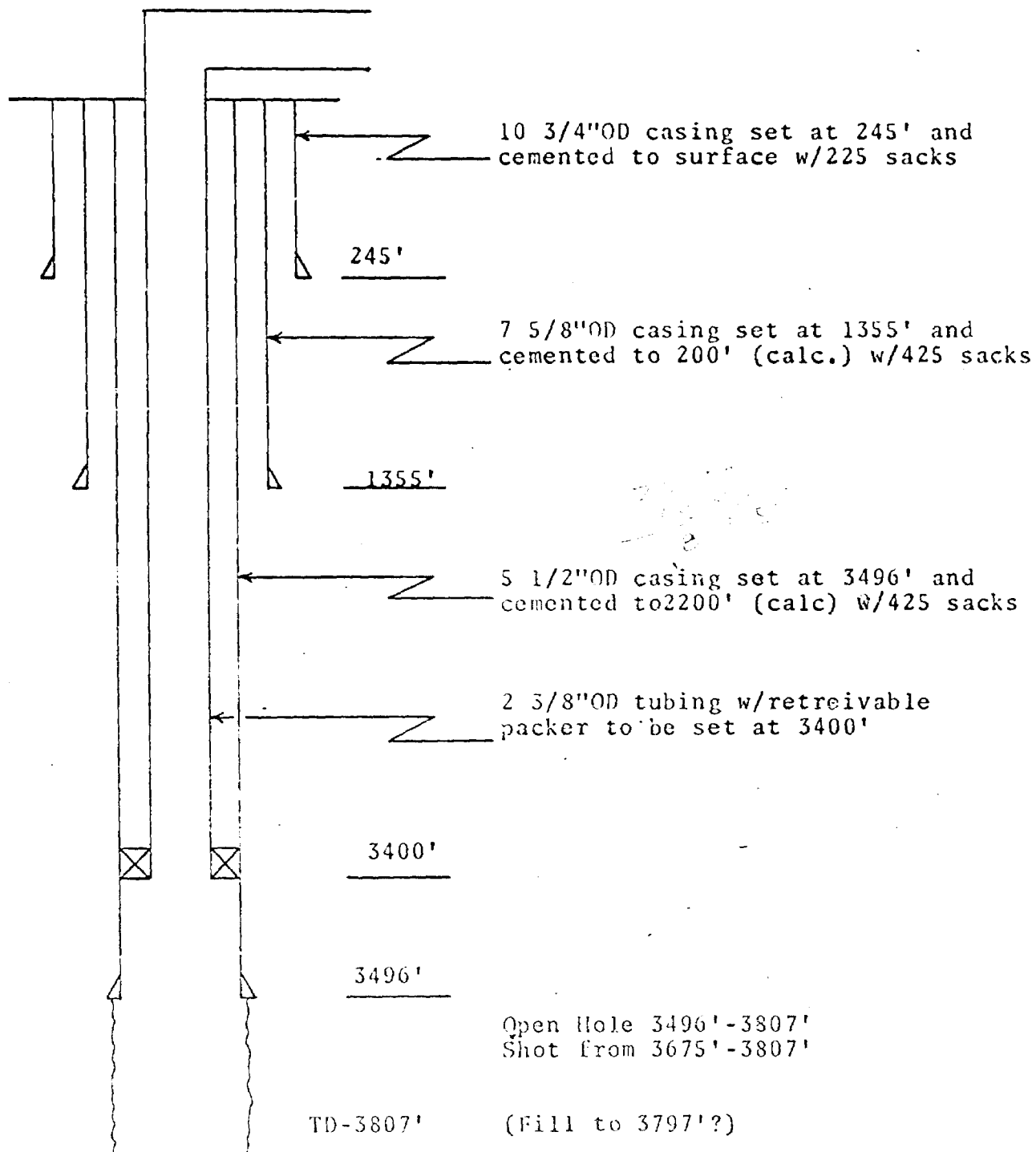
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3747'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State F-1 No. 2

Elev. - BHF-3501'



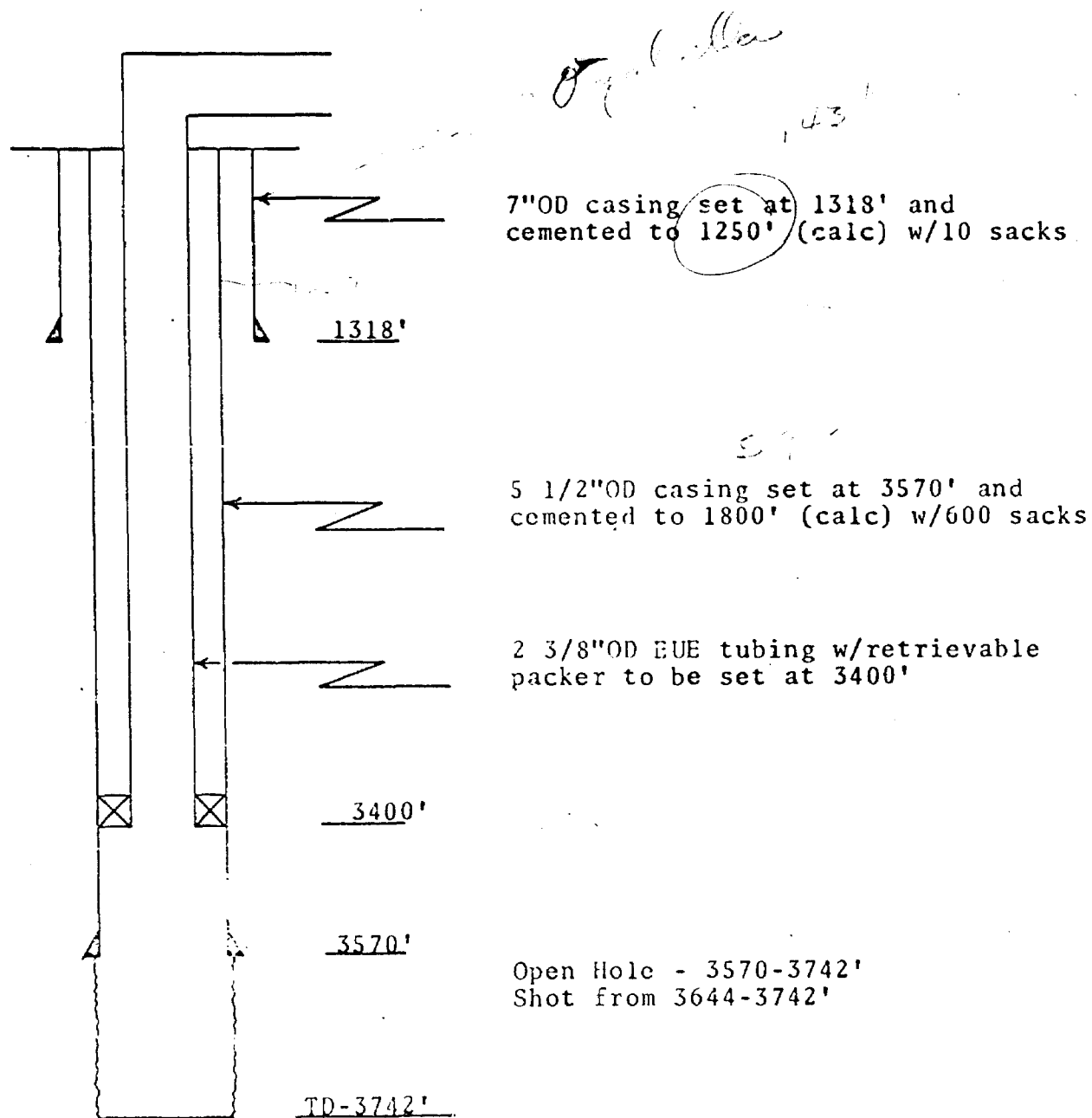
Proposed Procedure

1. Tag bottom tally out. Clean out to 3807'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State F-1 No. 3

Elev. - BHF-3496'



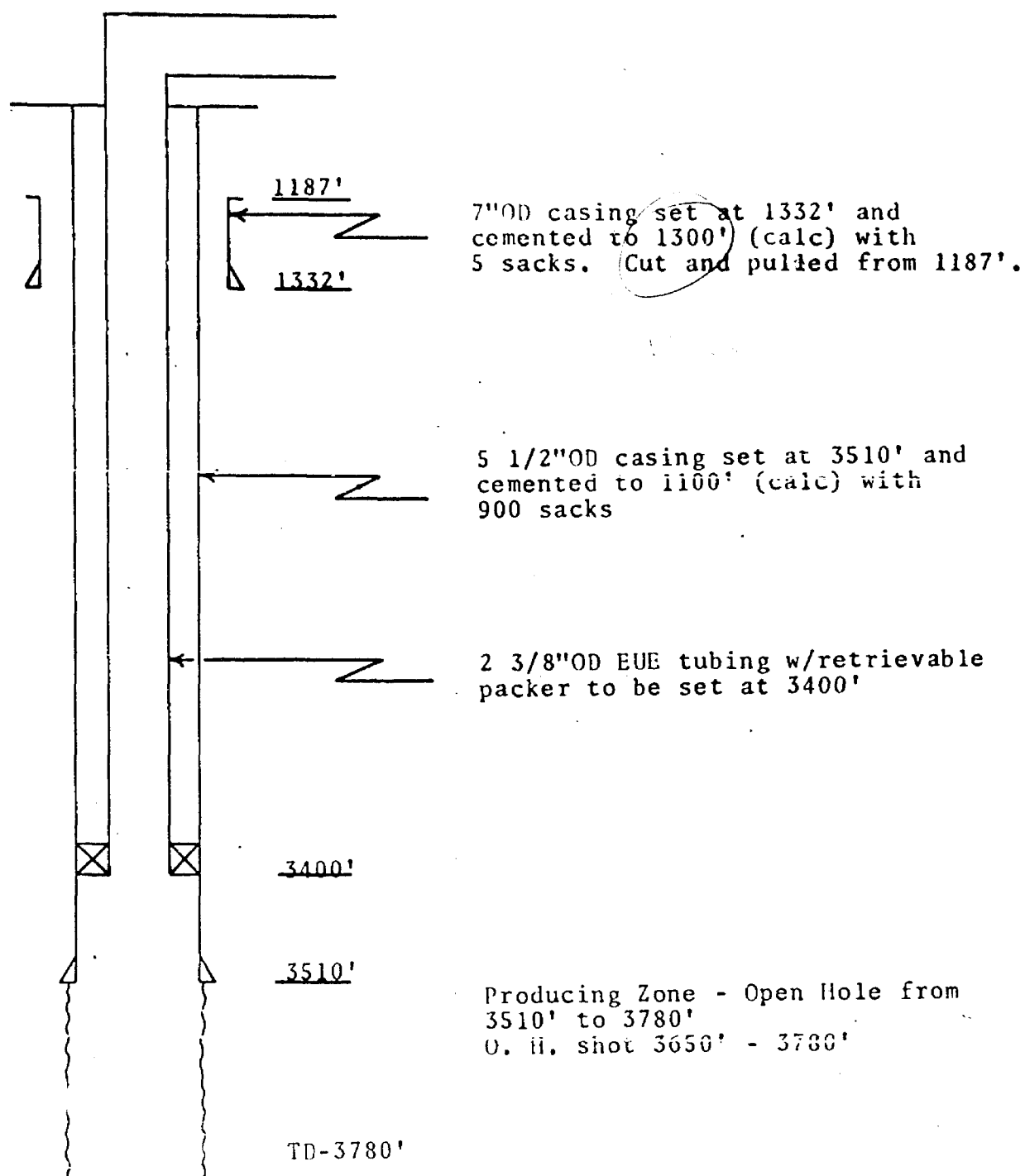
Proposed Procedure

1. Tag bottom tally out. Clean out to TD.
2. Run tubing with packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State F-1 No. 4

