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Hydrogeology • Mineral Resources Waste Management • Geological Engineering • Mine Hydrology

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WM DOCKET CONTROL
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Mr. Matthew Gordon
Division of Waste Management
Mail Stop 623-SS
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Matt:

WM-R65

WM PROJECT
B-7372
WDA

WM Project 10

Docket No.

PDR ✓

LPDR B

Distribution

Gordon

Jean Tillet

(Return to WM, 623-SS)

Dr. Roy Williams, Dr. Dale Ralston, and Mr. Gerry Winter, representing Williams and Associates, Inc., met with the NRC May 21, 1985, in Silver Spring prior to the public meeting. Mr. Paul Davis was in attendance representing Sandia National Laboratory. The NRC was represented by Mr. Matthew Gordon, Mr. Neil Coleman, Mr. Fred Ross, Dr. Mal Knapp, and Dr. Robert Wright. The potentiometric baseline for the Hanford site was the primary topic of the pre-public meeting discussion. Dr. Ralston and Mr. Winter displayed and discussed several hydrographs constructed by Williams and Associates, Inc. These hydrographs were constructed based on available water level data for the Hanford site. These hydrographs were prepared for the period of June 1984 through November 1984. The hydrographs were discussed extensively and several conclusions developed from the presentation and discussion. It was concluded that a pre-test trend could be projected for the water levels. It also was concluded that the final steady state water level could not be projected confidently for some of the units being monitored. The Wanapum and Saddle Mountain Basalt flow tops appear to be very near steady state. Two anomalies are apparent in the plotted water level data. One anomaly is the water levels reported for the Cohasset flow top in DC-19C. The water level trend for the Cohasset flow top in this well is not the same as the water level trend for the Cohasset flow top in the other two clusters (DC-20C and DC-22C). A second anomaly is the water levels (elevations-MSL) in the Rocky Coulee flow top and the Cohasset flow top in DC-20C. The water levels (elevations-MSL) are nearly the same. The question arises as to why the water levels are the same if these flow tops are supposedly isolated or separated by a low vertical hydraulic conductivity flow interior (Rocky Coulee). Alternate hydrogeologic explanations exist that can explain this apparent anomaly.

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The major topic of discussion concerned the idea of "consensus" on establishment of a baseline water level data system. The topic was discussed and options presented by Dr. Williams. The meeting then adjourned.

The public meeting began at 9:00 a.m. in the Wilste Building. Dr. Wright provided an introduction to the meeting. Dr. Wright noted that an additional public meeting would be held the following day on the seismic reflection work which has been done at the BWIP site. Dr. Wright pointed out that a test strategy had been discussed in the July 1983 workshop held in Richland, Washington. This test strategy was outlined in the NRC Site Technical Position Paper 1.1. Progress at the Hanford site, with respect to the test strategy, was discussed in the June 1984 workshop held in Gaithersburg, Maryland. A letter dated October 1984 was sent by the NRC to DOE discussing the changes in the test strategy. An additional workshop was held in December 1984 in Silver Spring. The purpose of this workshop was to update the NRC with respect to the work completed to date prior to pump testing at the Hanford site.

Mr. Dave Dahlem provided the introduction for the Department of Energy (DOE). Mr. Dahlem pointed out that the purpose of the meeting was to provide an update on the data baseline and on schedule changes in the test strategy. The test strategy flow chart, initially discussed in the July 1983 workshop, was used in this meeting also. Mr. Dahlem stated that they intend to provide a full review of the data collected to date but that they do not consider the NRC to be in a prescriptive mode with respect to whether a consensus baseline has been achieved. The DOE considers establishment and definition of the consensus baseline to be their responsibility.

Dr. Wright commented that if a baseline consensus is not agreed upon then subsequent test results would be subject to criticism. Mr. Gordon pointed out that the long-term impacts of the establishment of the baseline will be critical to future modeling. Mr. Hub Miller (NRC) pointed out that some level of agreement must be reached based on the July 1983 agreement.

