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Richland Operations Office
P.O. Box 550
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87-QSD-274

OCT 14 1987

J. H. Anttonen, Assistant Manager
for Commercial Nuclear Waste

DOE-RL QUALITY ASSURANCE AUDIT 8706 - BASALT WASTE ISOLATION DIVISION (BWI) ACTIVITIES

A Quality Assurance Audit of DOE-RL BWI activities is planned for November 16-20, 1987. The scope of the audit is provided in Attachment A. The audit will address the implementation of requirements, specified in the Basalt Procedures Manual (BPs) and the Project Management Directives Manual (PMDs) by DOE-RL BWI personnel. Attachment B is a tentative schedule for the audit activities.

The entrance meeting is scheduled for 9:00 am, November 16, 1987, in Conference Room 434 of the Federal Building. The exit meeting is tentatively planned for 3:00 pm, November 20, 1987 in the same Conference Room. The audit team leader, J. C. Friend (MACTEC), will be in contact with R. D. Izatt to establish specific schedules and availability of personnel who will be involved in the audit.

Any questions regarding this audit may be directed to T. K. Subramanian on 376-3176, or me at 376-7250.

R. P. Saget

R. P. Saget, Director
Quality Systems Division

QSD:TKS

Enclosure

cc w/encl:
D. Stewart-Smith, Oregon State Department of Energy
B. Burke, Confederated Tribes of the Umatilla Indian Reservation
R. Halfmoon, Nez Perce Indian Tribe
R. Jim, Yakima Indian Nation
A. Alkezweeny, On-Site Tribal Representative
T. Husseman, Washington State Department of Ecology
D. Silver, Washington State Institute for Public Policy
G. Faust, Weston
R. T. Johnson, WHC
J. P. Knight, DOE-HQ
J. J. Linehan, NRC
N. Montgomery, EEI

cc w/o encl:
R. Cook, NRC
J. Morris, DOE-HQ

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See pocket 1
for enclosure

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see ltr. to Kennedy
Sm. Cook Ltr to Anttonen
Sm. Saget
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Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

October 16, 1987

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J. H. Anttonen, Assistant Manager
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BASALT WASTE ISOLATION PROJECT IMPLEMENTATION OF IODINE-129 STRATEGY

Westinghouse Hanford Company (WHC) has recently received from the U. S. Department of Energy-Richland Operations Office (DOE-RL) a proposed strategy for ensuring that Iodine-129 (I-129) is not precluded as an indicator of the potential presence of a disqualifying condition (see attachment). Based on the proposed strategy and our discussions with DOE-RL staff, it is our understanding that the intent of the strategy is:

1. Define the aerial and vertical distribution of I-129 and other groundwater constituents in the deep basalts throughout the Hanford reservation. Differentiate, as much as practicable, among possible sources of I-129 that may be present in deep groundwater.

2. Minimize, to the extent practicable, introduction of I-129 into basalt aquifers during drilling and construction of DC-24, DC-25, DC-32 and DC-33.

3. Determine the amount of I-129 introduced to the groundwater by drilling fluids during drilling and construction of DC-24, DC-25, DC-32 and DC-33.

4. Clean up drilling fluids that are introduced to the confined aquifers to the degree practicable and consistent with achieving a balance with the scheduled hydrologic baseline period.

The first intent will be the subject of an evaluation by WHC of the boreholes proposed for I-129 sampling. A time frame for sampling of appropriate boreholes will be established. Conduct and timing of this work is contingent on adequate funding and will be evaluated relative to project

priorities. Differentiation of sources of I-129 can only be based on associated groundwater constituents and an overall model of the flow system that is consistent with hydrochemical and hydrologic data. Such an analysis is specified in hydrochemistry planning documents and will be conducted in a systematic manner as site characterization proceeds.

The second intent will be achieved by borehole designs aimed at minimizing displacement of water in basalt aquifers (cementing off of the unconfined aquifer and the Saddle Mountains Basalt) and by use of air assist reverse circulation drilling.

The third intent will be achieved in effect by implementation of the existing test plan for CX-series boreholes (SD-BWI-TP-045, p. 40) which requires analysis for I-129 of drilling fluids collected while drilling through 12 specific horizons.

The fourth intent requires the development of criteria for clean up and for definition of acceptable baseline impacts. Implementation would involve:

1. Determination if a tracer should be intentionally added to the drilling fluid or if chemical contrast that exist naturally between drilling fluids and formation water can be effectively used to document contamination by drilling fluid. A number of such tracers exist and it is the position of WHC that addition of tracers is unnecessary. For example, Hanford system water tentatively approved for drilling fluid make-up contrasts with formation water in its chloride, sulphate, total organic carbon and tritium content. Any one of these constituents would suffice to determine the amount of drilling fluid present in a sample.

2. Development of clean-up criteria based on the development ratio historically required to achieve reasonable clean-up or based on chemical recovery curves of tracer concentrations. The most practical approach given consideration of baseline impacts is to use the historical development ratio. Concurrent groundwater samples would be taken in order to define clean-up extent but may not be used for deciding the amount of pumping required.

