

UNITED STATES GOVERNMENT

# Memorandum

TO : Edson G. Case, Assistant Director  
Division of Reactor Licensing

FROM : Walter G. Belter, Chief *W.G. Belter*  
Environmental & Sanitary Engineering Branch  
Division of Reactor Development & Technology

SUBJECT: ESSA HAZARDS SUMMARY REPORTS

DATE: March 15, 1966

RDT:NS

Reference is made to your letter of February 24, 1966, to the Environmental Sciences Services Administration requesting comments on the following:

Humboldt Bay Power Plant, Unit #3  
Proposed Change No. 20  
Dated February 18, 1966

*50-133*

The comments of ESSA's Environmental Meteorological Research Branch are attached.

Attachments:  
Comments (orig. & 1 cy.)



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A. B. Holt, Chief  
Technical Assistance Branch  
Division of Safety Standards  
Raymond J. Impara  
Technical Assistance Branch, SS

MAR 10 1966

HUMBOLDT BAY FLOW REDUCTION ATTRIBUTED TO SCALE BUILDUP IN FUEL ASSEMBLIES

Mr. R. J. Tedesco has asked me to review and comment on the flow reduction experienced at the Humboldt Bay Plant.

The implication drawn from the arguments of the applicant is that, based upon his understanding of gross core flow and individual fuel assembly flow, he can still quantitatively predict margins to burnout. In my opinion this reasoning is invalid, because burnout is basically a local phenomenon involving single pins and the surrounding coolant channels. With the quantities of corrosion products present (1-1/2 inch layer on fuel spacer) and their mobility (from top of one spacer at no flow to bottom of next spacer with full flow), it is highly likely that individual coolant channels are blocked by a much higher percentage than the averages arrived at from looking at the total core flow or individual assembly flow. The applicant's report notes that a reduction in flow to 40% of rated is required before the Tech Spec limit on MBOR is reached. It is quite likely that local flow rates are well below this level because of concentrations of deposits.

The fact that no burnout has yet occurred could be explained by:

1. Deposition is in fact reasonably uniform (in contradiction to above suggested possibilities).
2. Deposition is localized and film boiling exists, but because of the relatively low heat flux, no fuel melting results.

In summary, in my opinion, the operator no longer has anything like a reasonably accurate knowledge of his localized margin to film boiling.

cc: J. J. DiNunno, Assist. Dir., SS  
R. S. Boyd, DRL  
R. J. Tedesco, DRL

OFFICE ▶	SS:TAB <i>RS</i>				
SURNAME ▶	RJImpara:ewe				
DATE ▶	3-20-66				

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