

BINGHAM INTERNATIONAL, INC.

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February 25, 1988

U.S. Nuclear Regulatory Commission
Vendor Program Branch
Washington, D.C. 20555

Dear Sir or Madam,

Bingham International Inc. (BII) has been verbally notified by our vendor Union Carbide that it is withdrawing its LC4 overlay from the market. The reason given is "potential crevice corrosion".

BII has used this material in its Balanced Stator TM seals, PWR applications. The LC4 overlay has been used on the non-code, non-pressure boundary secondary sleeves.

BII's 10 CFR Part 21 Committee has reviewed the verbal notification by Union Carbide and our technical history in the field with this product. BII has not experienced, nor been notified of any problems with this material and has no technical reason to expect future problems.

Bingham Balanced Stator TM seals use a stationary elastomer for a secondary seal. The elastomer seals on a stationary member is called a secondary seal sleeve.

Secondary seal sleeves are austenitic stainless steel coated with a chromium oxide ceramic overlay to reduce friction and wear. The coating is applied with a non transferred arc plasma process. The deposition on a microstructure basis is porous in nature and is sealed with an epoxy resin. The finished thickness of this coating is .007 inch.

If moisture reaches the substrate below the coating, the potential for crevice corrosion exists. Crevice corrosion could result in spalling (flaking off) of the ceramic coating. Bingham has not experienced a single failure in any installed part.

If crevice corrosion were to occur, several potential mechanisms exist which would cause seal performance to degrade.

1. Particles of the coating which flake off could pass across the sealing faces, causing a gradual increase in leakage.
2. Spalling of the surface at the secondary seal location would increase frictional drag. The increase in drag would result in decreased performance during transients which cause axial shaft motion.

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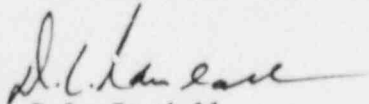
3. Spalling at the surface increases the diametrical clearance between the secondary seal o-ring and the sleeve, inceasing the chance for extrusion.

Spalling of the coating will not cause the seal cartridge to fail in a rapid or unpredictable manner. It should be recognized these are a multistage design seal and failure of a single stage would not cause a plant shutdown or additional seal stages to fail. Additionally it should be noted that plant instrumentation will indicate the condition of the seals with sufficient time for the operator to shut down the pump and secure the reactor.

Union Carbide is working with BII to qualify a new overlay procedure. Qualification of procedure is scheduled for 12 - 14 weeks. Contact at Union Carbide is Mr. Barry Hiese, General Manager of their Coating Systems U.S.A. operation.

Very truly yours,

BINGHAM INTERNATIONAL, INC.



D.L. Randall
Corporate Quality Assurance Manager

Attachment

BALANCED STATOR™ SEAL DESIGN FEATURES

(U.S. PATENT 4,272,084)