Elev. - BHF-3496'



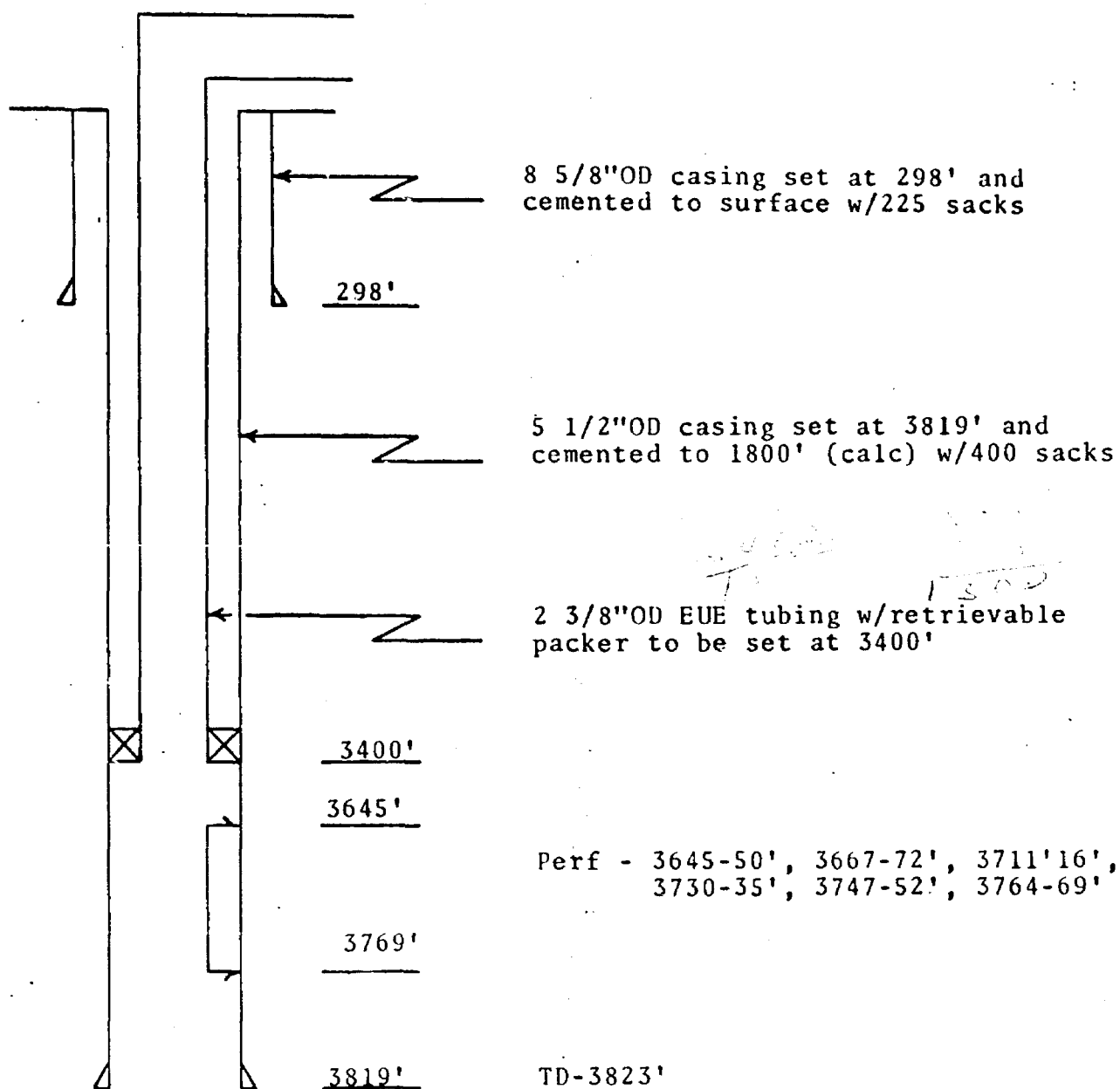
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to set at 3400'.
3. Connect up well for injection down the tubing.

WATER INJECTION WELL DATA

Continental - State KK 36 No. 1

Elev. - DF-3503'



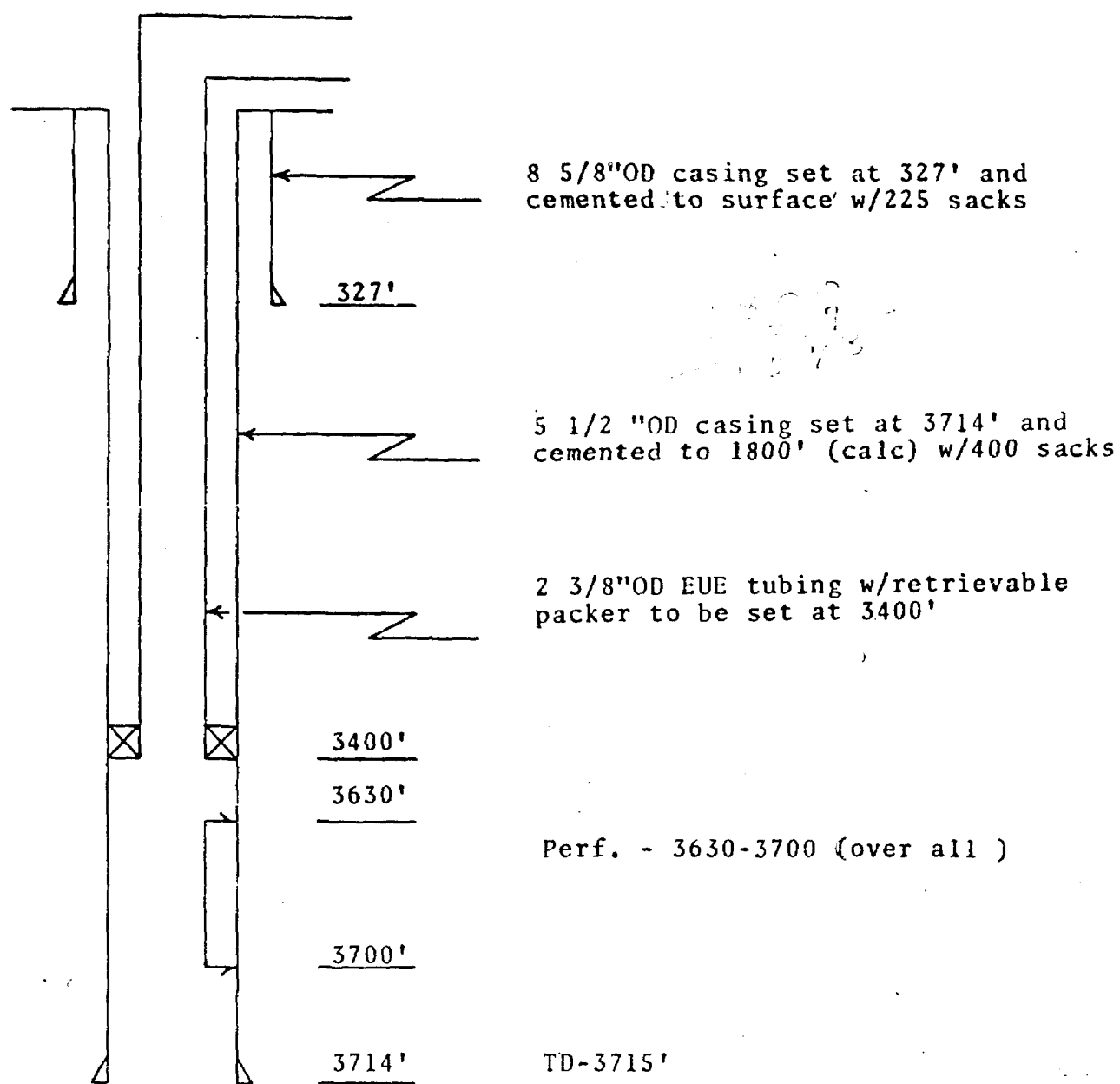
Proposed Procedure

1. Tag bottom tally out. Clean out to 3772'
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - State KK-36 No. 2

Elev. - BHF - 3505'



