September 8, 1982

Mr. M. R. Eshelman
Newport News Industrial Corporation
230 41st Street
Newport News, Virginia 23607

Dear Mr. Eshelman:

Subject: Request For Additional Information Number 1 On NN1-81-6(P)

We are currently reviewing Newport News Industrial Corporation licensing topical report number NN1-81-6(P) entitled "Waste Solidification and Packaging System" dated June 1981.

The initial review reveals the need for the additional information indicated in the enclosure.

This information is necessary to continue the review - its expeditious submittal will, therefore, be to Newport News Industrial Corporation's advantage. Please advise us, as soon as possible, of your planned submittal date to permit us in turn to develop the review schedule.

Sincerely,

Original Signed By:

Cecil O. Thomas, Acting Chief
Standardization and Special
Projects Branch
Division of Licensing

Enclosure:
As stated

DISTRIBUTION:
Central File
NRC PDR
NSIC
PRC
JBerggren
PAnderson
COThomas
TNovak
SSPR Rdg

RD-8.2 NEWPORT NEWS INDUSTRIAL CORP-

DESIGNATED ORIGINAL 9/8

Certified By K Baumann 9/8/82

8210040394 820908
PDR TOPRP EMVNNIC
C PDR

OFFICE	SSPB/DL	SSPB:DL					
SURNAME	JBerggren:kab	COThomas					
DATE	9/ /82	9/8 /82					

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY USGPO: 1981—335-960

NEWPORT NEWS INDUSTRIAL CORPORATION WASTE SOLIDIFICATION
AND PACKAGING SYSTEM TOPICAL REPORT QUESTIONS
NNI-81-6(P)

1. In Appendix 3A, you state that the processing capacities of the NNI's Waste Solidification and Packaging (WSP) system assumes that only 1 percent of wet wastes will bypass the volume reduction and encapsulation process. State the basis for the 1 percent bypass assumption of the wet wastes and provide the WSP system process capacity assuming spent resin will not be calcinated or incinerated to produce dry powder.

2. In Table 3A-1, you state that the estimated process operating time for the WSP system will range from 27 to 85 percent based on 24 hours a day and 365 days a year operation for a 3400 MWt BWR with powdered resin condensate filter/demineralizers. Estimate the expected system down time due to surveillance, equipment maintenance and repair, system and component decontamination, and instrument calibration. If a powdered resin BWR requires two WSP units as you suggested, would it require two completely redundant and independent WSP units?

3. In Section 2.3.3 and Appendices 2A and 2B, you describe NNI's laboratory and prototype pelletization/encapsulation process experiences. Provide the results of your prototype tests including laboratory scale tests of the encapsulant system which were underway at the time of your topical report submission.

4. Describe physical and/or chemical characteristics of VR powder pellets and pellet additive(s).

5. In Sections 2.3.2 (4th paragraph) and 3.1 (2nd paragrah), you state that the VR bypass solidification process is similar to the Dow Waste Solidification Process described in the Dow Topical Report, whereas, in Section 1.1 (3rd paragraph) you state the VR bypass system is virtually identical to the Dow Waste Solidification Process. Itemize in tabular form any deviation made for NNI's VR bypass solidification process from the Dow Waste Solidification Process described in the Dow Topical Report, "The Dow System for Solidification of Low Level Radioactive Waste from Nuclear Power Plants", dated March 1978.

6. In Sections 1.1 (3rd paragraph) and 3.1 (2nd paragraph) you state that the process for encapsulation of pelletized waste is a modification of the Dow Waste Solidification Process. Describe the modifications including your Process Control Program (boundary conditions for the process parameters) for the pellets and pellet additive(s) to ensure that NNI's encapsulation process will produce a monolithic liquid-free solidified product.

7. Clarify the following relating to the flush water:

   a. Will each waste transfer and solidification agent additions be immediately followed by a flush operation of the waste and the additive piping and the internals of the fill head?

   b. If the flushings are required, how is the flush water in the drum ultimately disposed?

8. Section 2.3.2, page 2-2, 1st paragraph

What are the physical forms of hte noncombustible wastes? Also please supply a copy of Figure 2.1-1 which is missing frm the report.

