



Department of Energy

Idaho Operations Office  
West Valley Project Office  
P.O. Box 191  
West Valley, NY 14171

May 14, 1991

M-32  
PDR / LDR

Mr. R. Davis Hurt  
U. S. Nuclear Regulatory Commission  
Headquarters  
Washington, D. C. 20555

SUBJECT: West Valley Waste Qualification Notebook

Dear Mr. Hurt:

Attached for your use and information are four copies of the "waste qualification notebook" we have discussed with you and your waste qualification staff. The document is entitled: Waste Form Qualification Program for Cement Solidification of Sludge Wash Liquid. As discussed earlier the waste qualification program is captured in tabular form. Several tabs are "blank", and will be filled in as the documents outlined in the Test Plan are completed. The timing for these additions is covered in the schedule update provided to you weekly.

Since you will be visiting West Valley during the week of June 3, it is our plan to review the notebook with you then, provide any new information available, and address any questions received from you either formally or by telecon on the waste recipe development. I would encourage you to call if there are any immediate concerns on the notebook or other information provided herein.

Based on May 2, 1991 telecon, attachment 2 provides the actual sludge wash composition data based on washing sludge with a 32 inch heel. Attachment 3 provides the "expected" sludge wash composition data based on mass balance calculations for a 129 inch heel. This completes two of the "immediate" actions described in the May 2 telecon which is provided as attachment 4. Other items in the telecon will be covered in future correspondence or in the June interface meeting with you.

If you have any questions on the recipe work, please call Steve Ketola of my staff on FTS 473-4314.

Sincerely,

*W. Stephen Ketola*  
T. J. Rowland, Director  
West Valley Project Office

Attachments

cc: J. E. Solecki, DOE-ID  
D. B. Engelman, DOE-ID

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change all distribution except CF, PDR / LDR NF-13  
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## Attachment 2

## Sludge Wash Composition

## Weight Percent of Total Solids

## 1. 32-Inch Heel

	Wash #1	Wash #2	Wash #3	Wash #4
Nitrite	17.9	19.3	18.5	16.7
Nitrate	17.4	18.0	16.7	11.5
Sulfate	21.5	21.0	21.3	17.0
Potassium	1.6	2.3	2.1	
Sodium	38.0	36.5	38.2	49.4
Cesium-137 (uCi/g)*	475	118	40	12.6
Strontium-90 (uCi/g)*	0.34	0.08	0.03	0.01
Alpha Plutonium (uCi/g)*	0.292	0.038	0.010	0.002
TDS (%) **	12.1	3.2	1.1	0.3
Density (g/ml solution)	1.083	1.018	1.005	1.001

\*(Radionuclide analyses are based on activity per gram of solution)

\*\* TDS (Total Dissolved Solids in percent (g solids/g solution x 100))

## Attachment 3

## Sludge Wash Composition

## Weight Percent of Total Solids

## 2. 129-Inch Heel

	Wash #1	Wash #2	Wash #3	Wash #4
Nitrite	22.6	22.4	21.9	32.2
Nitrate	27.4	27.2	26.5	17.9
Sulfate	14.3	14.2	13.9	9.4
Potassium	0.9	0.9	0.8	0.6
Sodium	30.5	30.7	31.3	33.2
Cesium-137 (uCi/g)*	830	210	54	14
Strontium-90 (uCi/g)*	0.54	0.14	0.04	0.01
Alpha Plutonium (uCi/g)*	0.295	0.075	0.020	0.008
TDS (%) **	18.6	5.2	1.4	0.5
Density (g/ml solution)	1.135	1.031	1.007	1.002

\*(Radionuclide analyses are based on activity per gram of solution)

\*\* TDS (Total Dissolved Solids in percent (g solids/g solution x 100))

6 May 91

T E L E C O N M E M O

West Valley Demonstration Project  
to the  
Nuclear Regulatory Commission

SUBJECT: West Valley preparation of the Cement Recipe for the  
Sludge Wash Waste Form.

DATE: 2 May 1991

PARTICIPANTS:

NRC: Mike Tokar  
Mary Adams

West Valley: W.S.Ketola (DOE) *WSK 5/13/91*  
P.S.Klanian  
J.C.Cwynar  
J.A.Mahoney  
D.Fauth  
F.T.Hara

DISCUSSION:

- o The discussion began with an explanation of the purpose of the conference call, i.e., to provide clarification to the NRC on the difference between the 32in. "heel" previously specified in the Waste Qualification Test plan and the current 129in. heel now shown in the revised test plan.
- o Mary Adams however, opened with a discussion of the need for the "Topical Report" since West Valley intends to provide TSRs (Test Summary Reports) for all of the testing to be done in support of qualification. Mike Tokar explained that because NRC does not regulate DOE, the "regulatory" requirement to do a Topical does not apply. The purpose in doing the Topical for the last recipe development was to document the work. Further clarification of this discussion will be added to the agenda for the next meeting with the NRC scheduled for the week of June 3, 1991.
- o Mary Adams expressed concern that the differences between the 32 and 129 inch heels would invalidate the test plan, thus implying that potentially "two" recipes would have to be developed. WVNS explained that actual "wash" data for the 32in. case and mass balance calculations for the 129in. case show no significant difference. Further, sampling is in progress which

will provide actual 129in. sludge and supernatant samples for additional testing to confirm the correlation.

ACTION ITEM:

Dave Fauth will assemble the data and results of the 32in. heel sludge wash tests, as well as the calculations showing the close correlation with the current 129in. heel. DOE will transmit.

- o NRC expressed concern over the recipe's capability to cover the range of chemistry implied by the differences of the four washes. WVNS discussed the "windows" parametric testing plan, and did acknowledge that while the first three washes should be easily covered by the proposed recipe, the fourth wash may be sufficiently different as to require another recipe and hence still other qualification testing. This will not be known for some time yet, however, West Valley will keep NRC informed and will modify, if necessary, the Test Plan by updating the Waste Qualification Notebook to include whatever additional testing may be required.
- o NRC was concerned with what appeared to be the single "confirmatory cube" proposed by the test plan. WVNS explained that multiple cubes will actually be tested, and that while the test plan may have been written in the "singular", the Test Requests and Procedures spell out how many cubes will be tested.

ACTION ITEM:

WVNS will assemble all currently available documentation (TR's, TP's, etc.) in the form of the Waste Qualification Notebook to be forwarded by DOE to NRC by 5/10/91.

- o NRC asked for the up-to-date results from the 5 year confirmation test program instituted as a part of the original STS treatment program.

ACTION ITEM:

WVNS will gather the test reports for transmittal by DOE. A reasonable target date should be established (say 2-4 weeks from this telecon date) for the transmittal.

- o The plan for having NRC at West Valley was discussed. Cement Recipe development would be added to the agenda. DOE will coordinate with Davis Hurt.