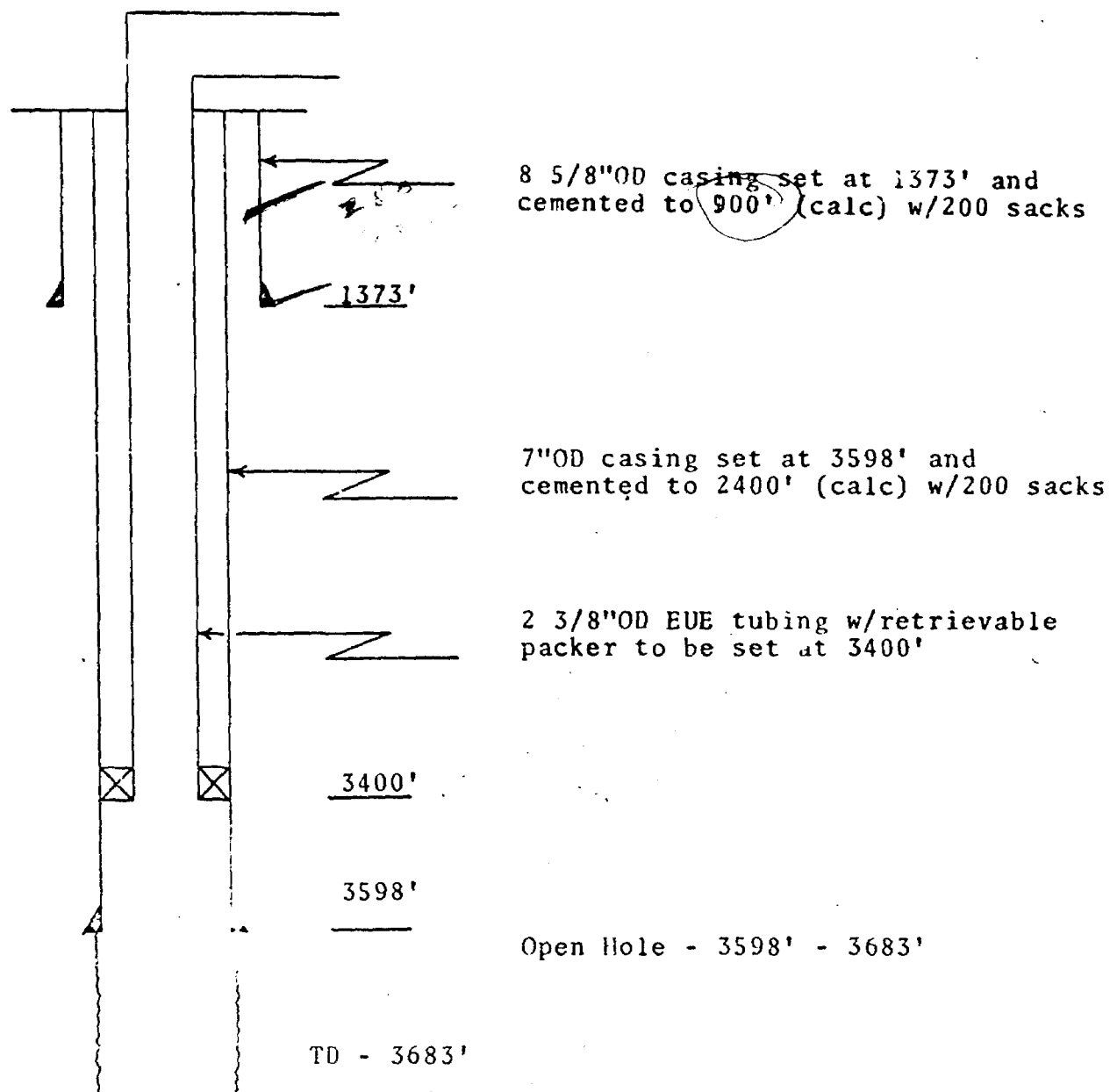
Proposed Procedure

1. Tag bottom tally out. Clean out to 37031'
2. Run tubing w/packer to be set at 3400'
3. Connect upwell for injection down tubing.

WATER INJECTION WELL DATA

Continental - State KM-36 No. 1

Elev. BHIF - 3506'



Proposed Procedure

1. Tag bottom tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

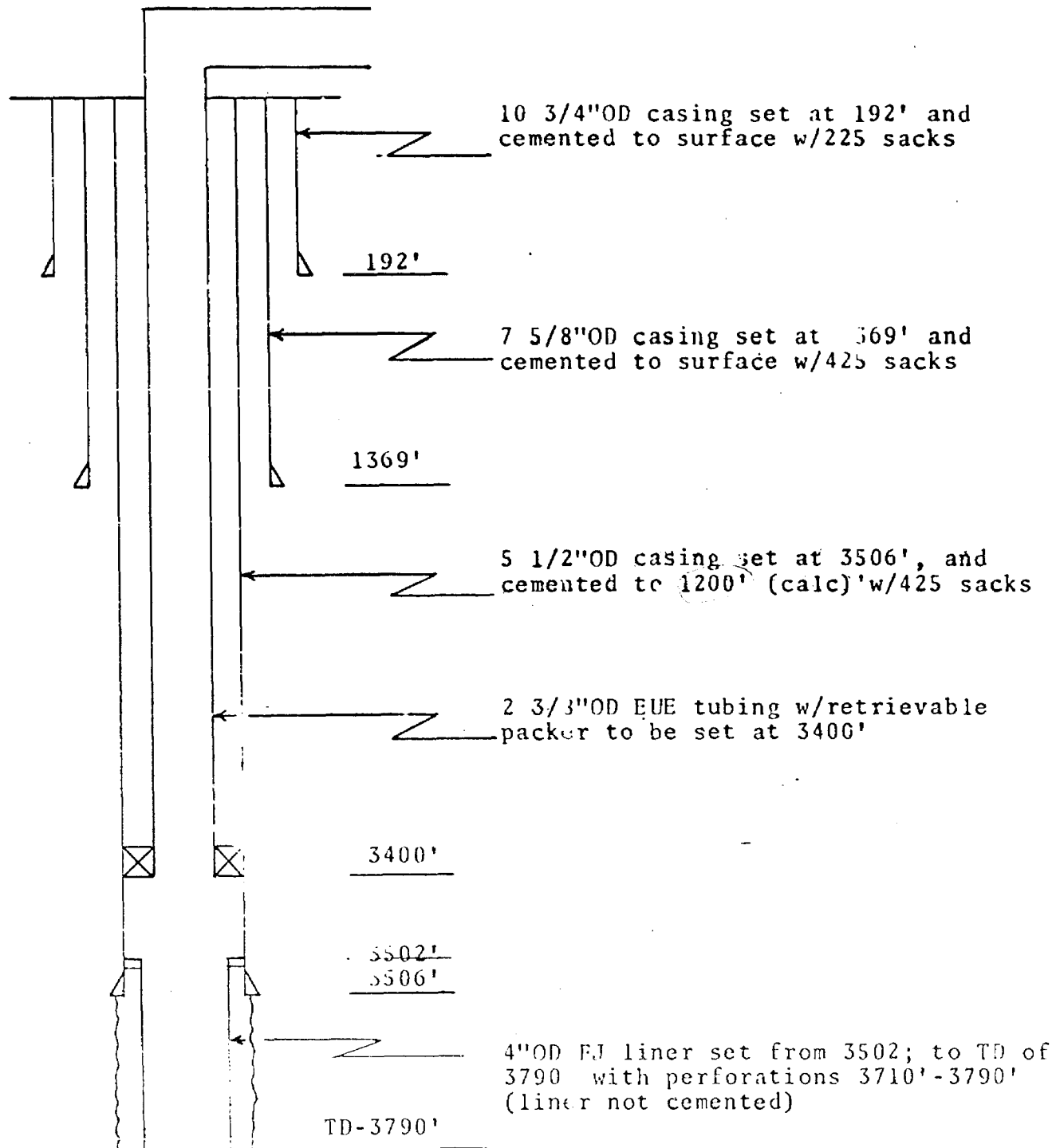
Future Work

1. Deepen to 3773'

WATER INJECTION WELL DATA

Continental - Meyer B-31 No. 1

Elev. DF-3500'



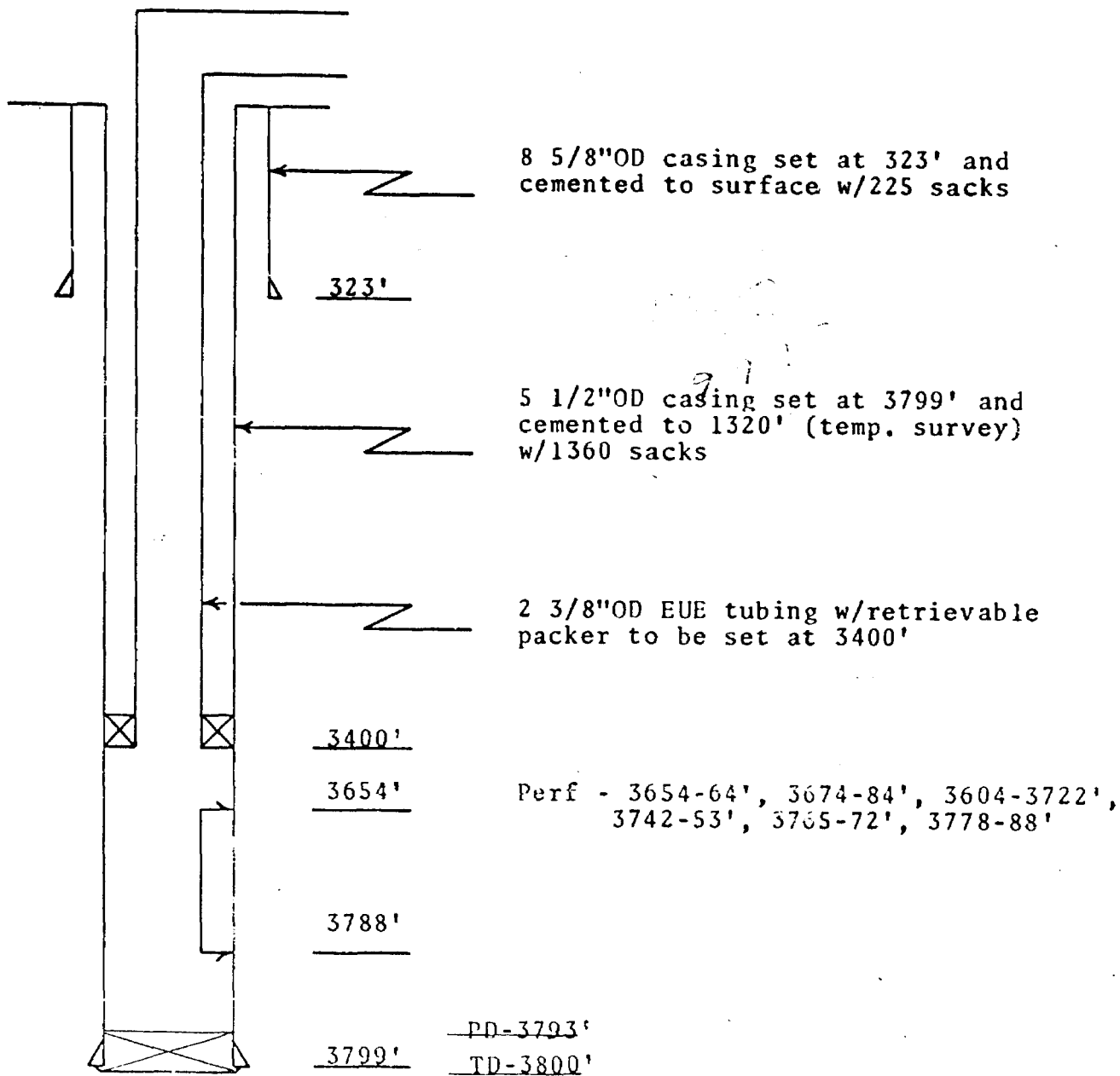
Proposed Procedure

1. Tag bottom and tally out. Clean out to TD.
2. Run tubing w/pack. to be set at 3400'
3. Connect up well for injection down the tubing.

