

MAY 20 1985

AEOD/E506

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FROM: Chuck Hsu, Engineer
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SUBJECT: VALVE STEM SUSCEPTIBILITY TO IGSCC DUE TO IMPROPER
HEAT TREATMENT

The enclosed Engineering Evaluation Report is forwarded for your information and further consideration. This review indicates that the intergranular stress corrosion cracking (IGSCC) damage to valve stems, made of 400 series stainless steel, was attributed to excessive hardness caused by improper heat treatment of the material. The excessive hardness resulting from improper heat treatment may not be detected in either the licensee's or the supplier's QA programs. Since stress corrosion indication on a valve stem can only be observed by close inspections after disassembly of the valve, the plant routine valve operability test program cannot detect valve stem degradation. It is likely that valve stem IGSCC would go undetected until failures evidenced by a sudden shear of the stem upon actuation of the valve. This appears to represent a generic problem with this stem material. Therefore, this report suggests that RES and IE consider the following actions:

1. RES should consider the adequacy of the existing code requirements with regard to assurance of proper hardness of martensitic stainless steel following the heat treatment process. If appropriate, RES should attempt to have such requirements included in the applicable code.

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2. IE should consider issuing an Information Notice to inform licensees of the potential problem concerning improper heat treatment of stem material made of 400 series stainless steel which results in a high susceptibility to IGSCC.

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Enclosure:
As stated

cc: w/enclosure
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