9. Page 3-1, Section 3.1

Is the VRS bypass waste solidification portion of the WSP meant to operate over the full range of liquid waste compositions approved for the Dow system, and is the NNI VRS bypass limited to those? State in tabular form the range of compositions for which the VRS bypass is to be used.

10. a) Page 3-2, Section 3.2 and Appendix 2A

Unacceptable feeds are stated to be those that cannot be solidified during verification testing. Reference is made to Section 3.2.4 for this. Section 3.2.4 says only that product quality montioring will be in accordance with the Dow Topical Report. Expand on this. State the minimum verification tests that are to be done, their frequency, where the samples are obtained, and the type of tests done. Also are any tests performed on VRS capsules prior to encapsulation? If so, describe them and the schedule. If any mechanical tests are performed (e.g., penetrability, rigidity, etc.) on VRS bypass wastes or capsules, describe them and discuss their reproducibility, independence of particular operator, etc. State the acceptance criteria for verification tests.

10. (b) Appendix 2A, Section 1.5.1, page 2A-6, 2nd paragraph

It is stated that cut samples suffered weight loss with time that is attributed to the presence of air pockets. Describe in more detail what happens, i.e., is liquid lost due to evaporation, or does the sample expand?

(c) Appendix 2A, Section 1.7, page 2A-8

What about penetration tests on the specimen? Can it withstand an impact testing? Will it be fractured into smaller fragments under such conditions?

(d) Appendix 2A

Have curing times been verified by NNI for 55-gal drums? If so, describe the tests. Are the proportions of water, binder, promoter, and catalyst used for encapsulation of pelletized VRS wastes kept fixed or are they subjected to change depending on the waste composition?

11. General Comments

In this section include a list of those tests made by Dow Chemical (without details) that NNI is relying on for validation of the VRS bypass process.

(a) Page 4-2, Section 4.2.1

What kind of level detector is used in the VRS product conveyor? What precision and accuracy does it have?

(b) In the event of failure of this detector, what happens and how is recovery accomplished?

(c) In the event that the special valve inside the conveyor on the VRS discharge fails, what are the consequences? Describe what happens.

12. Page 4-2, Section 4.2.2

What are the moisture limits on the dry air used for mixing and given their basis. Discuss the effect of moisture on VRS conveying and capsule quality.

13. (a) Page 4-5, Section 4.4

Describe how control of total radioactivity entering a drum is exerted for both VRS and VRS bypass wastes.

(b) Section 4.4.4, page 4-5

If the proportions of wastes and chemical agents are miscalculated and fed into the system, describe how this will affect the gel time. And if the gel does not solidify, explain how the operator is able to identify the problem.

(c) If the excess liquid drained from the agitator spills over into the station, can the operator identify the problem?

14. Section 7

This section is too general. Discuss VRS bypass process initiation and operation in more detail including how proportions of binder to water, and amounts of promoter and catalyst are adjusted for various waste compositions. If a standard procedure is used for this, describe this

procedure. Also include what basis is used for determining the amounts of binder, waste promoter and catalyst, where the basis information is obtained and how often is it done.

15. Section 8.4.3.1.3, page 8-12, 2nd paragraph, 3rd sentence

The statement that there is no I-131 in evaporator bottoms may be a valid statement for some power plants. However, source term measurements performed for the NRC have indicated that the iodine activity can be as high as 0.8 uCi/ml in some PWR(s). Describe how this source term would affect the safety analysis dose calculations.

16. Page 9-5, Table 9.1

State the basis for the dose rates used in this table. In particular, why is it assumed that the dose rates from the carousel and bypass stations are zero? Also explain why the measuring tank and its valves are not included in this table.

17. Appendix 2B, page 2B-2

Are there any results on full scale testing of the encapsulant system? In particular, were any tests performed by NNI on 55 gal drums? If so, describe these, or reference any tests done by Dow on filled drums.

18. Appendix 8B, Table 8B-1 and 8B-5, pages 8B-3 and 8B-9

Why are some of the isotope activity percentages in table 8B different from 8B-5 for the evaporator bottoms?

19. Appendix 8C, Section 4.3, page 8C-10, 1st paragraph

Why was 14.4 uCi for PWR powdered resins used for worst case analysis rather than 24.2 uCi for BWR deep bed resins (page 8C-2)?