WATER INJECTION WELL DATA

Continental - Meyer B-31 No. 3

Elev. - BHF-3502'
DF-3512'



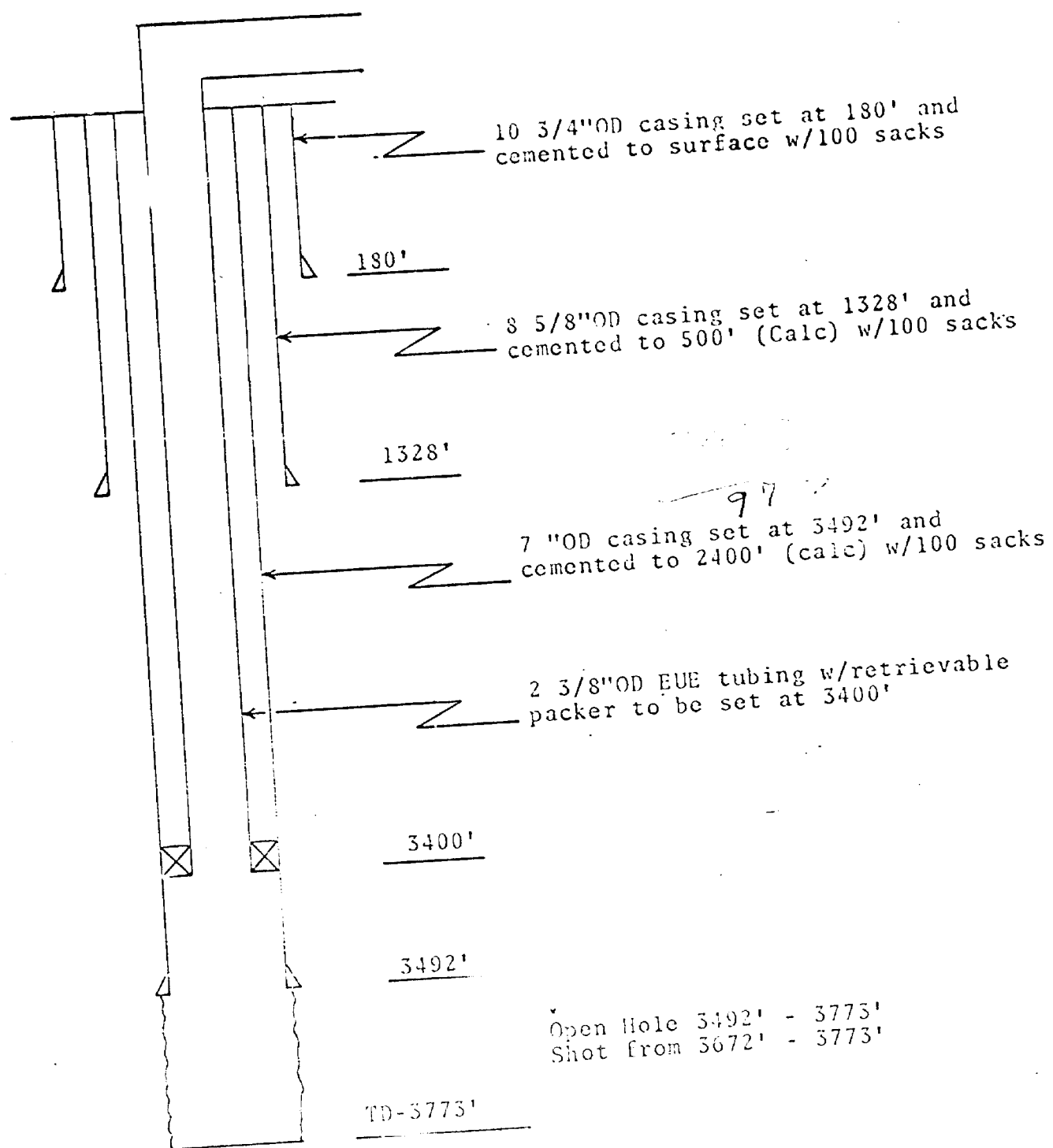
Proposed Procedure

1. Tag bottom & tally out. Clean out to 3790'
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Anadarko - Mae Currie No. 1

Elev. - BHF-3504'



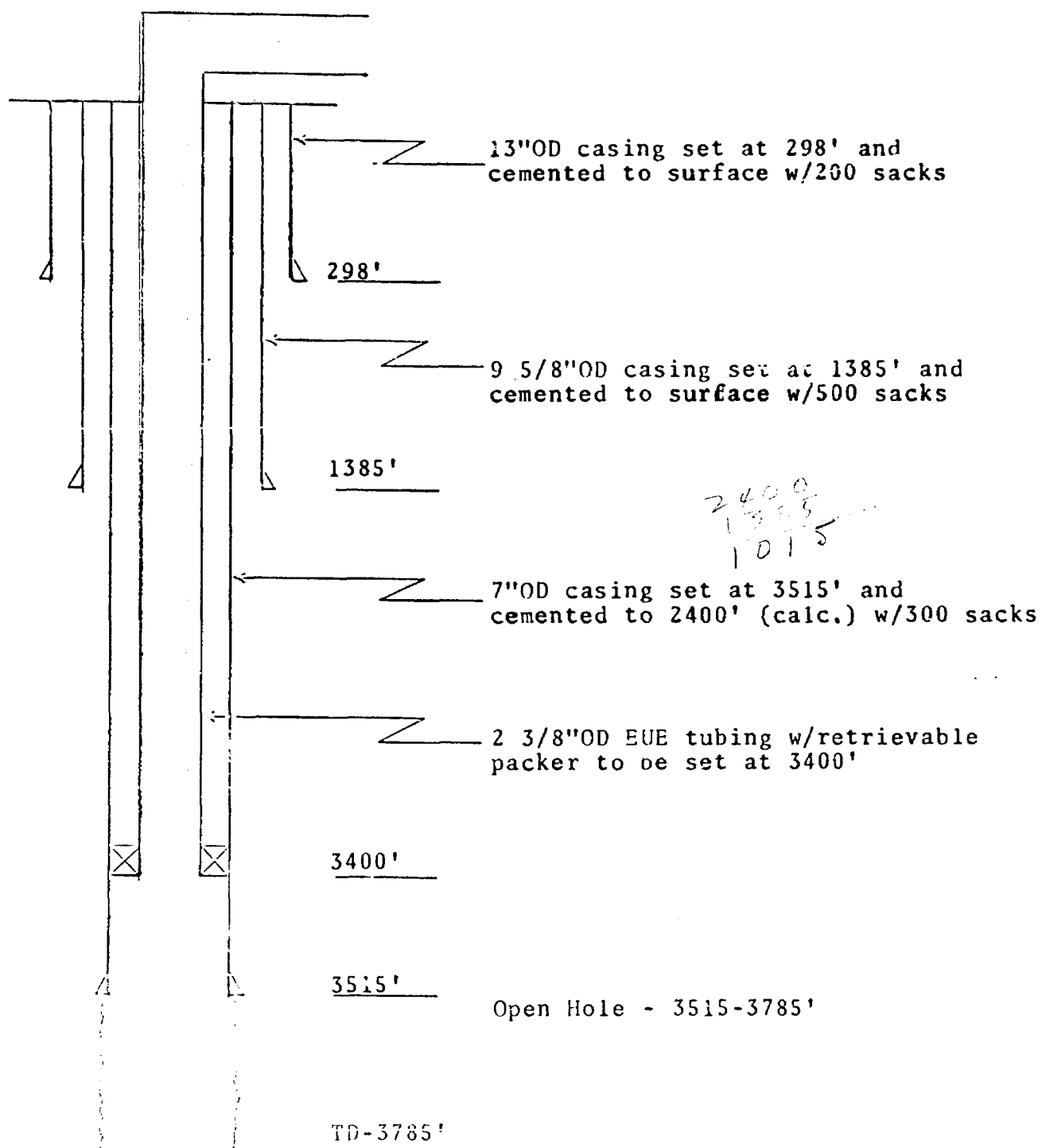
Proposed Procedure

1. Tag bottom tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Pan Am - Hill "A" No. 2

Elev. - BHF - 3492'



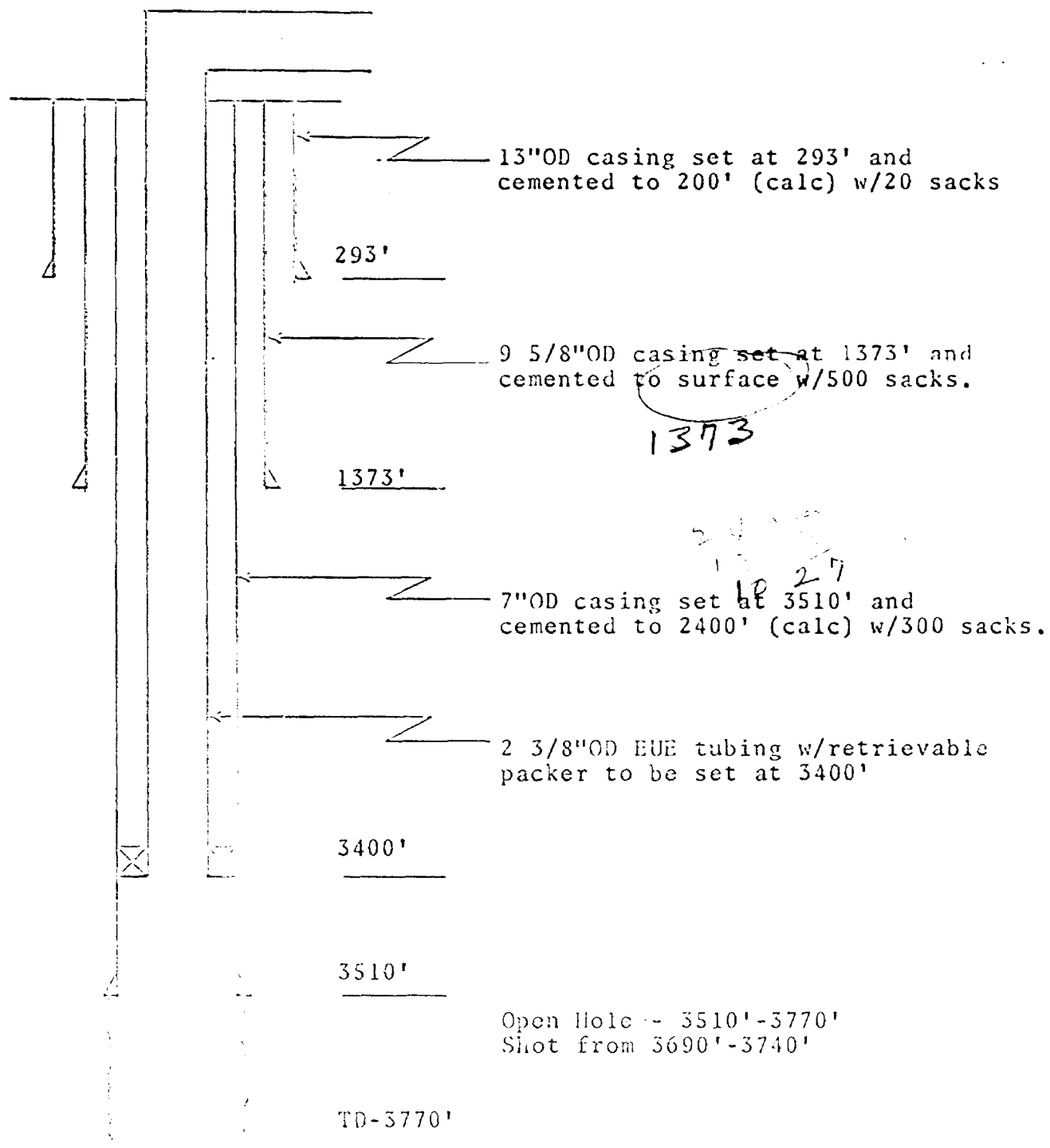
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Pan Am - Hill "A" No. 4