Mr. Dahlem introduced Mr. Maurice Veatch (Rockwell Hanford Operations). Mr. Veatch provided a handout for the discussion which followed. Mr. Veatch provided some background information on the status of baseline at the site. The cluster piezometers (DC-19, 20, and 22) were installed about 18 months ago. The piezometer completions are referred to as types A, C, and D. C piezometers begin in the Rosalia flow (Priest Rapids Member) and extend down through the Umtanum flow.

Mr. Veatch discussed the RRL-2 wells and piezometer completions:

this is the first site that will be pump tested. RRL-2B is the pumping well which will be drilled in the near future. RRL-2C is being drilled at this time. This multi-piezometer completion will monitor several flow tops and flow interiors. Mr. Veatch pointed out that the drilling and testing schedule has shifted from what is noted in a DOE publication referred to as TC-023. The drill rig will be moved from RRL-2C to RRL-2B after completing RRL-2C. The borehole RRL-2C will be instrumented while drilling RRL-2B. There is a 50- to 60-day pumping period planned in conjunction with a three-month recovery period for the RRL-2 site. They are currently ahead of schedule on drilling of RRL-2C. Drilling had penetrated to near the top of the Rocky Coulee flow on May 18. Casing has been set into the Wanapum in RRL-2C. Bentonite drilling mud was used on the shallow units in the well. The Grande Ronde flows are being drilled with water without the use of drilling mud additives. They will use the air rotary drilling method for RRL-2B if necessary based on the results of drilling RRL-2C. They plan to avoid using air rotary system, if possible, but if required they will add water to the hole to try and minimize the drilling impacts on water levels. Mr. Baker (Rockwell) pointed out that the large withdrawals experienced with the other air rotary drilled holes (DC-19, DC-20, and DC-22) were derived from the Wanapum Formation flow tops. Mr. Veatch pointed out that the transducer completion in the basalt interiors will be sealed although the column above the piezometer seat will be water filled. Dr. Ralston questioned whether the flow top completion would be the same as used in the other multi piezometer completions. The response was that the completions would be the same. Mr. Gordon questioned the hydraulic conductivity of the cement used in the multi-piezometer completion. Mr. Veatch responded that a high density cement is being tested for this use. Mr. Veatch pointed out that they hope to have a minimum of 20 to 25 feet of cement to seal the interiors.

Mr. Gordon pointed out that the consideration of water level data from DC-16 is incompatible with the three-point problem presented by Mr. Veatch for clusters DC-19, 20, and 22. Mr. Veatch responded that data outside the plane defined by these three wells should not be compared; extrapolation of the data outside these three piezometer clusters is not warranted at this time. Mr. Baker also pointed out that the DC-16 completion is suspect.

Dr. Domenico (DOE hydrogeology consultant) pointed out that the plane projected with the three-point solution may change with respect to geologic structures. The notable structures under consideration are the syncline axes to the south and southwest of the RRL. Mr. Gordon also pointed out that borehole DC-4 data are not compatible with the cluster data. Mr. Baker agreed that data from this borehole do not fit into the aforementioned plane. Mr.

Winter asked what type of data (surface based water levels or water levels calculated from downhole pressure readings) are presented on the figures. Mr. Veatch responded that the water levels are uncorrected depth to water values.

Mr. Veatch continued his presentation. He pointed out that the gradient is approximately 2×10^{-4} in the lateral sense. Heads appear to increase with depth. In December DOE noted the apparent presence of a high vertical hydraulic conductivity flow interior in the DC-20 cluster. This high vertical hydraulic conductivity flow interior is the Rocky Coulee interior lying between the Rocky Coulee flow top and the Cohassett flow top. Both flow tops are monitored in this cluster. Mr. Davis questioned the "reversal" of heads in the Grande Ronde flow tops in DC-19C. Mr. Veatch responded that the "reversal" of heads between the Cohassett and the Rocky Coulee-Umtanum flow tops in the DC-19C cluster has not been explained.

