REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8008120482 DOC.DATE: 80/08/06 NOTARIZED: NO DOCKET #
FACIL:50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
50-460 WPPSS Nuclear Project, Unit 1, Washington Public Powe 05000460
STN-50-508 WPPSS Nuclear Project, Unit 3, Washington Public 05000508
STN-50-509 WPPSS Nuclear Project, Unit 5, Washington Public 05000509
50-513 WPPSS Nuclear Project, Unit 4, Washington Public Powe 05000513
AUTH.NAME AUTHOR AFFILIATION
RENBERGER,D.L. Washington Public Power Supply System
RECIP.NAME RECIPIENT AFFILIATION
SNAIDER,R.P. Systematic Evaluation Program Branch

SUBJECT: Comments on NUREG-0577,in response to NRC 800520 ltr.Basis for required margins above nil ductility transition temp should be provided.Definition of operating temp & scope needed.

DISTRIBUTION CODE: A018S COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 4
TITLE: Component Support Fracture Toughness (USI A-12)

NOTES:PM: 2 copies of all material. 05000397
Standardized Plant. 05000508
Standardized Plant. 05000509

	RECIPIENT ID CODE/NAME		COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME		COPIES LTTR	COPIES ENCL
ACTION:	YOUNGBLOOD,B		7	7				
INTERNAL:	A/D MATL & QUAL		1	1	GEN ISSUES BR14		1	1
	I&E	10	2	2	MATL ENG	45	1	1
	NRC PDR	02	1	1	OP EX EVAL BR		1	1
	OR ASSESS	46	1	1	REG FILE	01	1	1
EXTERNAL:	ACRS	30	16	16	LPDR	03	1	1
	NSIC	04	1	1				

AUG 15 1980

TOTAL NUMBER OF COPIES REQUIRED: LTTR ~~34~~ 36 ENCL ~~34~~ 36

Washington Public Power Supply System
A JOINT OPERATING AGENCY

P. O. Box 968 3000 Geo. Washington Way Richland, Washington 99352 Phone (509) 375-5000

August 6, 1980
EMN-DB-80-30

50-397

Mr. Richard P. Snaider
Generic Issues Branch
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Snaider:

Subject: Comments On NUREG-0577 And Related Letter from Darrell G. Eisenhut Dated May 20, 1980

The Supply System comments on the subject NUREG and related letter are provided in the attachment.

Very truly yours,

G J Bailey for
D. L. Renberger
Assistant Director
Technology

DLR:DB:bt
Attachment

A018
S
1/1

8008120482

ATTACHMENT

GENERAL COMMENTS

1. Fracture Safe Criteria

   (i) The basis for the required margins above the nil ductility transition temperature (NDT) should be provided. The margins do not appear to be based upon the crack arrest approach developed by Pellini et al.

   (ii) The criteria allow only for two approaches--satisfy the NDT margin or assume member failure. There should be some intermediate position allowed, using linear elastic or elastic plastic fracture mechanics in combination with NDE to demonstrate fracture safe design. Without knowing the basis for the fracture toughness criteria provided in the NUREG it is difficult to make more specific comments.

   (iii) Following from (i) to (ii) it is apparent that following the NUREG approach no credit can be taken for factors such as volumetric inspection or post weld heat treatment. The criteria would be the same irrespective of inspection method or heat treatment.

   (iv) Consideration should be given to providing different fracture safe criteria for normal, upset and accident conditions. Normal stresses are low and the probability of accident conditions is also very low.

2. Definition Of Operating Temperature

   The selection of 75°F seems arbitrary. Normal operating temperatures are usually higher but minimum design temperatures lower. Again consideration should be given to having different criteria for shut down, start up and operation.

3. Definition Of Scope

   More guidance should be provided to define the type and extent of the supports covered by this NUREG. Also, interfaces with equipment and buildings should be defined. For example, on our WNP-2 plant the recirculation pump is suspended by hangers via the piping. The recirculation motor is hung by hanger rods from a cylindrical steel structure between the pump and the motor. It is difficult to define which of these items fall within the scope of the NUREG.

4. Basis For Assumed Upper Bound NDT Values

   The upper bound values provided for the high strength low alloy steels may not be conservative. These steels seem particularly susceptible to variations in rolling practice.

5. Implementation

Part II of the NUREG, the report by Sandia Labs, seems to fit the scope of a NUREG document. It would be preferable if the implementation sections were presented as an implementation letter, Regulatory Guide or Branch Technical Position.

6. Lamellar Tearing

It is apparent that adequate methods of predicting the occurrence of lamellar tearing do not exist. Emphasis should be placed on upgrading the base material quality requirements of the ASTM/ASME material specifications to provide structural materials for critical applications which have:

(i) Good through thickness ductility, low residual elements and controlled inclusion levels

(ii) Freedom from significant laminar defects

(iii) Freedom from other significant rolling defects

(iv) Adequate consistent toughness properties

(v) Good weldability

It is evident that the present specifications do not provide material which meets these requirements and that the nuclear industry must take the lead in this area rather than depending on the steelmakers.

7. Fracture Toughness Data Base

The Sandia report is a commendable attempt to assemble such a data base. Additional data is, however, required and could be obtained from the steelmakers and from impact test data generated for materials which have been used in nuclear construction. It is recognized that such data may be biased if toughness was specified, however, it would be very useful for future design purposes.

In addition, further characterization of the toughness of weld zones is required for the various processes, consumables and procedures of interest. This will be particularly important if design against fracture initiation is to be used. It is unwise to assume that the toughness of deposited weld metal can be deduced from the specified toughness for the consumable.

Also, the effect of plate thickness and rolling practice on toughness of carbon and low alloy steels should be examined.

8. Non-Destructive Examination (NDE)

   NDE is an important element for fracture safe design. Specific volumetric examination procedures and acceptance criteria are required for structural steel applications. Most work has been related to pressure vessels and piping. This should be expanded to include structures. The acceptance criteria in the structural welding codes are directed more at process and quality control rather than fracture safe design.

9. Post Weld Heat Treatment

   Again this is an important element in fracture safe design and should be integrated into any set of requirements intended to ensure structural integrity.