Elev. - BHF-3489'



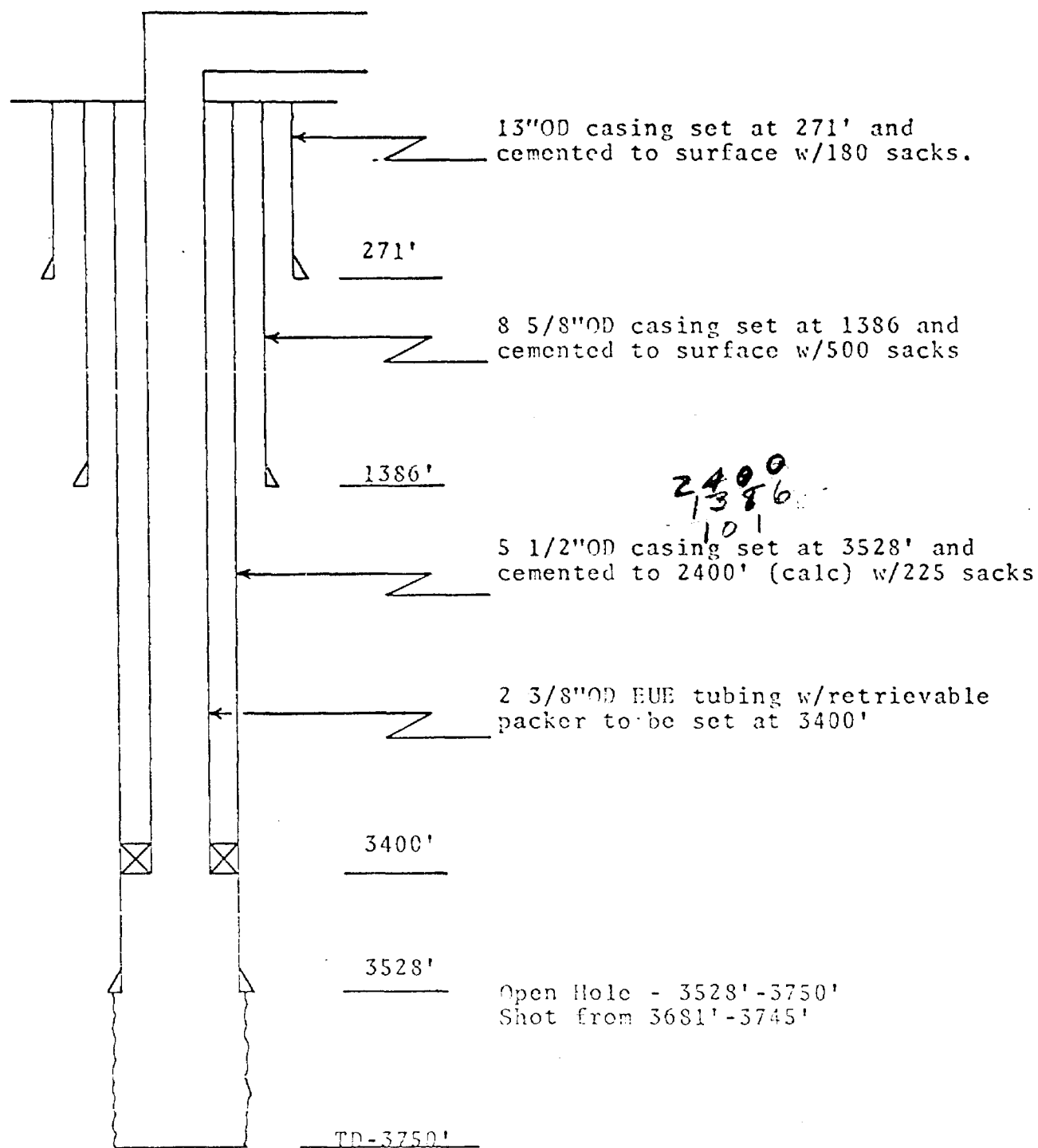
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3745'.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Pan Am - Hill "A" No. 6

Elev. - BHF-3488'
DF-3501'



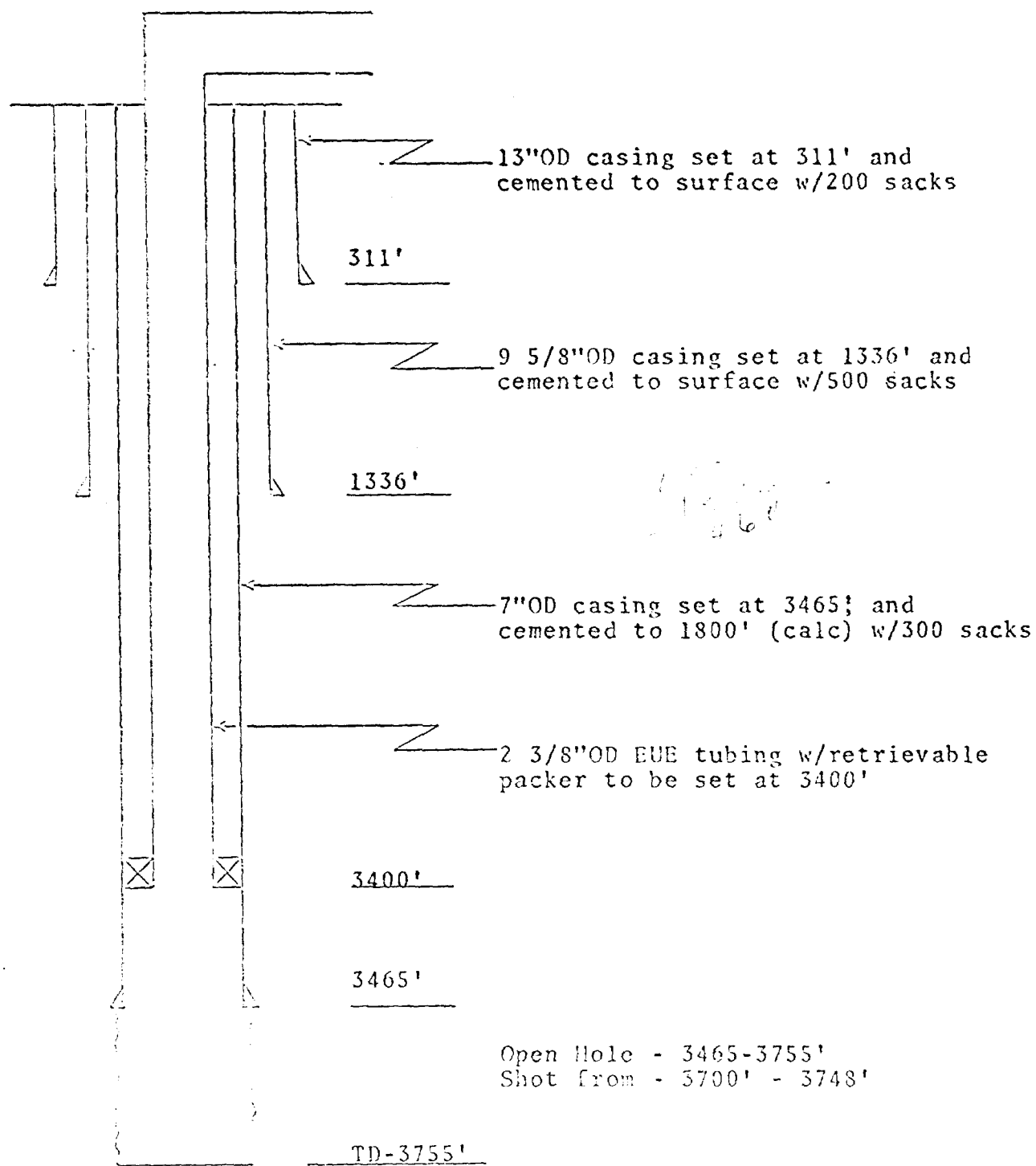
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Pan Am - Hill "C" No. 3

Elev. - BHFP-3457'
DF-3472'



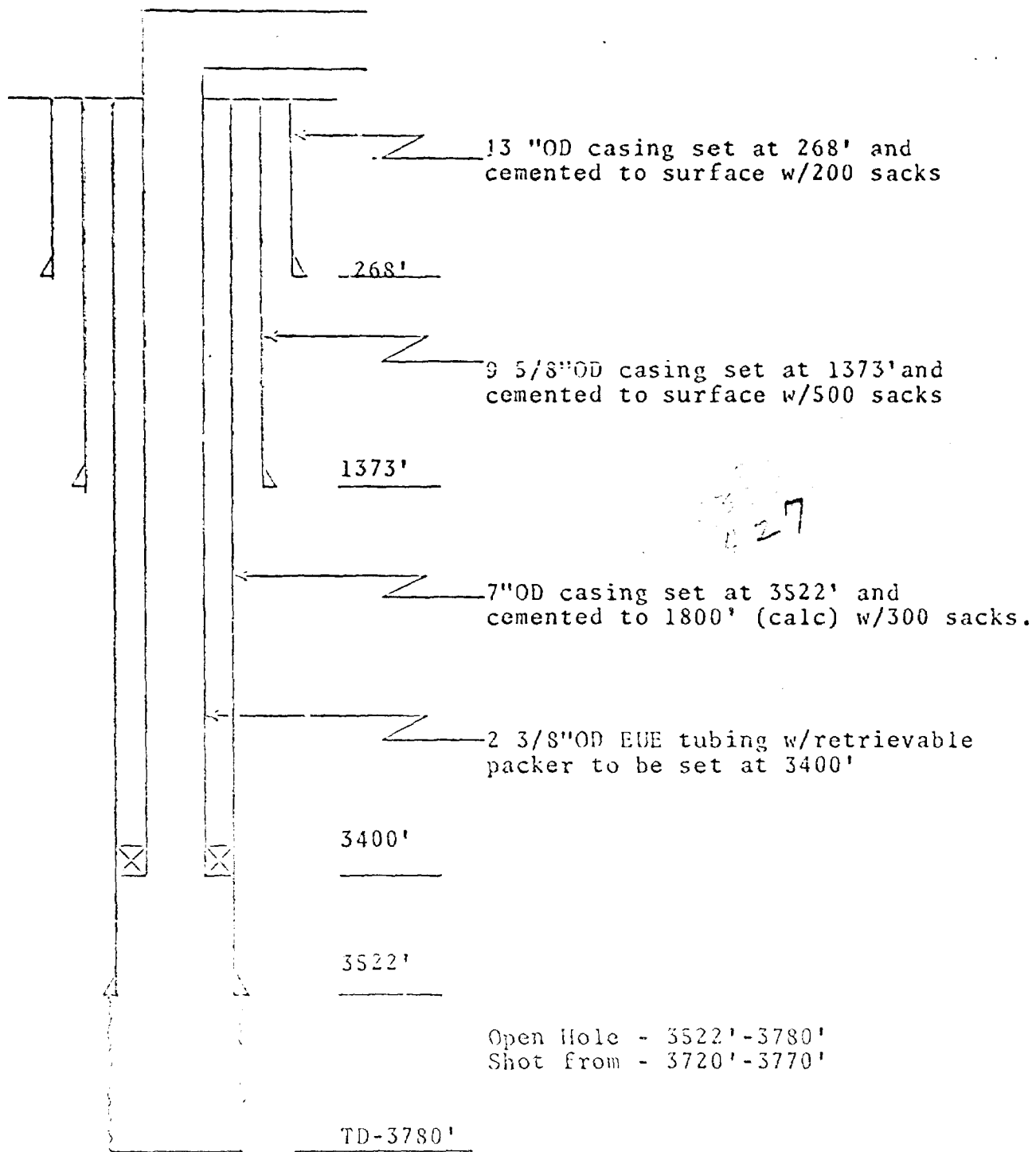
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3750'.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Pan Am - Hill "C" No. 4

