Department of Energy
Washington, DC 20585

MAR 0 1 2000

The Honorable John T. Conway
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, N.W.
Suite 700
Washington, D.C. 20004-2901

Dear John Mr. Chairman:

This letter informs you of the completion of Commitment 121, "Provide a revised completion date for the completion of polycube stabilization, if different from August 2002." This commitment is included in the Implementation Plan (IP) for the Defense Nuclear Facilities Safety Board, Recommendation 94-1, Remediation of Nuclear Materials in the Defense Nuclear Facilities Complex, Rev. 2. Presently, there is no change to the August 2002 completion date; this letter documents the Department's rationale for no change. Enclosed is the current schedule and other supporting documentation.

Revision 1 of the IP included a polycube stabilization completion date of August 2002. At the time of the Department's issuance of Revision 2, a preliminary evaluation indicated that the process for stabilizing the polycubes could be simplified from pyrolysis followed by thermal stabilization to direct thermal stabilization. The preliminary evaluation also indicated that the off-gas concerns were of lower hazard than had been anticipated earlier. Because of the uncertainty in the stabilization path forward process and in the associated risk, the Plutonium Finishing Plant Integrated Project Management Plan (IPMP) prioritized stabilization of other materials (primarily metals and solutions) ahead of the polycubes and showed a polycube stabilization completion date of March 2004, significantly beyond August 2002. The intent of Commitment 121 was to ensure that the August 2002 date could be met, or if not, propose an alternate later date.

The IPMP assumed all five furnaces would support oxidation of the resultant product from magnesium hydroxide precipitation process for solution stabilization during early fiscal year 2001. Preliminary testing shows that all five furnaces may not be needed for solution stabilization. The polycube stabilization could be initiated as early as October 2000. Presently, the Department believes polycube stabilization can be completed on or before August 2002. Several preliminary opportunities have been identified that show the August 2002 date can be

accelerated; however, due to uncertainty in furnace requirements and radiation exposure issues, the rate of acceleration cannot be determined at this time. The basis for any acceleration will be better known after further evaluations. A schedule showing the most likely scenario is enclosed.

We continue to closely track progress on all Recommendation 94-1 commitments and will keep you and your staff apprised of our progress. If you have any questions, please contact me at (202) 586-5151 or Mark W. Frei, Deputy Assistant Secretary for Project Completion, at (202) 586-0370.

Sincerely,

David G. Huizenga
Deputy Assistant Secretary
for Integration and Disposition
Office of Environmental Management

Enclosure

cc w/enclosure:
M. Whitaker, S-3.1

00-465

RECEIVED
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DNF SAFETY BOARD

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

00-MDD-048

FEB 29 2000

Mr. R. D. Hanson, President
Fluor Hanford, Inc.
Richland, Washington 99352

Dear Mr. Hanson:

CONTRACT NO. DE-AC06-96RL13200 - COMPLETION DATE FOR POLYCUBES PROCESSING (REVISED)

Reference is made to the letter (FH-0000952 R1), from G. W. Jackson, FHI, to P. M. Knollmeyer, RL, dated February 28, 2000, Completion Date for Polycubes Processing.

RL has reviewed the referenced letter and available supporting documentation for the stabilization of the entire polycube inventory at Plutonium Finishing Plant (PFP). RL concurs with the polycube schedule for completion of polycube processing by August 2002. Technical approval for this work will be batch thermal stabilization.

This schedule is consistent with DOE's position to have high-confidence baseline in support of Defense Nuclear Facilities Safety Board (DNFSB) commitments. RL recognizes and encourages FHI's continuing efforts of exploring and developing innovative approaches to accelerate polycube stabilization completion as discussed in the referenced letter.

RL concurrence of this schedule completes Commitment #121 "Provide a revised completion date for the completion of polycubes stabilization, if different than August 2002," from Revision 2 of the Implementation Plan for the DNFSB Recommendation 94-1, Remediation of Nuclear Materials in the Defense Nuclear Facilities Complex.

RL expects this schedule to be reflected in the next revision of the PFP Integrated Project Management Plan.

If you have any questions, please contact Pete Knollmeyer, Office of Nuclear Materials and Facility Stabilization, on (509) 376-7435, or your staff may contact Harry E. Bell, Materials Disposition Division, on (509) 376-2347 or Mark R. Hahn, Materials Disposition Division, on (509) 373-9872.

