LTR DBURROUGHS EW

Mr. Donald Burroughs, President
Diversified Technologies, Inc.
103 Dixon Drive
Chestertown, MD 21620

DEC 12 1989

Dear Mr. Burroughs:

This is in reply to your letter of November 16, 1989 which presented and requested our comments on an outline of your proposed revision to Topical Report DNS-RSS-200 NP-A = The Dow Solidification Process For Low-Level Radioactive Waste (Docket Number WM-82).

We have reviewed the outline and are in general agreement that it falls within the framework of the discussions held in our meeting on November 14, 1989. We do have one question, however, as we discussed in our telecon of December 6, 1989: we would like some clarification on the differences between Item III, PCP (Sample Verification Procedure) and item IX, Waste and Specimen Preparation.

We understand that you will perform the full-scale solidifications with simulated waste and vinyl ester styrene on December 18-19, 1989 at Chestertown, Maryland. Since we are nearby, we request your permission to send one or two NRC representatives to observe these full-scale solidifications.

A summary of our meeting here on November 14, 1989 is enclosed for your information.

Sincerely,

Original Signed By

Michael Tokar, Section Leader
Technical Branch
Division of Low-Level Waste Management
and Decommissioning, NMSS

Enclosure: As stated

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Docket File WM-82 RLBangart PLohaus JJSurmeier LLTB r/f
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SUBJECT ABSTRACT: TOPICAL REPORT DNS-RSS-200 NP-A (DOCKET NUMBER WM-82)

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NAME	:EWick/jl	:MTokar	:JSurmeier	:	:	:	:
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

DEC 4 198

MEMORANDUM FOR: John Surmeier, Chief
Technical Branch
Division of Low-Level Waste Management
and Decommissioning, NMSS

THRU: Michael Tokar, Section Leader
Technical Branch
Division of Low-Level Waste Management
and Decommissioning, NMSS

FROM: Everett Wick
Technical Branch
Division of Low-Level Waste Management
and Decommissioning, NMSS

SUBJECT: SUMMARY OF NOVEMBER 14, 1989 MEETING
WITH DIVERSIFIED TECHNOLOGIES GROUP, INC.

The subject meeting summary is enclosed. This summary highlights the status of efforts by Diversified Technologies Group, Inc. to re-introduce the Dow Polymer Solidification Process for low-level radioactive waste. These highlights include discussions of a testing program that would be required to support revision of the NRC-approved Dow Topical Report to cover solidification in larger containers.

Everett Wick

Everett Wick
Technical Branch
Division of Low-Level Waste Management
and Decommissioning, NMSS

Enclosure: Meeting Summary

cc: Attendees w/enclosure

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MEETING SUMMARY

DATE: November 14, 1989

TIME: 10:30 am to 1:00 p.m.

PLACE: OWFN Room 10B-13

PURPOSE: TO UPDATE NRC ON STATUS OF EFFORTS BY DIVERSIFIED TECHNOLOGIES GROUP, INC. TO RE-INTRODUCE DOW POLYMER SOLIDIFICATION PROCESS TO THE NUCLEAR INDUSTRY

CHAIRMAN: Mike Tokar/Everett Wick

ATTENDEES:

NRC

John Surmeier, LLTB/LLWM*
Mike Tokar LLTB/LLWM
Everett Wick LLTB/LLWM
Derek Widmayer LLTB/LLWM*

Diversified Technologies Group, Inc.

Donald Burroughs, President
Martin Brownstein, Vice President/Engineering
Charles Jensen, Vice President/Operations
Harold Filter, Chief Scientist

*Part Time Attendee

DISCUSSED ITEMS

1. Representatives of Diversified Technologies Group, Inc. (DTG) attended NRC's Workshop on Cement-Solidification of Low-Level Radioactive Waste at Gaithersburg, MD may 31-June 2, 1989. As a result of discussions at the Workshop on problems encountered with cement-solidified waste forms, DTG decided to re-introduce the DOW Polymer (Vinyl-Ester-Styrene) Solidification Process to the nuclear industry.[1] This is possible because Dow has decided to make the process available to the public.

2. No formal, legal relationship exists between Dow Chemical, USA and Diversified Technologies. However, technological and personal relationship exist because Messrs. Burroughs, Brownstein and Filter are former Dow employees. DTG feels that these relationships enhance DTG's ability to further develop and utilize this technology.

3. DTG plans to re-introduce the Dow Polymer Solidification Process primarily for the solidification of ion-exchange resin beads.

4. DTG noted that the cost of cement solidificatin of LLW has increased and that polymer solidification is now significantly cheaper. DTG said that polymer (VES) solidification is close to competing costwise with disposal of LLW in polyethylene HICs (NRC pointed out that it had not approved polyethylene HICs).

5. The Utilities, however, want to dispose of the waste in larger liners (200 cubic feet) for cost and burial efficiency. The Topical Report for the DOW Polymer Solidification Process is approved only for liners with volumes up to 50 cubic feet. DTG, therefore, wants to get NRC input on a test program that would support a revision to the Topical Report for solidification in liners with volumes up to 200 cubic feet.

6. DTG intends to conduct a testing campaign on non-radioactive, VES/simulated waste product, including full-scale solidifications in 200 cubic foot liners. Information and data gathered during this test will be used to support submittal of a revision to the TR approving solidification in 200 cubic foot liners. DTG plans to begin the full-scale solidifications in December, 1989. The testing will include lab-scale samples and full-scale samples to show that the lab-scale samples (which are the size that will be tested at the reactor site to verify that the process is producing acceptable solidified product) are representative of full-scale product. The lab-scale and large-scale samples will be tested for compressive strength before and after thermal-cycling and before and after 90 day immersion. The samples will also be examined for free-liquid content.

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(1) The solidified waste form produced by this process is covered under the Topical Report DNS-RSS-200 NP: The Dow Waste Solidification Process for Low-Level Radioactive Waste (Docket Number WM-82). This TR was approved June 1, 1988.

NRC told DTG that in order to demonstrate that the lab-scale samples have the same characteristics as the full-scale product, at least 10 samples of each should be tested for statistical significance. Also, sufficient samples should be tested from the full-scale product to demonstrate homogeneity. This could be done by taking nine samples for each test from a radial-axial plane as shown in the sketch below.

Since nine samples are required for each of three tests, a total of 27 full-scale samples would be required.

7. NRC advised DTG that with respect to a new TR or a revision to an existing TR, NRC's fee policy is full recovery of costs. There is no upper limit.

8. DIG asked for NRC's comments on the proposed test. NRC replied that before giving verbal comments on the process or testing program, it would need to see them in writing. DIG agreed to provide this.

9. A copy of DTG's vugraph presentation is available in my office.