Elev. - BHF-3479'



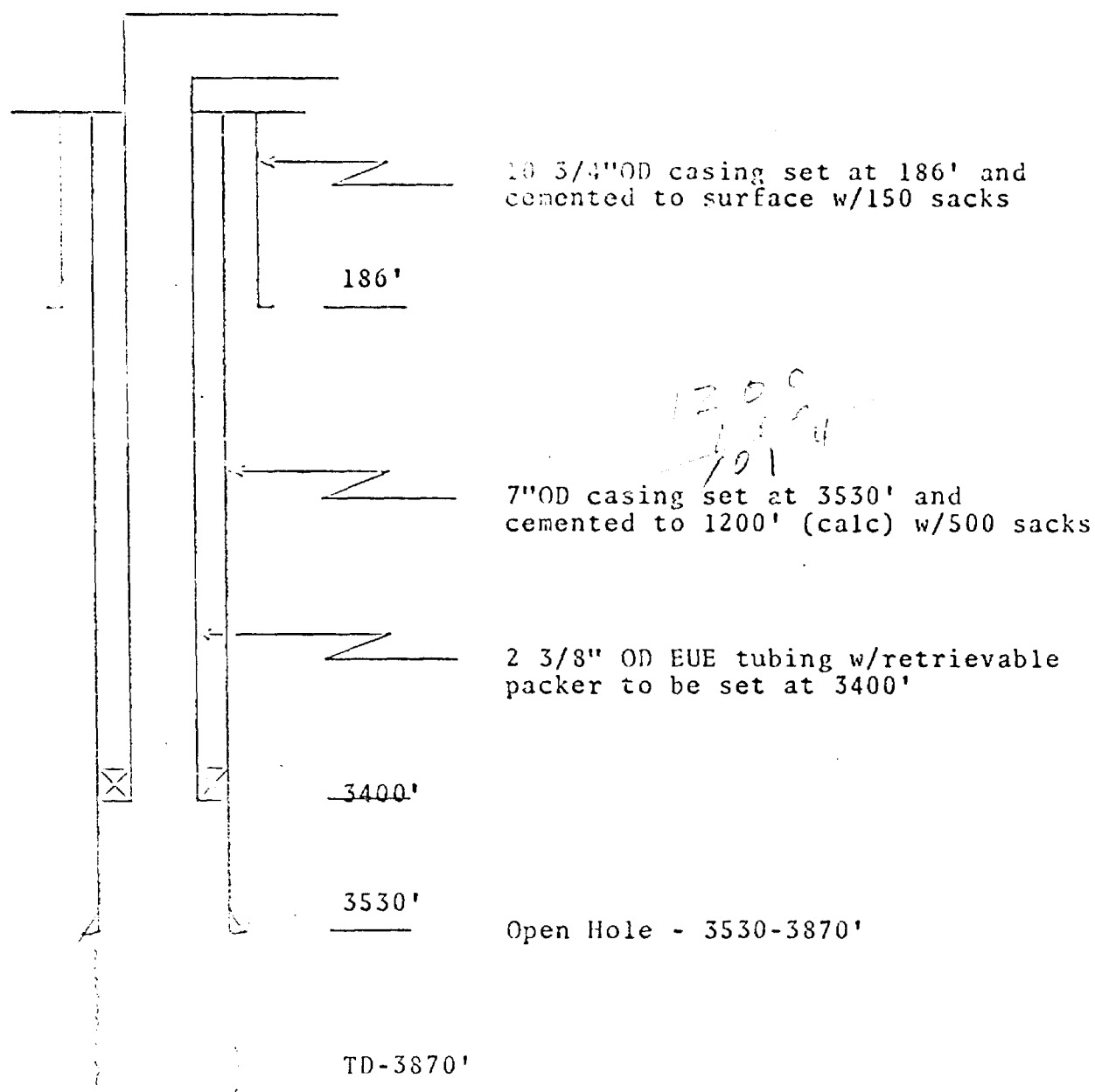
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3775'.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Skelly Oil - Hill No. 1

Elev. - BHF-3493'



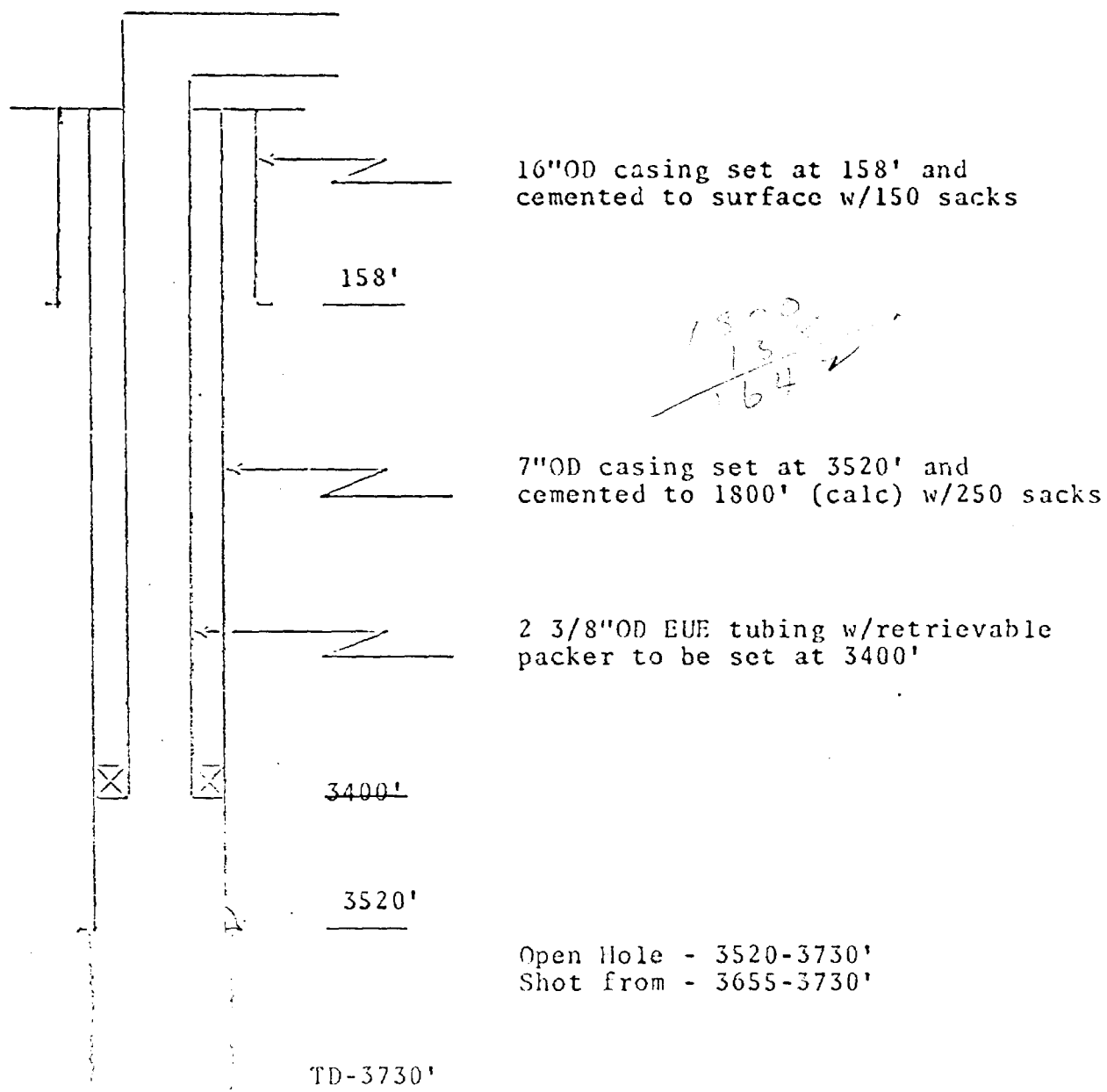
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Skelly Oil - Hill No. 3

Elev. BHF-3495'



