TO: Mr. R. N. Wallace

UNCLASSIFIED

March 1, 1960

FROM: G. E. Coyle

cc: Messrs. K.K. Klingensmith

SUBJECT: Design of LCCBM and
LCCBN Loops

J.R. Leon
G.W. Austin
M.A. Kycia
M.R. Foley
A.F. Lapan
H.C. Gray
D.T. Beebe
R.S. Kulp
G.W. Bersin
F. Spinelli
J.S. Nimmons

This document is
PUBLICLY RELEASABLE

Authorizing Official

Date: 10-27-10

J.R. Miller

3-4-60

Date

Classification

The special fabrication requirements of the newer columbium alloys, particularly with respect to brazing, stress relieving, weld filler wire, etc., necessitates individual detail and layout drawings for the construction of forced convection corrosion loops from different columbium alloys. Accordingly, it is requested that detail and layout drawings be provided for two forced convection corrosion loops to the specifications outlined below:

A. LCCBM

1. Loop is identical in configuration and size to the LCCBK-type loop design in all respects.
2. The size of the cooler tubing is to be changed from 0.242" ID x 0.035" W (0.312" OD) to 0.242" ID x 0.049" W (0.340" OD). All other dimensions remain unchanged.
3. All material coming in contact with the liquid metal in the flow stream of the loop is to be changed from columbium-1% zirconium alloy to columbium-5% zirconium alloy. For purposes of this design, the tube joining the expansion tank to the loop is to be considered as part of the flow path of the loop up to within three inches of the bottom of the expansion tank.
4. The parts of the expansion tank assembly coming in contact with the liquid metal may be made from either pure columbium, columbium-1% zirconium alloy, or columbium-5% zirconium alloy. If different fabrication techniques are required for the different alloys, alternate drawings are to be provided.
5. Only a machined pump cell duct type of pump cell assembly is to be provided for.

LCCBN

1. Loop is identical in configuration to the LCCBK-type loop design with the exception of the length of the hot and cold isothermal sections.
2. The length of the hot isothermal zone between the combination heater lug and expansion tank tee and the cooler jacket wall is to be lengthened to a minimum of 12 inches long.

UNCLASSIFIED

NOTICE
This report was prepared as an account of work sponsored by the United States Government. Neither the United States nor the United States Energy Research and Development Administration, nor any of their employees, nor any of their contractors, 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.

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

CLASSIFICATION CANCELLED (OR CHANGED TO UNCLASSIFIED)

BY AUTHORITY OF *Director, Dept. of Energy*

BY *M. J. Coyle* (PERSON AUTHORIZING CHANGE AND DATE THEREOF) 10-30-21

TO: Mr. R. N. Wallace

~~SECRET~~
UNCLASSIFIED

2378

March 1, 1960

3. The cold isothermal section between the cooler jacket and the EM pump is to be lengthened as necessary to be compatible with item No. 2 above.
4. All material in the flow path of the loop, as defined above for LCCBM, is to be of columbium-5% molybdenum, 2% zirconium, 2% titanium alloy.
5. The parts of the expansion tank coming in contact with the liquid metal may be constructed of columbium-1% zirconium alloy, columbium-5% zirconium alloy, or columbium-5% molybdenum, 2% zirconium, 2% titanium alloy with alternate drawings provided as necessary.
6. The size of the cooler tubing is to be changed from 0.242" ID x 0.035" W (0.312" OD) to 0.242" ID x 0.049" W (0.340" OD). All remaining dimensions are unchanged.
7. An alternate pump cell assembly of the standard brazed-type of cell is to be provided in addition to the welded, machined duct type of cell.

All information with respect to the annealing or stress relieving of welds, use of weld filler wire, special weld preparations, brazing material, temperature, and etc., specifications will be provided by Messrs. M.A. Kycia and/or F. Spinalli.

Completion of the LCCBM is desired by March 18, 1960, and completion of the LCCBN is desired by March 24, 1960. If any difficulty is anticipated in meeting either of these dates it is requested that Mr. R.S. Kulp be contacted immediately.

All work is to be charged to Engineering Order Supplement Number 156, Work Order Number 415673.

G. E. Coyle

Approved:
Appro

K.K. Klingensmith

UNCLASSIFIED
~~SECRET~~

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.

DISCLAIMER

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