2. I du Pont de Nemours & Co.
Explosives Department
TO **UNCLASSIFIED**
By Authority of

- #2. H. Worthington - D. F. Babcock
- #3. M. H. Wahl - C. W. J. Wende - SRL
- #4. D. A. Miller - W. S. Church - SRP
- #5. A. A. Johnson - SRP
- #6. H. W. Bellas
- #7. W FILE
- #8. SP FILE

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Name Title Date
TO: J. B. TINKER (IN) *4/89*
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~~B. H. MACKAY~~
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February 17, 1955. *DPW-55-17-7*
(SR/H--907)

FROM: H. W. BELLAS *H.W.B.*

WEEKLY REPORT - 100 AREAS - FEBRUARY 17, 1955.

Assembly Area

Reynolds Metals Company is shipping to SRP the last three boxes of Q-foils produced in the course of their development studies. In the course of these studies, they have developed a satisfactory method of producing tubes within specifications, ready to be fitted with end fittings at some other location. The cost to date is about \$55,000 out of the \$75,000 authorized and about 450 Q-tubes have been extruded, drawn, and shipped to SRP. We understand Reynolds is still finishing several more extrusion dyes, for which we can find no good reason and which will be looked into during F. D. Singleton's expected visit there on March 2. We are momentarily expecting a quotation from Reynolds based on a maximum production of about 240 Q-foils per month.

Harvey Machine Company have shipped experimental foils to SRP where they are due February 18 for immediate inspection. The results of the inspection and other matters will be discussed by F. D. Singleton on his visit to Harvey in Los Angeles on March 1.

A process description for welding Q-foils has been written by D. Noyes and sent to SRP for possible use in undertaking to weld the above quantities of Reynolds' Q-foils.

Shipment of "88" slugs has arrived at SRP in preparation for the doing of seven hexes in R-5 charge. A T/A is needed from SRL to cover this test. Security provisions for LMF slugs in 105-R will be complete February 18.

A scope of work on Mark III and IV elements is in rough draft form and will be sent to Engineering in final form within the week. It covers the receipt, inspection, assembly, testing, handling, charging and discharging, and disassembly of tubular and plate elements of representative design to permit Engineering to analyze these processing problems under the existing work request.

Reactor Complex

Stress studies on annular shields were discussed at a meeting with A. D. Duff and T. H. Davis. The latter's latest calculations developed from discussions with J. Walker of SRL and D. Leader of SRP indicated a minimum

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2/17/55

rating of R and P reactors at 850 Mw, L and K at 950, and C at 1000. These limitations imposed by the annular shields are based on conservative estimates owing to inaccuracies in calculating temperature differences between the inner and outer walls and in calculating stresses. The temperature difference is to be measured by means of SRL's relative motion indicator to be installed in P and C reactors. The limiting feature of R and P thermal shields is the pocket around each stub beam where stress concentration occurs and it is proposed to mock up a pocket at small expense for stress studies to permit more accurate estimation of limitations on power levels. Estimates of stresses in L, K and C will be made after more temperatures have been measured in these reactors.

Increased output of 3000 HP motors on moderator pumps by refrigeration has been suggested by C. A. Meyer in discussions with Engineering Department. The refrigeration could be applied by chilling the cooling water to the motors or by circulation of chilled water through a closed circuit system but would require careful analysis from the standpoint of reliability of supply. Design Division is giving the matter further consideration in an effort to increase the head available for future pumps at currently contemplated flows (25,000 GPM).

Reactor Control

Strainers in the dual valves of the monitor pins have been found to be badly plugged in 105-L. In all reactors the filter medium consists of a filter paper incompletely filling the space between two cylindrical wire screens to act as a trap through which the purge flow to the annular space around the monitor pin could by-pass. We have asked Design Division to find out how many simple cylindrical screens are available and how soon more could be manufactured to replace the present elements if this is desirable.

Maintenance of nuclear instruments was discussed in the recent S&H Committee Meeting on this subject, and the question arose as to how many spare instruments should be provided in the case - for example - of linear Beckmans, gamma monitors, Log N-Period Meters, etc. Our own feeling is that where installed spares exist as in the case of three linear Beckmans, no further spares are needed except possibly one or two for the whole plant. Where no spares exist, it would seem logical to provide one per area of essential instruments and several for the whole plant on instruments not involved in safety circuits.

Disassembly

A scope of work on disassembly of long elements has been forwarded to Engineering to establish a basis for paper studies of shipping versus cutting long elements.

Vibration tests on slug buckets have been run in a disassembly basin to establish the feasibility of this method for avoiding spillage from buckets. The basin buckets which were designed to contain three foils of slugs (240) tend to spill over quite frequently owing to excessive jack-straw effect. Vibrating the buckets during or after filling seems to compact the packing sufficiently to assure the loading of 240 and possibly 320 slugs per bucket. After making a careful check of possible damage to the slugs, the matter will be taken up with Engineering Department for correction of design deficiencies.

2/17/55

LMF (exposed) shipments to Arco can probably be made in less special casks than were originally estimated. The Traffic Departments in Operations and in AEC having found that a 15-day rail turn-around is possible, the required number of casks can be reduced from 30 to 18 at a proportionate reduction in cost. We are also led to believe that Arco can handle cut fuel tubes if we should choose to ship any, but W. Davis of AEC is checking into this at a current visit to Arco.

Slug bucket handling in 105-C will require some modification to permit identification of buckets while they are stored on the -20' storage floor. The floor was provided for storage of long elements in long buckets but will be needed for slugs until long elements are available.

Purification

High maintenance costs have been reported for the ammonia refrigeration system used in the vent condensers in 105-R and P. While a study is under way to correct our difficulties with the valves, etc., D₂O losses from the system are being evaluated along with the possibility of using a desiccant system.

General

A meeting to discuss major items of work remaining to be done on R, P, L and K (for example, safety brake, latch changes, etc.) and to reach recommendations has been set up for Building 704-C for Tuesday, February 22, at 1:00 P.M.

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