

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

DP-55-17-24

SR/H--922

- #2. H. Worthington - D. F. ~~W~~cock
- #3. M. H. Wahl - G. W. J. ~~W~~erde - SRL
- #4. D. A. Miller - W. S. Church - SRP
- #5. A. A. Johnson - SRP
- #6. J. T. Carleton - P. H. ~~P~~awer - SRL
- #7. H. ...
- #8. ...
- #9. SP ...

Classification Cancelled/Changed

TO UNCLASSIFIED

By Authority of

June 22, 1955

TO: J. B. ~~T~~ERLER (IN  
J. E. ~~C~~OLE (TURN)  
B. H. ~~L~~ONEY  
S. A. McNEIGHT

FROM: H. W. BELLAS

1. *[Signature]* Name *AOD* Title *ADD* Date *11/23/87*  
 This document consists of *AED* Title *CO* Date *2/4/89*  
 No. 2. *[Signature]* Name *[Blank]* Title *[Blank]* Date *[Blank]*  
 of *[Blank]* Copies *[Blank]*

100 AREA WEEKLY REPORT, JUNE 16, 1955.

Assembly Area

A Q-foil extrusion from Harvey Machine Company has now been sectioned and measured, in addition to the check of the 21 extrusions at their ends, previously reported. The sectioned extrusion, where readings were taken every 6" along the entire length, showed a definite pattern of channel ID in each channel... One channel appeared to be within specifications while two were oval and generally undersize. In the fourth channel the ID varied considerably and somewhat regularly on a 12" cycle. The average thickness of the individual channel walls was on the high side of tolerances but the average thickness of the common wall was within specifications. Harvey is being informed of the results.

The procurement of natural slugs, special in slug diameter and surface finish, has been checked upon recently in connection with the proposal to produce thick wall cans. Results under T/A 3-191, in which 50,000 of each of two diameters and two surface finishes of slugs were to be canned, show a definite pattern of rejects on the basis of approximately 30% completion of this test. While there is no strong systematic variation in non-seats, the rejects for bulged cans amount to over 5% of the smooth slug production and less than 1% of the threaded slugs. In the recent visit of metallurgists to Fernald it was found that production of threaded slugs costs approximately 5 cents per slug more than for smooth, but the yield with threaded slugs is somewhat greater. Until such time as a firm conclusion is reached on this T/A, regular production from Fernald will consist of normal size smooth pieces. The T/A (1-296) irradiation of thick wall canned slugs is being deferred until irradiation experience has been obtained on these smooth and threaded slugs.

DOES NOT CONTAIN  
 UNCLASSIFIED CONTROLLED  
 NUCLEAR INFORMATION

Reviewing Official *[Signature]*  
 C. J. Banick, AED Class Officer  
 1/11/89

Flow guides are now being used almost completely in R, P and L reactors. Except for 205 Q-foils remaining in L-4 from L-3 charge (2-zone discharge) all Q-foils in these three reactors are fitted with flow guides. There remain on hand, however, approximately 2500 of the former type foils in which aluminum sleeves are being welded and which are to be used up in 105-R and L. Experience with these flow guides is being sought in connection with the proposal by the plant to investigate the use of flow guides over metering pins in K and C reactors.

Reactor Control

The package installation of latch hoist safety brake, latch revisions, remote span adjustment, and supplemental safety device has been authorized for 105-P, L and K and Engineering Department has been requested to proceed with planning in cooperation with the Reactor Department. It is probable that 105-L and K will be worked on in July and 105-P in September.

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

MASTER

## **DISCLAIMER**

**Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.**

Reactor Complex

Evaluation estimates have been received of the cost of installing additional cooling and circulating water facilities in all 100 Areas. These Engineering Department figures on an order-of-magnitude basis cover changes within 105 Building only, and for 105-C only the installation of larger pumps and their drives (\$1,150,000). The total cost of providing larger circulating pumps, installing six extra heat exchangers, and revising process and cooling water piping is larger for L and K than for R and P: \$5,100,000 each versus \$4,750,000, owing to the greater complexity of cooling water piping in the L and K design and in spite of the fact that nozzles are already provided on the cooling water headers in L and K. On the other hand, the cost of installing the extra heat exchangers is slightly greater in R and P than in L and K.

A comparison of quotations from the four vendors bidding on larger moderator pumps has shown a wide variation in some of the critical dimensions, leading to further discussions with the vendors to analyze the basis for design. In discussions with Allis-Chalmers this week we noted that the small dimensions of the impeller did not seem compatible with the extremely low NPSH requirements they claim. We also brought to their attention the fact that the ratio of NPSH to developed head did not fall in the usual relationship to specific speed. We continued to ask for steeper head-discharge characteristics in order to make the pump more flexible over a wide range of fuel element design. Allis-Chalmers is to review these points with their design people in the next two weeks and let us know if they wish to modify their quoted design. Discussions with Byron-Jackson are to be held next Monday, June 20; Bingham has been asked for some explanation of the NPSH curves; and Ingersoll-Rand is to run some model tests on a modified pump design next week. Upon questioning Allis Chalmers about the mechanical aspects of our pump design, we were told that they independently recommend use of a circulating oil system with cooler and clean-up facilities of the type they had recommended for the river pumps but with even more emphasis in this case upon the need for the ultimate in lubrication.

The first drop test of a loaded Q-foil on a monitor pin by Works Technical at SRP has shown that the monitor pin was not dislodged in a Q-foil drop from full height. This test was run with water in the tank but will be repeated dry, and also a check will be made of the relative positions of the two members at the time of striking.

Disassembly

An evaluation estimate on an order-of-magnitude basis has been received from Engineering Department comparing the installed cost of facilities for shipping long elements with that for size reduction of the long elements. The 100 Area cost totaled \$1,600,000 for shipment of long elements versus \$5,000,000 for size reduction and shipping in new sealed buckets. It was assumed that new casks would be required in either case, - the cut elements requiring stainless casks instead of the present mild steel. A companion estimate for the 200 Area facilities had been previously transmitted to AED.

General

Modification of the Dravo hoist on the shield doors is still under study in the Design Division and will be completed in early July. It will probably include (1) inter-reaving of the cables, (2) replacing hoist drum shafts with larger diameter shafts, (3) replacing ~~existing~~ pinion and shaft with an

6/16/55

integral pinion and shaft including heavier bearings, (4) replacing four solid couplings with flexible couplings, (5) installing a Youngstown switch on the up-limit of door travel, and (6) providing some improvement such as a jogging button for the last few inches of rise so that the operator can and will watch critical points where danger might occur. We will review the design before it is issued. The basis for the changes is not the degree of safety hazard that was thought to exist with the latch hoist, but the correction of some possible danger points and an increase in safety factors that are not seriously low.

New Technical Standards being rewritten by Works Technical have been reviewed at the plant. Our comments were offered for minor changes in the final draft.

Wilmington Design has asked that the SRP Project Department supply a final list of extra machinery items for 100-C so that procurement for the 100 Areas can be terminated.

#### DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

HJB/blt