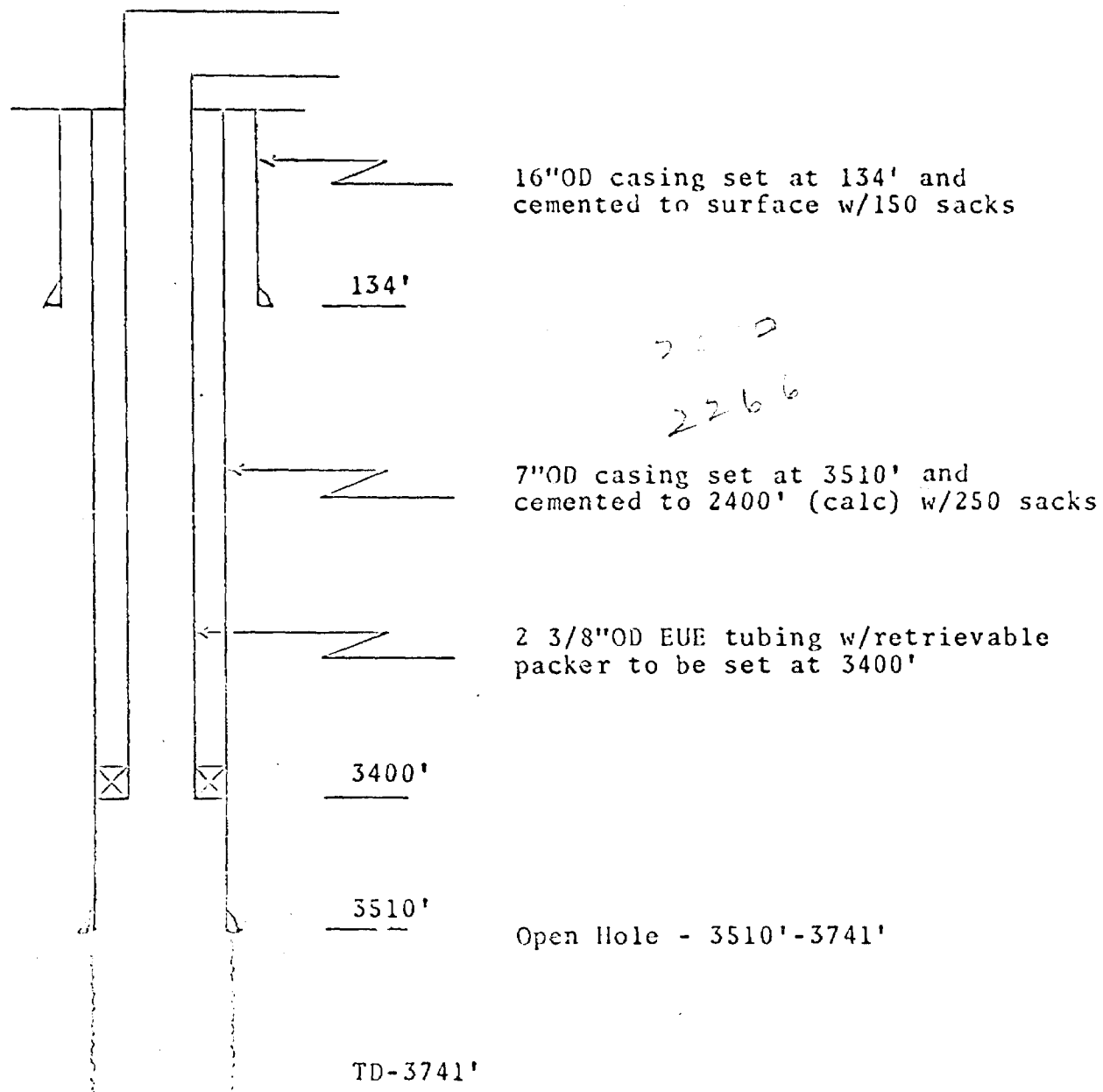
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Skelly Oil - Hill No. 5

Elev. - BHF-3471'



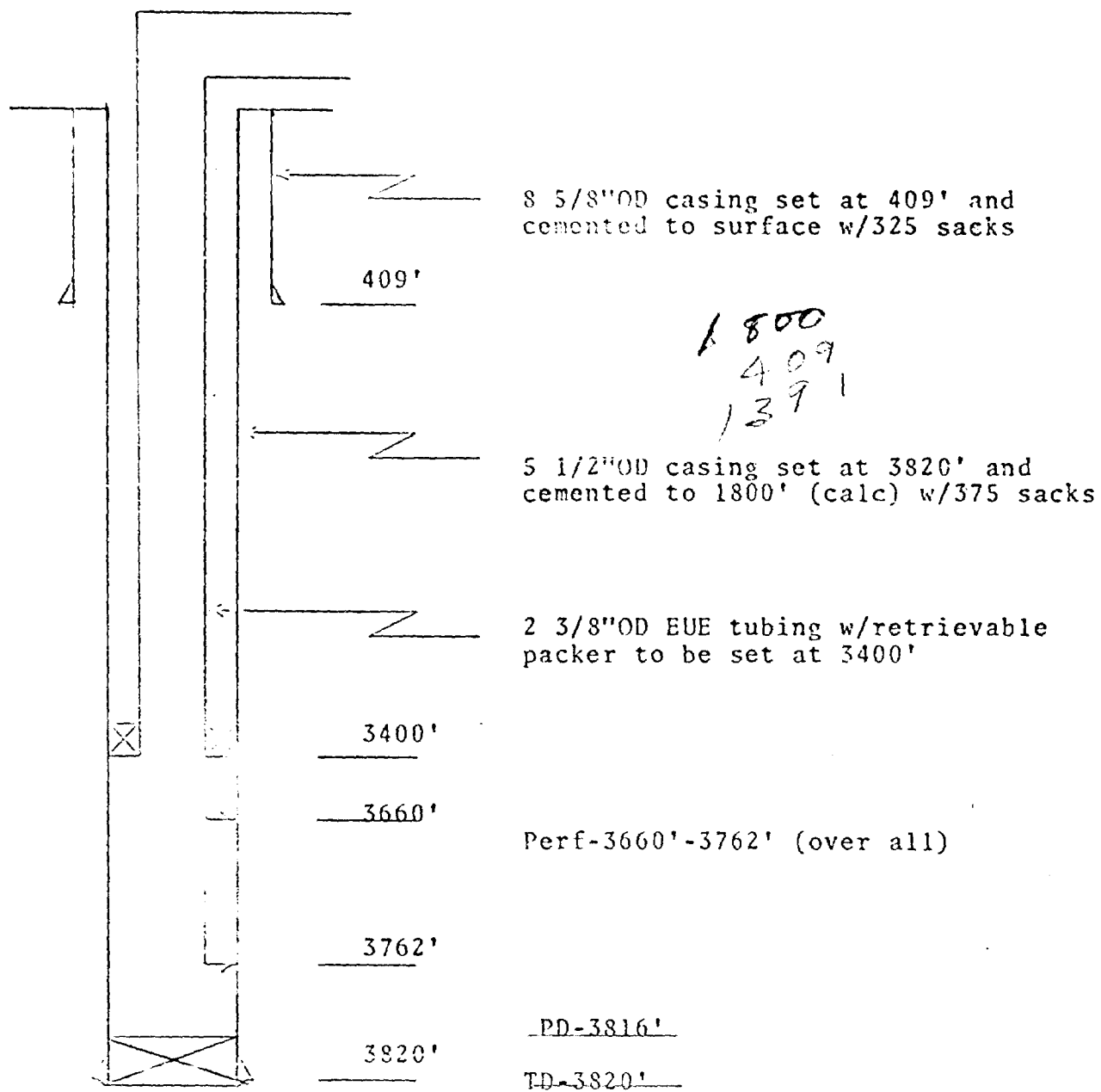
Proposed Procedure

1. Tag bottom - tally out. Clean out to TD.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Gulf Oil - Bell Ramsay No. 1

Elev. - BHF-3513'



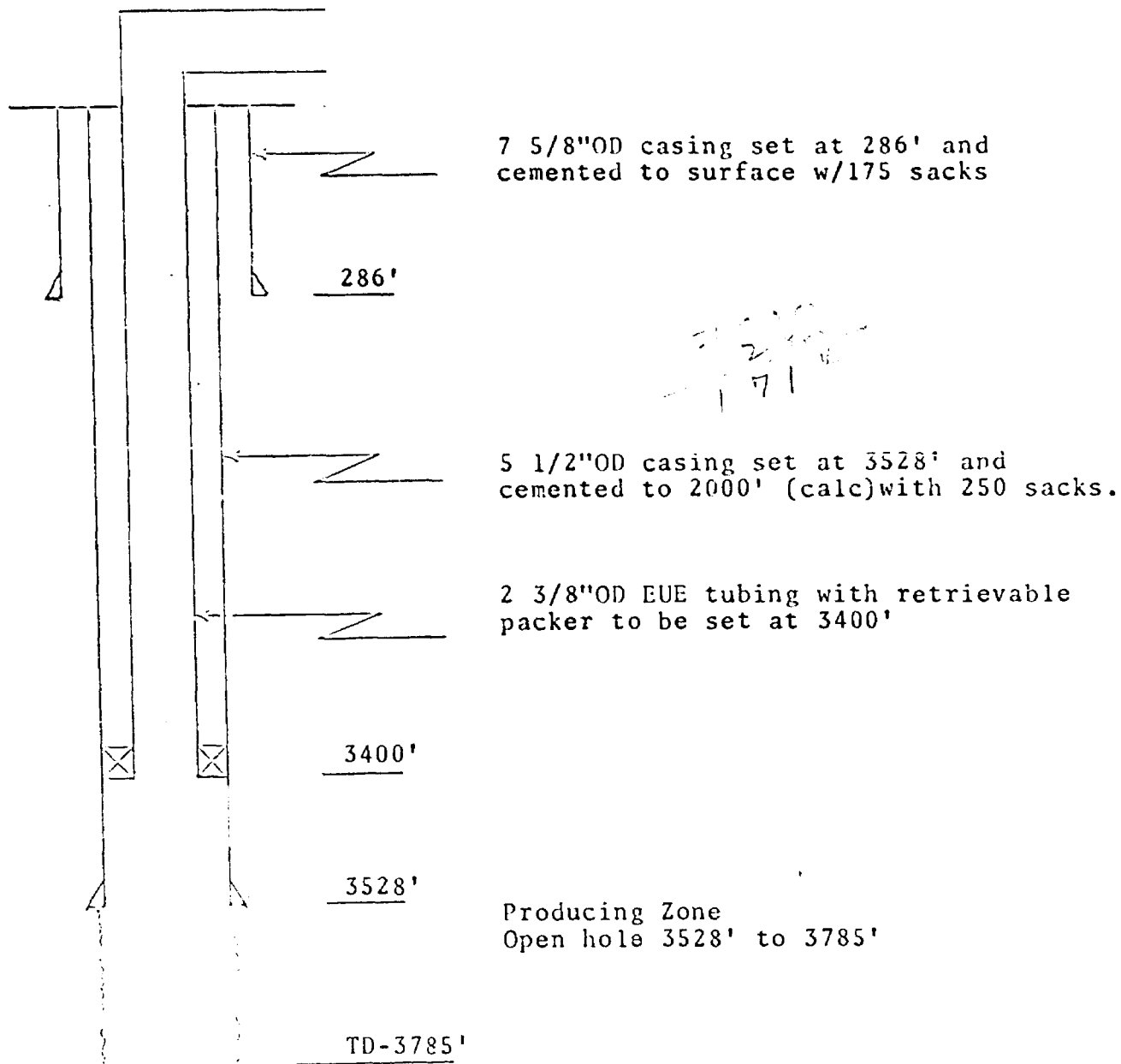
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3765'.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Two State - Hill No. 2

Elev. - DF-3495'



Proposed Procedure

1. Tag bottom and tally out. Clean out to TD of 3785'
2. Run tubing with retrievable packer to be set at 3400'
3. Connect up well for injection down tubing.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE
STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
CONTINENTAL OIL COMPANY FOR APPROVAL
OF A WATERFLOOD PROJECT ON ITS SEMU
EUMONT LEASE IN COOPERATION WITH THE
PROPOSED EUMONT HARDY UNIT, LOCATED
IN SECTION 25, TOWNSHIP 20 SOUTH, RANGE
37 EAST, LEA COUNTY, NEW MEXICO.