3. Balancing the extent of clean-up against hydrologic baseline equilibration requires determination of impact on equilibration time as a function of fluid withdrawn during development. As envisioned, development would be of the entire open hole section of the borehole. Under those conditions the response to development cannot be determined without knowledge of the hydrologic properties of each flow top in the open portion of the borehole. Consequently, it is recommended that the decision on extent of development be based on the historic development ratio given reasonable drilling fluid losses. Any effort to clean up drilling fluids introduced during the drilling process will inevitably lengthen the baseline equilibration period. It is our understanding that resultant schedule delays are acceptable to DOE given appropriate efforts to ensure that they are minimized.

It is our judgement that the implementation of the above recommendations will not impact on the start of drilling of DC-24CX. It may, however, impact piezometer installation and initiation of borehole development once drilling is complete. To minimize this potential impact, WHC will implement DOE's request to employ the I-129 strategy based on our interpretation of its intent as discussed above.

Westinghouse Hanford Company believes that the intent of the I-129 strategy and therefore the corresponding approach to implementation can be improved in the interest of evaluating the site for a repository. We therefore propose the following alternatives for your consideration.

1. Drill the CX-series boreholes as currently planned except pack off one or two horizons in the Wanapum or upper Grande Ronde. Develop these horizons individually for hydrochemical samples and measure the samples for I-129 as well as other appropriate constituents. This approach may provide early indication of the presence or absence of a possible disqualifying condition and yet would minimize the overall impact on the baseline especially if vertical communication is limited.

2. Conduct a drill-and-test program in borehole DC-24CX and in DC-33CX, at least in the Wanapum and Grande Ronde. This option would have the greatest impact on the baseline but would provide significant information on the vertical distribution of I-129 and other hydrochemical tracers (assuming suitable packer seals can be obtained) without drilling additional boreholes in the vicinity of the planned CX boreholes.

We believe that alternative one above provides the most direct response to evaluating the possible presence of I-129 as an early indicator of a possible disqualifying condition. This alternative will not have additional impact on the construction schedule for DC-24, DC-25, DC-32 and DC-33.

Your prompt response on this urgent matter is requested. Please advise Mr. G. S. Hunt of my staff if you have questions or require additional information.

D. C. Gibbs, Manager
Civilian Waste Management Division

kfc

Attachments

DOE-RL - Director, Financial Resources Division
A. W. Kellogg, AMO Operations Officer (w/o attachments)

To: Jim Kennedy/Jim Donnelly
MS 623SS HLOB

Kennedy/
Donnelly

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

87-QSD-276

OCT 16 1987

Those on Attached List

Ladies and Gentlemen:

BASALT WASTE ISOLATION PROJECT (BWIP) QUALITY ASSURANCE (QA) PROGRAM WORKSHOP COMMENTS AND RESOLUTIONS

The closing session of the January 1987 Quarterly Project Status meeting between the Department of Energy, Richland Operations (DOE-RL) and the NRC, States and the affected Tribes included a workshop on BWIP QA program.

During the workshop a commitment was made by DOE-RL to provide to the NRC's On-Site Representative the number of surveillances performed on the Site Characterization Plan (SCP) preparation and the number of nonconformances identified.

The information provided informally to the NRC On-Site Representative during April 1987 is shown in Table 1 of enclosures. The enclosed Table 2 provides the updated information resulting from one (1) audit and three (3) surveillances performed by both Westinghouse and DOE-RL, on the SCP activities.

Table 1: All the deficiencies listed on Table 1 addressed by Westinghouse Surveillances have been corrected. Westinghouse QA has verified the corrective actions and closed the unsatisfactory surveillances. All the seven (7) findings from audit 87-001 have been closed after required verification. One (1) of the seven (7) findings is tracked by audit 87-004.

Table 2: Three (3) out of thirteen findings resulting from Westinghouse audit 87-004 have also been closed by Westinghouse QA after verification of corrective action. Ten (10) findings remain open. While Westinghouse Surveillance concerns are closed out, DOE-RL Quality Systems Division (QSD) Surveillance concern response is under verification.

Please contact Mr. T. K. Subramanian on (509) 376-3175 for any additional information on the status of surveillances and audits on SCP production activities.

Sincerely,

R. P. Saget

R. P. Saget, Director
Quality Systems Division

QSD:TKS

Addresses - Letter dated OCT 16 1987

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Assurance Division, RW-24

Ralph Stein, Director
Engineering and Geotechnology
Division, RW-23

TABLE 1

April 1987 Status

Results of Rockwell Surveillances and Audit on SCP preparation

SURVEILLANCES

YEAR	TOTAL	UNSATISFACTORY	REMARKS
1986	20	7	All unsatisfactory surveillances have been closed after verifying corrective actions
1987	7	1	

AUDITS

87-001 Feb. 1987	7 findings 3 observations	All responses have been accepted by QA and findings closed (item tracked by audit 87-004, Table 2)

TABLE 2

September 1987 Status

AUDIT/SURVEILLANCES	RESULT	REMARKS
Westinghouse Audit 87-004	13 findings 2 observations	3 closed, 10 open Responses for others accepted by QA
Westinghouse Surveillances 2	1 unsatisfactory 1 satisfactory	corrective action completed
DOE-RL QSD Surveillance 1 QSD-066	1 finding	Response under verification by Quality Assurance