

SUMMARY AND CONCLUSIONS

The planned drilling time (10 days) for the Rose I well was exceeded primarily for two reasons: 1) delay due to the lost circulation zones in the interval 986-1822 ft. 2) delay due to slow penetration in the extended section of unanticipated volcanics between 718 Ft. and TD (3506 Ft.). Although the drilling and casing program proved workable for this well, more detailed planning will be required to isolate the extensive lost circulation zones encountered here should deeper targets be considered on nearby locations. The following discussion will be detailed by drilled/cased interval:

12 1/4" Hole / 8 5/8" Surface Casing

The 8 5/8" Casing was planned to be set at 600 Ft. in order to protect fresh water aquifers known to exist above the Columbia River Basalt (initially estimated between 700 and 1000 feet). Due to the fact that the Columbia River Basalt was not present, the casing was set in the shale sequences above the massive volcanics as planned. This depth was elected since it satisfied the State of Oregon's "10% of TD" requirement for the surface string and the shales would provide a sufficiently competent shoe for drillout of the surface casing.

The only significant hazard to drilling experienced in this interval was that the shales were more reactive than at the Anderson I location. The result was that clay balls formed in the flow line to such an extent that a slower controlled rate of penetration was required. The problem could be controlled relatively well and did not cause significant delay.

Cementing operations were marginally successful primarily due to lack of quality control of the cement. When the proper amount of water was added to 300 sx of class "G" cement + 2% calcium chloride and the proper density (15.8 ppg) occurred the slurry had a pumping time of only 1 1/2 hours. After pumping was stopped to drop the top plug the friction pressure developed by the cement in the annulus when pumping was resumed was sufficiently great that circulation was lost and the remaining cement was pumped away into the formation. This time is significantly less than indicated in the published tables for class "G" cement. Nevertheless, the shoe was sealed and the casing/cement integrity test was successful. Pea gravel was poured down the annulus to support the uncemented section of pipe. A more detailed discussion of this procedure and the equipment used is covered in the appendix.

7 7/8" Hole

Following drillout of the 8 5/8" casing, sticky shales/clay continued to a depth of 718 ft. at which point the top of the massive volcanics was encountered. After drilling a short section of the volcanics without incident the first of a long section of

lost circulation zones was encountered. The interval started at 986 ft. and lasted to a depth of 1822 ft. after which depth no further problems were encountered with lost circulation. The worst part of the interval (990-1127 ft.) had to be cemented. After significant conditioning of the interval with LCM pills the cementation was successful on the first attempt. Partial returns could be maintained with water by a depth of 1460 ft. Drilling at this point was continued with water until LCM pills and cuttings plugged off the remaining zones and full returns were regained by 1822 ft.

Penetration slowed significantly with depth below the lost circulation interval. Soft formation insert bits were most successful in drilling this interval due to the long run times and the additional weight which could be used on them. After reaching a TD of 3506 ft. and having explored all surface resistivity anomalies further drilling was abandoned. Openhole logging was cancelled at abandonment when no zones of interest had been encountered. Subsequently a 120 SK cement plug was set at 800 ft. to cover the casing shoe IAW State abandonment procedures. The wellhead was cutoff and an extension was welded to bring the top of the casing 1 ft. above the ground level. A buttplate was tackwelded over the end of the casing in accordance with the special abandonment procedures requested by the State of Oregon Department of Mineral Industries, the location was filled in and the well was turned over to the landowner to test for irrigation potential.

BHA Selection

As mentioned in the Anderson I report the 6 1/2" drillcollar string Taylor's Rig # 4 was supplied with were not acceptable for the 7 7/8" hole due to the fact that they were too large to be fished with an overshot. Subsequently, however, the pin on the number 3 - 6" collar from the top of the BHA broke during makeup. It was also learned that this 6" string had been extremely hard worked by an operator just prior to the rig being contracted by RH Exploration. Since the string was inspected prior to this job, metal fatigue was the probable cause of the failure. This knowledge in combination with the fact that the 6 1/2" collars were new was the basis of the decision to make up the majority of the BHA with the new collars. The 3 - 6" collars which had been at the bottom of the previous assembly (and had the least cyclic loading) were shifted to the top of the BHA to provide both a better transition to the drillpipe and a BHA least likely to present further problems. As in the Anderson well the assembly was run slick at all times with no apparent problems with deviation, ledges or extraordinary bit wear.