Mr. Baker pointed out that they have looked at a variety of scales with respect to presenting the hydrograph data. This statement was in response to a question by Dr. Williams. Mr. Baker pointed out that they believe they have 90% of the recoverable head in the piezometers. They have consultants looking at this question via statistical analysis of the data. The work is being done by personnel at the University of Arizona. Mr. Coleman pointed out that an apparent anomaly is displayed in the hydrographs. Flow appears to go upward to and downward to the upper Wanapum basalt flows. Mr. Veatch and Mr. Baker had no concrete explanation for this apparent anomaly. Mr. Davis pointed out that this zone could be explained by both conceptual and numerical models. Mr. Veatch pointed out that the DOE does plan to install multi-piezometer completions north of Gable Mountain-Gable Butte trend; this additional site should help answer this groundwater flow direction question. Mr. Davis pointed out that the current models used for the Hanford site do not show the apparent flow down to and up to the upper Wanapum Formation. Mr. Baker pointed out that modeling has not reached this level of sophistication at this time.

Dr. Williams questioned Mr. Veatch as to whether or not data are available for the Wanapum away from the effects of the cluster work. He also questioned whether there are other effects on the Wanapum not noted. Mr. Veatch pointed out that these were topics to be brought up in the afternoon session.

Mr. Veatch stated that the current schedule calls for pumping to begin in about November (1985). Baseline data collection will continue until testing. Two figures were shown to illustrate the effect on the hydrographs associated with drilling with mud. The possible deviation in the hydrographs for the period of time at

the scale shown is minimal. They plan to increase the transducer monitor interval (shorter time between readings) in DC-22 during activities at the site which could affect water levels. These activities include the drilling operations and the possible effects created by pulling bridge plugs. Mr. Veatch pointed out that drilling mud losses at RRL-2C had not been too excessive. Losses consisted of approximately 200 barrels of mud in the Sentinel Gap flow top, 60 barrels in the Upper Pamona, 20 barrels in the middle Saddle Mountains, and 12 barrels in the Roza flow top.

Mr. Dahlem introduced Mr. Baker for the subsequent discussion of testing at the site. Mr. Baker gave a brief overview of the conceptual model, the plans to pump the flow tops and the monitoring plans in both an areal and vertical perspective. Mr. Baker pointed out that the logic has changed somewhat from that incorporated in the NRC STP 1.1. Mr. Baker pointed out that there were several important features of the testing program which should be reiterated. The purpose of the testing is to directly test the flow paths and to determine the hydraulic characteristics therein. The large-scale testing also is important for testing the validity of the drill and test data collected to date. Mr. Baker pointed out that Stage 4 on the logic diagram will be initiated if the Grande Ronde Formation proves to be too tight for the large-scale testing. He further pointed out the features of STP 1.1 that are of primary importance. These features include the initiation of direct testing and the definition of a defensible conceptual model with boundary conditions and hydraulic properties. He also noted that the NRC must avoid being prescriptive and that the STP 1.1 is not a comprehensive document. Mr. Gordon questioned Mr. Baker as to how they plan to remove the previous test effects and drilling effects from the next test period. Mr. Baker pointed out that they plan to look at vertical hydraulic conductivity via inverse modeling and standard analytical techniques.

Mr. Baker pointed out that DOE plans to install the Westbay equipment in RRL-14 hopefully by August. Mr. Gordon questioned Mr. Baker as to why footnote 3 had been removed from the logic diagram. This footnote refers to consultation with the NRC. Mr. Baker stated that that question needs to be revisited. Dr. Wright and Mr. Dahlem entered into a discussion of the NRC role and the non-prescriptive nature of the NRC role. A major point raised was whether or not the NRC is a signatory to the test plans or the consensus baseline. Dr. Domenico questioned whether or not a fight would develop for a few tenths of a foot of additional recovery. This question was keyed to the fact that a lot of modeling will be conducted for the site. Mr. Mike Thompson (DOE) stated that this topic would be discussed later. Mr. Dahlem pointed out that trying to get a consensus opinion in

the scientific community is a real problem. Dr. Wright pointed out that maybe the real problem is using the word consensus. No agreement was reached on the definition of consensus and it was decided to discuss the term later during the meeting.