Sincerely,

Sally A. Steracki
Contracting Officer

MDD:HEB

cc: C. L. Huntoon, EM-1
J. M. Owendoff, EM-2
D. G. Huizenga, EM-20
J. C. Tseng, EM-21
M. W. Frei, EM-40
R. L. Kaltreider, EM-43
J. E. Newson, EM-43
J. A. Turi, EM-43
M. B. Whitaker, Jr., US
A. F. Shattuck, FDNW
G. W. Jackson, WSMS
J. G. McKibbin, WSMS
R. L. McQuinn, WSMS

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FLUOR DANIEL

Fluor Daniel Hanford, Inc.
P.O. Box 1000
Richland, WA 99352

February 28, 2000

FH-0000952 R1

Mr. P. M. Knollmeyer, Assistant Manager
Nuclear Materials and Facility Stabilization
U.S. Department of Energy
Richland Operations Office A5-11
Post Office Box 550
Richland, Washington 99352

Dear Mr. Knollmeyer:

CONTRACT NO. DE-AC06-96RL13200 - COMPLETION DATE FOR POLYCUBES PROCESSING

The Plutonium Finishing Plant (PFP) team has completed its evaluation of polycube processing and developed a schedule. The schedule is based upon processing the polycubes via thermal oxidation in muffle furnaces. On the basis of tests performed on actual polycubes, we are confident that thermal oxidation can be safely performed in muffle furnaces. The schedule in Attachment 2 shows that we expect to complete polycube processing on or before the Defense Nuclear Facilities Safety Board 94-1 Implementation Plan (IP) commitment date of August 2002.

The start-up date for polycubes processing is anticipated in late October 2000. This start date is dictated by the need to complete National Environmental Policy Act and authorization basis documentation. It is also the result of the multiple start-ups scheduled for the latter part of fiscal year 2000. Between June and September we will be starting up residues stabilization, a second bagless transfer system, and solutions processing. The polycube start-up review will follow these.

The basis for polycube processing is shown in Attachment 1. Processing is based on 400 gram bulk weight of polycubes per charge being processed in 2 dedicated furnaces in 234-5Z. Using this basis, polycube processing would be completed in late July 2002. This supports the August 2002 completion date, but is not sufficiently different to warrant changing the IP commitment.

Testing currently underway at Pacific Northwest National Laboratory (PNNL) and Plutonium Process Support Laboratories (PPSL) is producing data to support safety analysis calculations. The testing will be documented in a series of reports from PNNL and PPSL. Results of the cold polycube testing performed last year will be issued in March. The final PNNL report providing hydrocarbon evolution rates for full polycubes

will be issued by mid-April. The final PPSL testing document providing test results from thermal stabilization of several full polycubes will be issued in late April. Calculations related to safe charge size will be issued in early May. Testing and calculations done to date support thermal stabilization of 400 grams bulk polycubes as a safe alternative to pyrolysis. It is our belief that these testing results and safety calculations will support an increased charge size (800 grams bulk polycubes). Increasing the charge size to 800 grams will significantly accelerate the processing of polycubes. In addition, a dose study of polycube processing is currently being performed and will be completed in May 2000. This study will be used to identify ALARA techniques and add confidence to the proposed polycube schedule.

If you have questions related to the PFP polycube processing commitment, please contact Mr. John McKibbin at 373-7353.

Very truly yours,

G. W. Jackson, Vice President
Nuclear Material Stabilization
Fluor Hanford

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Attachments

ATTACHMENT 1

FH-0000952 R1

COMPLETION DATE FOR POLYCUBES PROCESSING POLYCUBE PROCESSING BASIS

Consisting of 2 pages, including coversheet

Attachment 1
Polycube Processing Basis

The one over arching assumption made is that personnel exposure will be managed so it does not restrict processing. Dose measurements of polycubes are extremely high (up to 20 Rem) and will require a strong ALARA effort to minimize exposure. Two teams are identifying options to minimize the exposure from handling and processing polycubes.

Baseline
260 cans of polycubes at 800 grams bulk per can
Boat charge size is 400 grams bulk polycubes
2 furnaces dedicated to polycube processing (Solutions processing rates will only require 2-3 furnaces)
One run per day per furnace using a modified calcination cycle. The furnace will be left at a few hundred degrees C for several hours until oxidation of the organic is complete. The amount of time and temperature to be used will be determined as part of the testing and process optimization work underway at PNNL and PPSL. It is expected the cycle time will be 18-20 hours.
Total Operating Efficiency (TOE) = 60%

260 cans of polycubes @ 2 charges per can = 520 charges

520 charges / (5 charges per week per furnace x 2 furnaces x 0.6 TOE) = 520/6 = 87 weeks to process 260 cans of polycubes

Therefore, processing will take place from November 2000 through July 2002

Acceleration Opportunity
If the charge size is increased to 800 grams as result of the testing, the schedule will show significant improvement.

