

File 245 - Peach Bottom

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October 19, 1960

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Test & Power Reactor Safety Branch

MEETING WITH APPLICANT

Note: Subsequent to the last meeting a letter was sent to the applicant on September 9, 1960 requesting information on the proposed R & D program.

The applicant submitted Amendment I to the report on September 27, 1960. The Amendment included a change of design in the control rod and a 66 page description of R & D. Several other changes were also included.

A meeting was held on October 18, 1960 to review with the applicant his recent amendment and other items of general concern in addition to those noted in the August 24 meeting. Those in attendance included:

<u>TPRSB</u>	<u>Phil. Elec. Co.</u>	<u>AEC - DRD</u>	<u>HTRDA</u>
M. Biles	J. L. Allen	D. Groelsema	I. McChesney
R. Hurst	E. J. Bradley		
R. Sliger	V. P. McDevitt		
	J. L. Everett		
	<u>Gen. Atomics</u>	<u>Bechtel Corp.</u>	
	E. Heller	G. Bosworth	
	R. Duffield	W. Dickenson	
	S. Koutz	P. Schmitz	
	H. Hoffman		
	H. Stewart		

The meeting was conducted similar to the first meeting, following the revised report.

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- II - 1 Q. - What is stage of knowledge on reflector ring seal and its effect on flow if failure occurs?
- A. - Seal to be resolved during flow model studies but calculations show if no seal at all it would only bypass 10% of flow.
- II - 6a Q. - Control drive description states motion of scram is capable of 3 g acceleration. Text also states less than 1 g applied to knuckle joint. Please clarify.
- A. - Loose play in joint would not be affected by larger acceleration since resting on adjacent parts but rate of deceleration would cause the effect.

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- II - 6b Q. If the coolant flow for cooling the rods is 2 - 5% (8800 - 22000 lb/hr or 237 - 594 lb/hr/rod or ~~4~~ 4 - 10 lb/min/rod) as stated and ΔP across the core is 3.2 psi, is it planned to run flow tests on the rod both hot and cold? Is there a possibility of thermal lock preventing flow due to hot spots?
- A. No flow tests are now proposed prior to core testing but G.A. agrees to review.
- II - 6b Q. It is noted that the ball type joint of the control rod not only slides in graphite sleeve but that the thimble below the grid is shown to be stainless steel the same material. Has testing on other been done to verify that galling will not occur.
- A. They agree to this concern and the material will be reviewed.
- II - 6b Q. Statement in test is that rod and guide tube are removed as an assembly and inspected by T.V. while still in vessel. How does one see the rod itself if the rod is still in the guide tube?
- A. They agree they don't know answer and suggest a further review on their part to resolve.
- II - 7 Q. Drawings and description show the lower rod housing to be quite long (12'-4") and welded to the lower vessel by heavy strength welds. Since the push rod and the actuator support tubes fit closely with this vessel extension, how can one anticipate or assure a straight tube and maintain alignment? What are the effects of vessel heating and possible binding effects on control rods?
- A. They say mfg. will keep 3/16 eccentricity tolerance at end of tube. Welds will be stress relieved and temperature tests will be performed on vessel prior to operation.
- II - 7b Q. What prevents leaking valve to allow drifting of rod?
- A. An anti-torque type clutch will lock the motion.
- II - 7a Q. Assume the rotary seal on the rod mechanism leaks. What prevents core helium from coming into operators face when lowering rod for maintenance?
- A. Procedure will provide that clean helium will be purged prior to disconnect.
- II - 7c Q. If scram valve is triggered and then re-energized during scram a) can this happen? and b) what are results?
- A. They agree this should not happen and adequate interlocks will be provided.

- II - 8 Q. Has vent system piping been resolved?
A. Double containment will be used.
- II - 13 Q. What is temperature in the internal trap?
A. Calculated to be 800° - 900°F.
- II - 18 Q. How would broken fuel or guide sleeve be removed from core?
A. Methods of mechanical grapplers are being considered.
- II - 24 Q. Title of Section F refers to afterheat and Emergency Systems. Text only describes afterheat-what is meaning of Emergency System.
A. The systems are intended to be one and the same.
- II - 26 Q. Has any value of rods been resolved on the min. shutdown margin?
A. Their calculations indicate this to be 3 or 4 rods.
- II - 31 Q. Where are neutron chambers to be located? How is it planned to measure in-core flux?
A. Polonium-Beryllium sources will be used and number is about 5. All chambers are to be located in void region just outside vessel, and wires will be used to measure core flux at startup.
- II - 32 Q. What are the withdrawal prohibits?
A. Please refer to page V-3.
- II - 38 Q. What is significance of the change of thermal conductivity in graphite for lower temperature and not startup tests?
A. They have taken this into account in calculating the hot spot figures.
- IV - 1 Q. The leak note is not in accordance with earlier submittal. Please explain.
A. Inventory in primary loop has changed and by going to all-graphite elements and trapping the potential release of fission products is much less. Also credible break allows no appreciable pressure buildup which all total is less by factor of 20. They conservatively raised the leak rate by only factor of 4 eg; 0.05% to 0.2%.
- IV - 1 Q. What is leak rate after penetrations are installed. It is pointed out that NASA, EBWR, and PWR all have past tests.

- A. They had no plans for doing this but would not object if it is considered necessary.
- V - 1 Q. Has the new rod been evaluated for rate of worth.
- A. It is designed for same value.
- V - 4 Q. Statements on p. II-7c refer to a group of rods being on auto-level control. Is this true?
- A. This fact must be resolved in the R & D program.
- V - 9 Q. It does not appear that HP Instruments are sufficiently described, e.g.; stack, filters, building air, waste, process, how many, etc.
- A. They agree and will be prepared to discuss at any time but assure that adequate instruments will be provided in design.
- VII - 4 Q. Under the in-pile loop program is it considered to inject water and O₂ to determine effects?
- A. Had not planned to do this but will consider.
- VII - 5 Q. Has the question of flow distribution been resolved on single blower operation?
- A. This will be resolved in the flow model studies.
- VII - 11 Q. If the 405[#] of H₂O is introduced, what is the effect on ThC and UC?
- A. All the H₂O is converted to gas CO and CO₂ prior to reaching fuel metals.
- VII - 18 Q. In the consideration of transient it is stated that no fuel element damage would occur unless the compact temp. exceeds 4532^oF. Since the internal trap is to contain copper which has a M.P. of 1980 F, how is it protected?
- A. They had not considered but will resolve the question in R & D and final design.

The meeting was adjourned and noted that the ACRS Subcommittee meeting would be Friday, November 4.

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C - 1083°C
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