Mr. Baker continued his presentation after a lunch break. Mr. Coleman questioned Mr. Baker on the perception that is apparent on the cutting back of the scale of the tests. Mr. Baker pointed out that it is not clear that the first test will be cut back. Mr. Davis questioned whether DOE will continue their regional modeling effort. Mr. Dahlem responded that yes they will continue the modeling; this modeling will parallel the tripartite modeling effort discussed in the December 1984 meeting. Mr. Rollo (USGS) pointed out that they will release raw data but not interpretive data. This response by Mr. Rollo was in response to a question by Mr. Davis. Mr. Baker stated that they hope that all data used will be released in the near future. Mr. Baker pointed out that the baseline objectives consider understanding the ground water flow system and providing a basis for large-scale test interpretation. They agree that the baseline status of the Grande Ronde is in a stage of recovery from previous activities at the site. Mr. Baker stated that they believe they can predict with a reasonable degree of accuracy the recovery based on the use of the Theis method applied to the recovery data. Dr. Williams pointed out that this method of prediction is keyed to an early time match with the Theis method.

Mr. Baker pointed out that there is a large downward gradient to the Wanapum Formation. Mr. Coleman questioned what the conceptual model is for the Saddle Mountains and Wanapum Formations. Mr. Baker pointed out that there is no released conceptual model at this time. He speculated on the role that outcrop areas play in the recharge/discharge scenario. Mr. Coleman questioned the impact of the 200 area waste water disposal on water levels in the deeper units. Mr. Baker pointed out that they wanted to try and avoid speculation. Dr. Ralston pointed out that he did not feel at all comfortable with the attempt to extrapolate data away from these three cluster points. Mr. Baker pointed out that he is not even comfortable interpolating between the points. Dr. Domenico stated that the cluster data may fit with the old head data for regional distribution. He also noted that the data may be adequate for evaluating lateral flow but not vertical flow.

Mr. Baker noted that they have placed bridge plugs and cement in all holes around the RRL including DC-4/5, RRL-6, and DC-16A. They have pulled all the bridge plugs from RRL-14 at this time. Mr. Coleman questioned whether the installation of RRL-2C could affect the testing plans for the RRL area. Mr. Veatch responded that he did not think the drilling would adversely affect the

testing. He also pointed out that testing would not necessarily start as indicated in the new schedule. Mr. Davis objected to the term "isolation" used on page 29 of the handout from Mr. Veatch and as used by Mr. Baker. Dr. Williams reinforced this objection. Mr. Ron Smith (Rockwell) stated that the chemistry data support the separation. Mr. Davis questioned the basis for stating isolation. Dr. Domenico stated that the RRL area is too far from the river to use wave propagation theory to support isolation of these units in a lateral sense.

Mr. Baker pointed out that testing in the Grande Ronde will be conducted to minimize effects on boreholes DC-19, 20, and 22. Mr. Thompson pointed out that the test will be conducted at the largest scale possible while still minimizing impact on baseline data. Mr. Coleman questioned whether the tracer test would be conducted as originally planned. Mr. Baker and Mr. Veatch stated that they will conduct the tracer test at the same time in the RRL-2 wells. Mr. Veatch pointed out that they expect to have to conduct a pulse test on the Cohasset flow top due to the expected low hydraulic conductivity of this flow top. Mr. Veatch pointed out that the construction of the exploratory shaft would cause a postponement of most of the large scale testing until 1988. Mr. Winter questioned whether they would terminate the large-scale testing if they detected too much response from the test at the clusters DC-19, 20, and 22. Mr. Baker responded that yes they would terminate the testing but that criteria for termination are not established at this time. Mr. Baker pointed out that several new DC clusters have been proposed and illustrated their location on an overhead projection. These additional clusters will be completed in 1986. The new DC cluster wells will be located to the northeast and south of the RRL. A question was raised as to how the discharge for the large-scale test will be determined. Mr. Veatch responded that they will look at various limitations for the testing. Mr. Baker stated that the requirement for 800 feet of drawdown might still be maintained as a determining factor for discharge.

