E. I. du Pont de Nemours & Co.
Explosives Department
Wilmington 98, Delaware

DFW-55-17-23

SR/H-857

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June 9, 1955

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Reviewed by J. H. Frank
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WEEKLY REPORT - 100 AREAS - JUNE 9, 1955.

Assembly Area

Quality inspection of quatrefoils at Alcoa's Plant by Engineering Department M&E Section will be discontinued as of June 10. Since all parts furnished to Alcoa by du Pont have 100% inspection before delivery to Alcoa, and all finished foils are inspected at SRP, the need for full time inspectors at New Kensington no longer exists. Alcoa have been doing this inspection work for some time and therefore withdrawing our inspectors is not a major change in procedure.

Charge and Discharge Machines

During the R-5-6 recharge a major delay was experienced during replacement of septifoils. In handling stainless steel muffs and aluminum foils the jaws of the Discharge Machine chuck became roughened and release of the lightweight foil to the exit conveyor could not be made by normal machine operations. It became necessary to abandon use of the Discharge Machine before the work was completed and to use the Charge Machine for all operations. Since this chuck was recently replaced with a revised design, investigation will be made to see if the proper material and hardness was used in making the chuck jaws.

Reactor Control

Monitor Pin Instrument Tubing Failures

Recent work of filter replacement at the base of monitor pins has not resulted in additional breakage of instrument tubing. Encouraged by this and dissuaded by the absence of any means of non-destructive testing of this tubing, the plant has decided to delay ordering additional spare monitor pins. During the current series of recharges, monitor pins are being removed in each area to permit installing the supplementary safety system spargers. These pins will contribute tubing for accurate metallurgical examination to indicate to some degree the extent of cracking present in the instrument tubing. A decision with

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is proposed. It is hoped that a non-destructive test will have been developed in the laboratory information toward this decision.

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6/9/55

Reactor Complex

The estimated safe operating limits for the R, P, L, K and C thermal shields that were given us verbally by the Engineering Department have been forwarded to the Plant by letter. A program of work on thermal shield stress analysis by the Engineering Department has been agreed upon as follows:

Item	Completion Date
1. Letter giving calculated limits of operation for R,P,L&K shields	6/10/55
2. Fatigue test of typical R,P,L&K instrument sleeve weld	6/13/55
3. Letter giving basis of calculations of limits for R,P,L&K shields	6/20/55
4. Letter giving calculated limits of operation for C shield	6/20/55
5. Letter giving basis of calculations of limits for C shield	6/27/55
6. Report - University of Delaware tests on C shield staybolt failures	6/27/55
7. Report - University of Delaware tests on R,P,L,K&C normal staybolts	6/27/55
8. Tests of R,P,L&K shield instrument sleeve weld	7/18/55
9. Letter giving limits of operation for R,P,L&K shields based on calculations plus test work	7/27/55
10. Tests of C shield instrument sleeve - may or may not be required, depending on the outcome of the tests on the R,P,L&K instrument sleeves	--

D. B. Wesstrom is currently working on a manual of reactor stresses and deformation for the 105-C reactor similar to that already issued for the R,P,L and K reactors. This work is scheduled for completion August 1, without charts, and September 1 with charts. A work request on BSD has been authorized for assistance at the Plant on 105-C reactor stresses during the interim period. The assistance will consist of cooperation with Mr. Wesstrom during the course of the preparation of the manual to calculate the current stresses in the C reactor expansion joint and T weld, and to have the manual information put into a form directly useable by the Plant by the time the manual is issued. In this connection, B. J. Cherney of Works Technical and R. B. Brown of BSD visited Wilmington to see Mr. Wesstrom and the Zallea Brothers Company, who manufactured the expansion joint.

The goal dates for the installation of larger moderator pumps in Building 105-C toward which the Engineering Department is currently working are:

Project Part I Authorization (includes the purchase of pumps and reduction gears)	October 1955
Project Part II Authorization	May 1956
Start-Up	April 1957

The date for the Part I will require the completion of the Order-of-Magnitude estimate by September 1955 and the Scope of Work by August 1955.

As part of the program to evaluate the bids of the four vendors quoting on larger moderator pumps, C. A. Meyer and J. S. Neill of AED are accompanying Engineering Department representatives on a visit to the Ingersoll-Rand Co. today to discuss their quotation and pump characteristics.

6/9/55

Purification

L Area columns have been started up after charging with overloads from R and P columns as part of the program to determine the effectiveness for removal of tritium from relatively dilute moderator. This proposal was briefly described in the weekly report of May 12. The current test is to be a batch distillation from A rundown tank. The columns are now on total reflux, and drawoff will be started when recirculation rates are suitably established.

Disassembly

The DM for underwater viewing equipment in LKC was recently cancelled. The plant has been considering the use of a small hand telescope or binoculars for inspection of slugs in these areas. The clarity of the water would greatly affect the quality of image. Also taking photographs would probably be impracticable. The Engineering Department has called to our attention the availability of a high quality periscope, either 1-1/2 and 7-1/2 or 3 and 15 power, with a scanning mirror to facilitate viewing the whole slug at high power, at a price of \$4800 each in lots of three. Kollmorgen is quoting on this unit to General Electric and Phillips Petroleum. Thus, SRP may be able to purchase a single unit at this price, or for additional units the price might be reduced. For comparison, the binocular microscope installed in P Area monitor basin cost about \$50,000 including \$15,000 development. Engineering forwarded this information also to Works Technical, who now have it under consideration.

The electronic gaging station developed by DED for measuring length, diameter and warp of slugs is now being installed in P Area monitor basin. Construction was considerably delayed by the failure of Atco to supply watertight cases for the differential transformers. The case now being used was designed by the plant DED group, and was satisfactory in preliminary tests.

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