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REVISED GOAL EXPOSURE PLANS

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R. D. Shimer

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August 7, 1962

T. Prudich, Manager
Production Planning & Scheduling
MANUFACTURING

DECLASSIFIEDREVISED GOAL EXPOSURE PLANSINTRODUCTION

The purpose of this report is to transmit revised goal exposure plans for normal production material. These plans supersede previous recommendations.¹

Inherent in these plans are the assumptions: (1) The plant must produce a product containing six per cent Pu-240, and (2) product blending capabilities are such that there are no restrictions, other than economic, on Pu-240 buildup at an individual reactor.

DISCUSSION

Due to recent assessed changes in metal performance^{2,3} and conversion of DR reactor to bumper natural material, revision of recommended goal exposure plans is called for. During the past year a significant shift in the relative metal performance between reactor types occurred. You may have observed the low rupture frequency at the C and K reactors compared to the rupture frequency at the old reactors. Based on the observed experience, goal exposures should be raised for C and K material and lowered for old reactor material.

The goal exposure plans recommended herein are based on present, July 1962, assessed rupture performance³ and the latest conversion tables,⁴ incremental metal costs⁵ and burnout cost data.⁶ The current reactor optimization program⁷ was used to determine optimum goal exposures.

¹Shimer, R.D., Goal Exposure Plans for Bumper and Non-Bumper Material, HW-73262, April 4, 1962, [REDACTED].

²Shimer, R.D., Revised (g) Values, Unclassified letter to Process Engineers, July 23, 1962.

³Reid, R.W., Rupture and Water Leak Memorandum - June 1962, HW-74396, July 24, 1962, [REDACTED].

⁴Hoba, D.W., IPD Plutonium Conversion Tables, HW-50300 B, January 1, 1962, [REDACTED].

⁵Personal communication, L.W. Lang to H.G. Spencer.

⁶McCurry, J.W. and D.W. Hoba, Plutonium Formation, Uranium Credits, Burnout and Burnout Costs, HW-67011 Rev 3, January 1, 1962, [REDACTED].

⁷Sparks, G.R., Description of the Net Return Optimization Computer Program - IBM-7090 Fortran Monitor, HW-73713, May 21, 1962, [REDACTED].

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Table 1 presents the reactor loading and discharge plans used to calculate the recommended goal exposures. The current and previous recommended average goal exposures are given in Table 2. It should be noted there is no provision for production of unclassified plutonium in these exposures. The slope constants, d and e, currently being used⁸ to determine individual tube goal exposures should continue to be used.

Reactor loadings slightly different from the assumed loadings, production of unclassified plutonium and observed discrepancies⁹ in the current conversion tables may require some adjustment to the recommended goal exposures. If such adjustment is necessary, it is advisable to change all of the goal exposures by a small amount rather than one or two by a large amount.

R. D. Shimer

R. D. Shimer
Process Analysis Unit
Research and Engineering

APPROVED:

R. W. Reid

R. W. Reid, Manager
Process Technology Sub-Section
Research and Engineering

RDS:mf

⁸Bown, R.W., Status of Special Reactor Process Tube Loadings, July 1, 1962, HW-74389, July 23, 1962, [REDACTED].

⁹Fullmer, G.C., Plans for Yield Prediction Normalization, Unclassified letter to distribution, July 25, 1962.

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TABLE 1REACTOR LOADINGS AND DISCHARGE PLANS

<u>Reactor</u>	<u>Loading</u>	<u>Discharge Plan</u>	
B	O-III-N	Variable Goal	
	O-III-EB	"	"
C	C-II-N	"	"
	C-III-E	"	"
D	O-III-NB	"	"
	O-III-EB	"	"
DR	O-III-NB, central zone	Block	
	O-III-NB, fringe zone	Variable Goal	
	O-III-EB	"	"
F	O-III-N	"	"
	O-III-EB	"	"
H	O-III-NB	Block	
	O-III-EB	Variable Goal	
	O-III-E, fringe blanket	"	"
KE and KW	K-IV-N	"	"
	K-IV-E	"	"

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TABLE 2AVERAGE GOAL EXPOSURES

<u>Material</u>	<u>Discharge Plan</u>	<u>Average Goal Exposure, MWD/Ton</u>		<u>Maximum Exposure</u>
		<u>Current</u>	<u>Previous</u>	
O-III-N	Variable Goal	625	675	800
O-III-NB	" "	725	800	1000
O-III-NB	Block	600	650	---
O-III-E short	Variable Goal	775	800	1400
O-III-EB short	" "	875	925	1400
O-III-E long	" "	1000	1000	1400
O-III-EB long	" "	1100	1150	1400
C-II-N	" "	650	625	800
C-III-E	" "	800	675	1400
K-IV-N	" "	700	650	800
K-IV-E	" "	850	775	1400

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