After the break, Mr. Gordon reviewed the public comments received in November 1984 on STP 1.1. He pointed out that a hydraulic and hydrochemical baseline should be established for the site. STP 1.1 advocates an approach which tests alternate conceptual models. It also notes that the stress applied to the system should be as large as practical. Mr. Gordon noted that only four parties had commented on STP 1.1. One of the common comments referred to the prescriptive nature of STP 1.1. The Yakima Tribe comments were an exception to this note. The USGS commented that the tests as proposed in STP 1.1 would not be appropriate for detecting small scale features. The USGS also commented that the term "consensus" should be described. The USGS believes that drilling fluids could affect the large-scale test. The Yakima

Indian Nation wants two to three years of data collected at the site prior to testing. The Yakima Indian Nation also wants the validity of Darcy's law to be tested at the site. The Edison Electric Institute had one basic comment. They believe that the test program can be reduced. Dr. Williams interjected that the multi-piezometer completion, in retrospect, is better than the multi packer system proposed in STP 1.1. Mr. Baker concurred with Dr. Williams and also pointed out that the multi piezometer system is much cheaper than the multi packer system. Dr. Williams also pointed out that the separate monitoring established for the Mabton is better than originally proposed.

Mr. Winter made a presentation based on the hydrographs prepared by Williams and Associates and as presented to the NRC prior to the public meeting. The hydrographs covered the water level data available to Williams and Associates, Inc. The time interval for the hydrographs was June through November of 1984. The data plots are based on the mean of the daily measured water levels. The mean value for each month is believed to accurately remove the barometric and tidal effects on the data. The March 31, 1985, water levels for each of the piezometers were added to the hydrographs. The hydrograph presentations also included a semi-log recovery plot based on the interpretation of the last major perturbation to the hydraulic system. The major perturbation could have been due drilling, well development, or other activities at the site which would have affected significantly water levels in the flow top under consideration. The hydrographs presented were at a much different scale than presented by DOE. These hydrographs showed that significant recovery is still occurring in the Grande Ronde flow tops except for the Cohasset flow top at DC-19C. These hydrographs also show that the Wanapum flow tops have achieved a very low rate of water level recovery from earlier activities.

Mr. Winter then made a brief presentation of the hydrochemical statistical report which is in draft form at this time. The brief presentation covered the highlights of the draft report which has been reviewed by the NRC just recently. Several questions were raised by Mr. Baker, Mr. Smith, and Dr. Domenico. Mr. Winter and Dr. Williams answered the questions with the acknowledged restraint that Dr. Kirk Steinhorst, the statistician for Williams and Associates, Inc., was not present at the meeting; Dr. Steinhorst played a major role in the preparation of the draft report. Mr. Winter pointed out that the series of statistical manipulations applied to the hydrochemical data pointed out that there are distinct water qualities that can be associated with the basalt flows. Mr. Winter discussed the hydrogeologic significance of the statistical analysis. The most obvious implication refers to those water samples and record numbers which do not coincide with the predicted water chemistry.

These anomalous record samples and numbers are found in boreholes DC-14, DC-1, DC-12, DC-6, and the McGee Well. The Grande Ronde samples from the McGee do not fall in the Grande Ronde groups for the rest of the boreholes investigated. Data from DC-14 indicate that a long period of well development may be required to fully achieve the proper hydrochemical data for the Grande Ronde units. Similar anomalous samples from the other boreholes were discussed.

Dr. Wright requested comments from participating members of the public and interested parties. Ms. Linda Lehman asked several questions pertaining to the BWIP site. Ms. Lehman represents the Yakima Indian Nation in conjunction with several other members at the meeting. Ms. Lehman asked for clarification on the tracer test, pump test, and injection test planned for the RRL-2 wells. She also noted that the Yakima Indian Nation would like to see quantitative criteria established for the adequacy of the baseline data. She also noted that they would like to see an agreement achieved on the baseline data before the exploratory shaft is started.