Only 260 charges will be required since each boat will hold a full can of polycubes

260 charges / (5 charges per week per furnace x 2 furnaces x 0.6 TOE) = 260/6 = 43 weeks to process 260 cans of polycubes

On this basis, processing will take place from November 2000 through August 2001

Note: If Total Operating Efficiency is improved to 80% (for example) from the 60% assumed, the base line schedule can be reduced by about 6 months and the Acceleration Opportunity Case schedule can be improved by about 2 months.

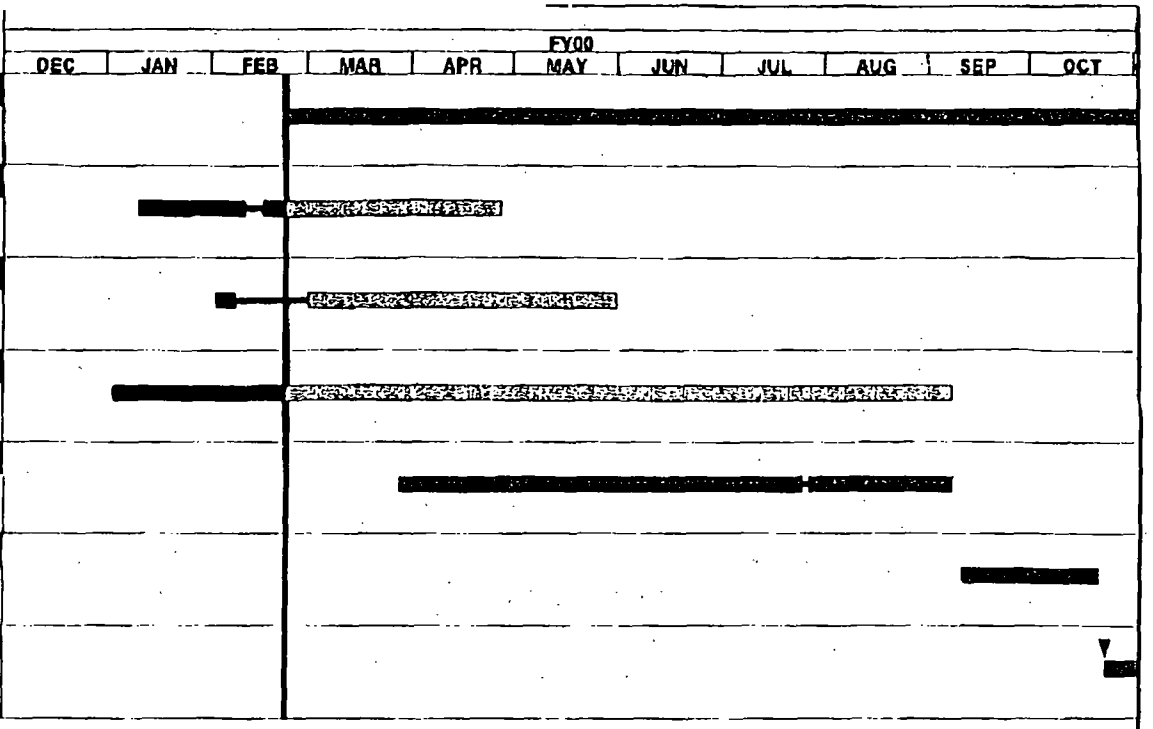
ATTACHMENT 2

FH-0000952 R1

COMPLETION DATE FOR POLYCUBES PROCESSING NUCLEAR MATERIAL STABILIZATION POLYCUBE SCHEDULE

Consisting of 2 pages, including coversheet

Activity ID	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish
Polycube - PROJECT MANAGEMENT					
POEDAJD1	POLYCUBE PROJECT MANAGEMENT	668	668	23FEB00	14OCT02
+ Polycubes - PNNL & PPSL Testing/Reports					
		77	46	10JAN00A	26APR00
+ Polycubes - Safety Activities CSED's/SAR					
		83	64	02FEB00A	30MAY00
+ Polycubes - Regulatory NEPA/NOC's					
		175	139	03JAN00A	07SEP00
+ Polycubes - Process Procedures/Training					
		115	115	28MAR00	07SEP00
Standard Startup Review					
POSTPOD12	Complete Startup Review	30	30	11SEP00*	20OCT00
Polycube Stabilization Operations					
POSTPOD13	Polycube Processing Operations	456	456	23OCT00	14AUG02



Start Date	01OCT99
Finish Date	14OCT02
Data Date	23FEB00
Run Date	28FEB00 14:05

Early Bar
Progress Bar
Critical Activity

Fluor Hanford Sheet 1 of 1

Nuclear Material Stabilization Project

Polycubes

PFP Project Contol

Project Manager D. Bogen
Scheduler J. White
LT-91/FL-91
Working Level