A P P L I C A T I O N

Comes now Applicant, Continental Oil Company, and respectfully requests approval of a waterflood project on its SEMU Eumont Lease, in cooperation with the Eumont Hardy Unit. The said lease is described as SE/4 NW/4, NE/4 SW/4, N/2 SE/4, Section 25, Township 20 South, Range 37 East, Lea County, New Mexico, containing 160 acres. In support of this application, the applicant would show:

1. That the SEMU Eumont Lease is adjacent to the proposed Eumont Hardy Unit and is a part of the same oil accumulation which is to be flooded by that unit.
2. That it is impracticable to include the said lease in the Eumont Hardy Unit.
3. That the attached lease plat marked Exhibit I shows the said lease and the surrounding area.
4. That applicant proposes to inject water into the Eumont pay zone in the following wells:

SEMU No. 52, Unit F, Section 25, T20S, R37E.

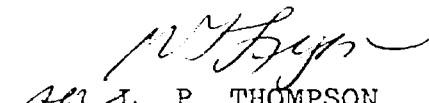
SEMU No. 55, Unit J, Section 25, T20S, R37E.

The manner of completion of these wells is shown tabulated in Exhibit II attached hereto and are shown schematically on the attached diagrams marked Exhibit II-A and II-B.

5. That applicant proposes to inject approximately 800 barrels per day into the two said injection wells on an 80-acre five-spot pattern. Said water will be obtained from the Cass Pennsylvanian Pool approximately 1.5 miles northwest of said lease.

Wherefore, applicant respectfully requests that this matter be set for hearing before the Commission's duly qualified Examiner and that upon hearing an order be entered approving the installation and operation of a waterflood project on the applicant's SEMU Eumont Lease in cooperation with the Eumont Hardy Unit as described above.

Respectfully Submitted,


L. P. THOMPSON
District Manager
Hobbs District

LPT-JS

SEMU-EUMONT LEASE - INJECTION WELL DATA

EXHIBIT No.

Company, Lease and Well No.	Total Depth and/or PBD	Surface Casing			Int. Casing			Production Casing			Pro (P) (O)
		Size	Depth	Cement	Size	Depth	Cement	Size	Depth	Cement	
<u>Continental Oil Co. et al</u>											
SEMU No. 52	3825'/3820'	8 5/8"	331'	225			None	5 1/2"	3824'	1490	(P)
SEMU No. 55	3900'/3898'	8 5/8"	329'	225			None	5 1/2"	3899'	1500	(P)

SEMU-EUMONT LEASE - INJECTION WELL DATA

EXHIBIT No. 8

Total Depth
and/or PBD

Surface Casing
Size Depth Cement

Int. Casing
Size Depth Cement

Production Casing
Size Depth Cement

Producing Int.
(P) Perf.
(OH) Open Hole

t al

3825'/3820'
3900'/3898'

8 5/8" 331' 225
8 5/8" 329' 225

None
None

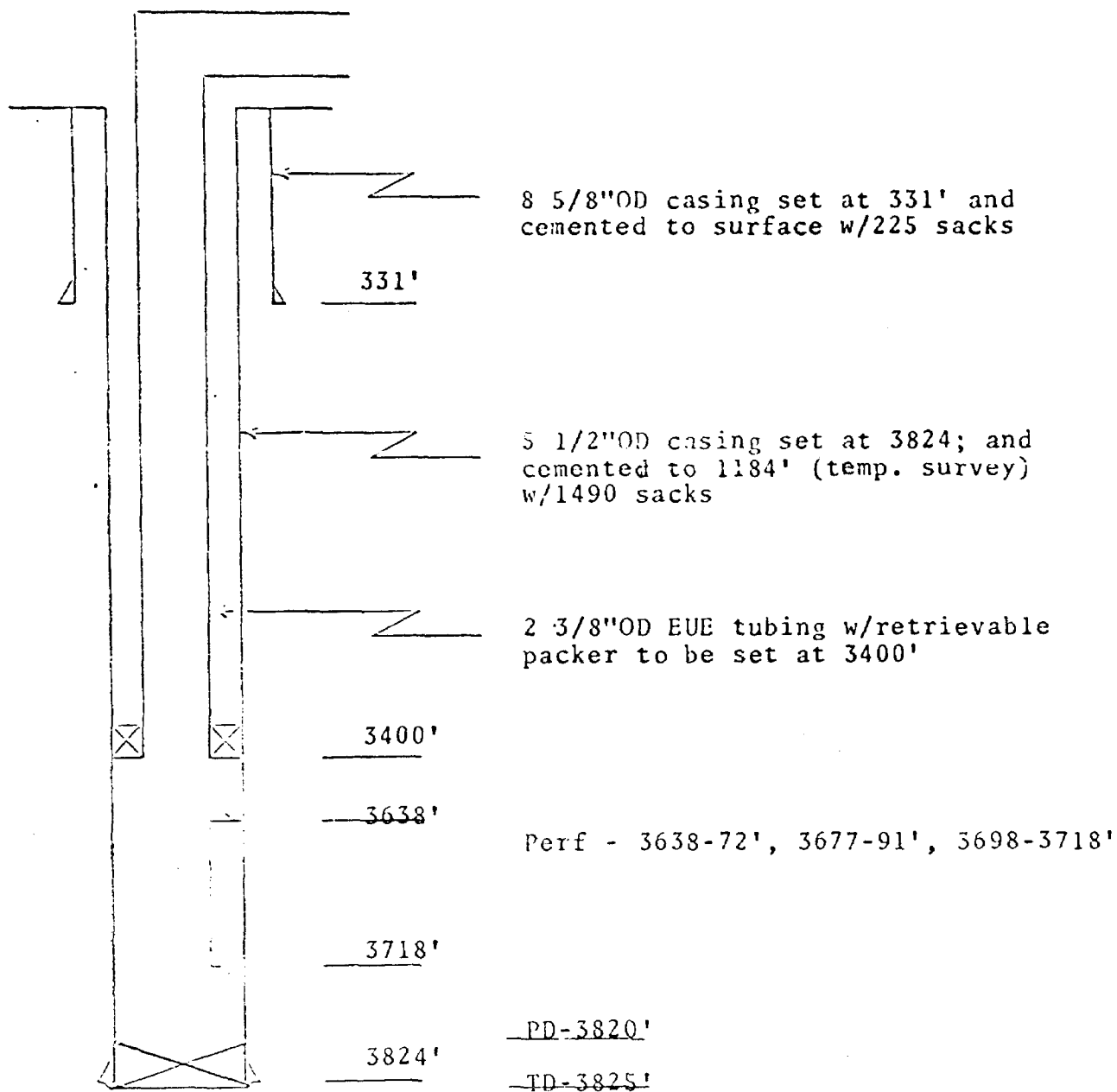
5 1/2" 3824' 1490
5 1/2" 3899' 1500

(P) 3638-3718'
(P) 3660-3778'

WATER INJECTION WELL DATA

Continental - SEMU No. 52

Elev. - BHIF - 3518'
DF - 3528'



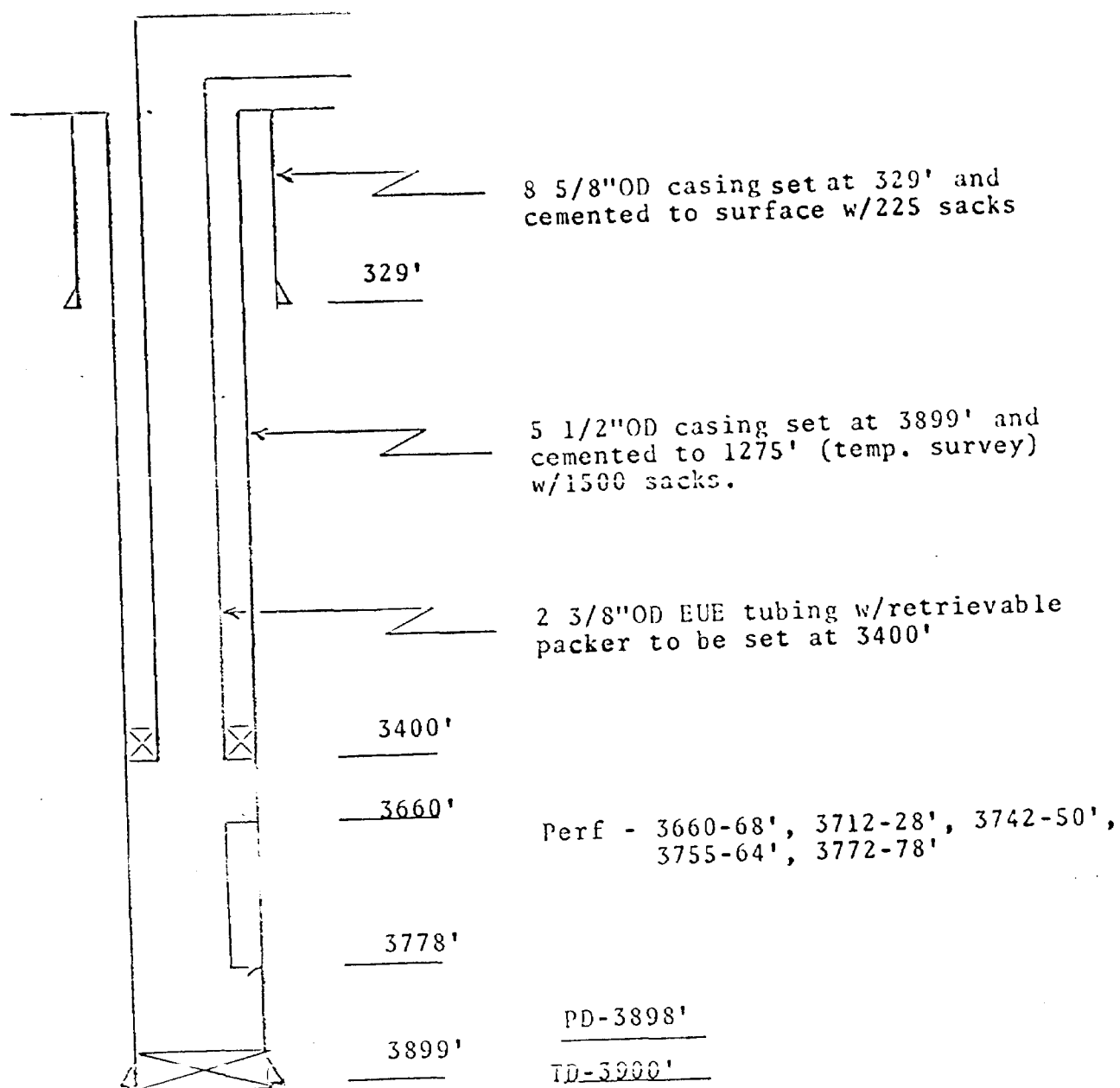
Proposed Procedure

1. Tag bottom - tally out. Clean out to 3722'.
2. Run tubing w/packer to be set at 3400'
3. Connect up well for injection down tubing.

WATER INJECTION WELL DATA

Continental - SEMU No. 55

Elev. - BHIF-3513'
DF-3523'



Proposed Procedure

1. Tag bottom tally out. Clean out to 3781'.
2. Run tubing w/packer to be set at 3400'.
3. Connect up well for injection down tubing.