Mr. Bill Brown was present representing the Umatilla and Nez Perce Indian Nations. Mr. Brown requested that information be supplied pertaining to the question about whether the water quality of the river had been "categorized" at this time. Mr. Brown questioned whether the cement used in the RRL holes will be stable over a long period of time. He also asked how the casing storage effect will be handled for the tests planned at the RRL site.

Mr. Rollo was present representing the USGS. Mr. Rollo noted that he is fairly comfortable with the basic approach presented at the meeting. However, Mr. Rollo pointed out that Rockwell and DOE should be very cautious with respect to using limited testing at the RRL. He pointed out that they should consider seriously the gains that will be made versus the losses that will be incurred by implementing a limited testing program.

The participants caucused in separate groups at this time. Dr. Wright noted in the NRC caucus that a major comment seems to revolve about what is the valid baseline. Mr. Linehan (NRC) questioned whether the drilling of RRL-2C and 2B would affect the baseline. Dr. Williams and Dr. Ralston noted that it did not look like the baseline would be significantly affected based on what Mr. Veatch had said about the current status of drilling RRL-2C. Rockwell has already drilled down into the Cohasset interior at this date.

Mr. Gordon pointed out that there are several topics he felt should be considered for discussion. These topics included

discussing the NRC position on Rockwell proceeding without NRC concurrence on the baseline. A second topic included the definition of consensus. A third topic was the definition of baseline. Additional topics included the changes in the specifications on the LHS testing, the preparation of contour maps and flow directions based on available pertinent data, whether there was support for stating that there is an inadequacy of the baseline data to allow testing, and whether their changes in the proposed pump test strategy and in the test wells are appropriate. Mr. Linehan suggested that paragraphs be written and finished tomorrow concerning these topics. Mr. Gordon noted that Rockwell and DOE appear to believe that they have an adequate baseline for testing but not modeling. The DOE basis for modeling is definition of flow systems. The NRC reconvened with the other groups participating in this public meeting.

Dr. Wright reiterated the four main questions developed from the NRC caucus. These questions are 1) what is meant by consensus on baseline, 2) what is meant by baseline: does baseline mean testing or flow system definition, 3) what is the NRC position on the baseline, 4) what are the thoughts developed since the December meeting with respect to the apparent changes which will be initiated in the test strategy. Mr. Gordon noted that the data available for DC-19, 20, and 22 are very useful for considering the water level trends which are developing. Mr. Gordon noted that the NRC has not seen data collected since December. The December data package was received just a few days before the meeting. Mr. Gordon also pointed out that the NRC has not seen the DOE analyses of water level recovery at the site. He pointed out that the data at this time were insufficient for defining flow directions and gradient. He pointed out that the testing may adversely affect the baseline for the flow system definition. He requested that any information regarding the possible effects noted in the water level data with respect to the drilling of RRL-2C be provided to the NRC. Mr. Gordon noted that changes in the test plans including the new holes and the reduction of the test scale will be commented on in a letter which will be transmitted in approximately three weeks.

Mr. Dahlem discussed the changes in the test strategy chart. Mr. Dahlem suggested that the 'consultation with the NRC' footnote be placed between block 1b and the following diamond. He suggested that the word consensus be replaced with project. He also suggested that an insert be placed in the box. The insert is "defensible baseline provided for NRC awareness and comment, if necessary." Mr. Dahlem raised the question that it could appear that the NRC and DOE were in collusion with respect to determining when baseline was adequate and with respect to other aspects of the testing plan for the BWIP site. Mr. Linehan responded that that risk always exists but the benefits outweigh

the problems associated with respect to saying yes or no on the adequacy of baseline. Ms. Lehman stated that she thought consensus included the DOE, NRC, USGS, affected states and the affected tribes. Mr. Dahlem stated that he thought consensus is between the DOE and NRC. The meeting adjourned at this time and the groups reconvened the following morning to complete this public meeting.

