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UNITED STATES ATOMIC ENERGY COMMISSION

THE USE OF DICALITE DIATOMACEOUS EARTH AS A PURGE MATERIAL IN THE 100 AREAS

Final Report on Production Test 105-3-MR

By
W. R. Conley

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May 26, 1952

Hanford Works
Richland, Washington

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-2-

Richland, Washington
May 26, 1952

FINAL REPORT - PRODUCTION TEST - 105-3-MR
THE USE OF DICALITE DIATOMACEOUS EARTH AS A PURGE MATERIAL
IN THE 100 AREAS

INTRODUCTION:

The standard material used at Hanford for purging film from reactor process tubes is Johns-Manville Super-Cel, a diatomaceous earth of controlled particle size. Because Super-Cel is currently unavailable, operating information concerning the use of substitute materials is necessary. Consequently, a series of purges were given in the normal manner, but on a test basis, (Production Test - 105-3-MR, The Use of Dicalite Diatomaceous Earth as a Purge Material in the 100 Areas, HW-24055) using the substitute diatomaceous earths Dicalite Special Speedflow and Dicalite #4200. The results of these test purges are herein reported.

SUMMARY AND CONCLUSIONS:

Four purges were given with Dicalite Special Speedflow with normal results. Film removal appeared to be equal to that obtained with Johns-Manville Super-Cel. There appeared to be no unusual problems associated with the use of the new material. However, the purges were given at normal rates and methods of comparing

May 26, 1952

-3-

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SUMMARY AND CONCLUSIONS: (Continued)

results are sufficiently uncertain that minor or long time effects might not have been detected in the course of these tests. Within these limitations, Dicalite Special Speedflow has been demonstrated to be equivalent to Johns-Manville Super-Cel as a purge material for the process tubes.

One purge was given with Dicalite #4200. Film removal appeared to be equivalent to that obtained with Super-Cel. There appeared to be no significant differences in over-all performances between Super-Cel and Dicalite #4200.

DISCUSSION:

Four purges were given with Dicalite Special Speedflow with results comparable to those obtained with Johns-Manville Super-Cel. Film removal was good, resulting in the normal decrease in pressure drop across the process tubes with resultant increase in cooling water flow. There were no apparent problems associated with the preparation and use of the slurry. The data are presented for the four purges in the following table:

Purges With Dicalite Special Speedflow

<u>Purge Date</u>	<u>Area</u>	<u>Flow Increase Following Purge GPM</u>	<u>Panelit Pressure Decrease Following Purge PSI - Average of 20 Tubes in Central Zone.</u>	<u>P - PSI Above Base Following Purge</u>
4-18-52	100-D	1000	7	-5.6
5-7-52	100-D	500	4	-1.5
4-24-52	100-DR	500	3	-4.4
5-5-52	100-B	500	4	2.8
Nominal Data From Typical Purge		500	5	0

One purge was given at 100-H Area with Dicalite #4200, a diatomaceous earth of larger particle size than either Super-Cel or Dicalite Special Speedflow. Film removal appeared to be good, resulting in a water flow increase of approximately 500 gpm. An expected improvement in the tendency of the slurry to agglomerate and plug screens was not observed. As there appear to be no advantages to be gained from using Dicalite #4200, further investigation of this material does not seem to be justified at the present time.

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