A number of participants for the Rockwell-DOE team had to be absent from the continuation of this meeting (May 23) due to travel plans and conflicts with the seismic reflection meeting being held concurrently. The NRC team joined the Rockwell team after holding a short caucus before the public meeting. It was decided to wait for the typing on Mr. Wright's discussion of baseline consensus. The meeting proceeded with Mr. Gordon's discussion of the following topics as noted the preceding day. Mr. Gordon noted that the term baseline must be defined in terms of being adequate for testing and for flow system definition. Mr. Gordon pointed out that there were a lack of data and backup information pertaining to the interpretation of the data for evaluation of baseline. He pointed out that testing may adversely affect the baseline and that the cluster wells should be incorporated into the baseline data in conjunction with all available and pertinent data. He pointed out that potentiometric maps should be constructed using all pertinent information. Mr. Dahlem and Mr. Thompson stated that they did not believe flow system definition was required at this time. They noted that they believed a baseline consensus was required for testing at this time. Mr. Veatch suggested that the wording was a bit restrictive. Dr. Wright pointed out that comments would be considered but would not necessarily be incorporated into the NRC portion stated in the meeting notes being discussed at this time. Mr. Gordon continued and stated that the NRC will have to examine the data pertaining to the possible effects on the baseline caused by drilling RRL-2C. Mr. Gordon pointed out that there have been significant changes in the test plan. These changes include: a) limited scale testing at the RRL wells, b) new boreholes planned outside the RRL, c) the testing postponed from June until at least November or until the basis for test interpretation is established, d) the establishment of a program to perform independent regional modeling, and e) the potential for deletion of the large-scale testing prior to exploratory shaft sinking. Dr. Williams pointed out that the limited scale test will definitely inhibit the ability to determine the vertical hydraulic conductivity of the basalt flow interiors. Mr. Gordon continued with his listing. Item f) refers to the plans for the large-scale test and their subsequent alteration. Mr. Gordon pointed out that g) questions have been raised about the calculation and use of environmental heads and the hydraulic parameters referred to as effective porosity and dispersivity

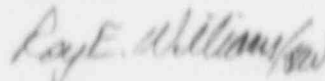
which were not discussed in this meeting. At this time Mr. Thompson objected to Mr. Gordon's comment about the reduction of the large-scale test. Mr. Gordon pointed out that the final item h) concerned the NRC and DOE agreeing on the consultation points on the testing logic diagram or flow chart.

After a brief break, Mr. Bazemore (Rockwell) discussed several points from the DOE-Rockwell side. He pointed out that an exchange of information has occurred on the baseline and test plans at RRL-2 site. He noted that the changes in the test plans were discussed as well as the comments received on the NRC STP 1.1. He noted also that a hydrochemistry presentation has been made to the DOE and Rockwell. Mr. Bazemore pointed out that they consider themselves to be at position one on the logic chart or testing strategy chart as noted earlier.

Mr. Thompson pointed out that the views on STP 1.1 are not changed with respect to the NRC. He noted that discussions on the baseline are DOE's call but discussions with the NRC will be sought. Mr. Thompson noted that they believe it is prudent for DOE to seek consensus on the baseline prior to initiating activities that could affect the baseline. He noted that testing has been delayed until November to accommodate changes in the current baseline information. DOE will continue to obtain spatial and temporal baseline information adequate for testing this fall. He noted that DOE will provide information on schedule changes, that water level data were presented for March 1985, and that the balance of the data will be sent in two weeks. DOE fully intends to analyze the effects of testing before conducting any testing on the site. Baseline data will continue to be collected. The DOE intends to amend the test logic diagram with respect to the points for NRC consultation. The meeting notes were discussed between the NRC and DOE representatives at which time the presence of Williams and Associates, Inc. was no longer required.

An attendance list was not available for Williams and Associates, Inc. We would appreciate receiving a list of attendees at this meeting.

Sincerely,

A handwritten signature in cursive script, appearing to read "Roy E. Williams".

Roy E. Williams