

April 23, 1970

L. Squires, Chairman  
Midland Plant Subcommittee

DRL MEETING WITH CONSUMERS POWER COMPANY REGARDING THE PROCESS STEAM  
EXPORTED TO DOW

On April 22, 1970 the Regulatory Staff met with Consumers Power Company and Dow Chemical Company to discuss the licensing aspects of the process steam to be provided from the Midland Plant.

Mr. Price said that he saw no alternate to either licensing Dow or issuing a specific exemption for the use of this steam and byproduct material, if any. He said the AEC could never tell the FDA that the process steam contained absolutely no byproduct material. He did say that as long as the activity remained below some yet to be defined limit, the AEC could say that the steam contained essentially no byproduct material.

Consumers Power and Dow are quite concerned with these two alternatives since they felt that this issue had been resolved in discussions with the staff over the past two years. They were under the impression that neither a license nor an exemption would be required. This matter will have to be discussed further by the management of both companies.

The applicant discussed this issue with the Food and Drug Administration (FDA). The FDA could not accept the values in the Dow report as limiting values and suggested that a detector of suitable sensitivity be developed to continuously measure the activity in the steam, as long as the activity remained below detectable limits the steam would be assumed to have virtually no radioactive materials in it. Such a detector has been developed and its alarm point is  $3 \times 10^{-6}$  c/ml. For the usual mix of fission products this is well below the Part 20 limits on specific isotopes. If the detector alarms the applicant will immediately switch to another source of process steam or will stop the flow of this steam.

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The applicant was asked to calculate the concentrations of the various isotopes present at the alarm point of the detector. The applicant stated that he would assure that no isotope exceeded the Part 20 limits.

The applicant does not object to the ACRS looking at the Dow report for information but does not want that report made a part of the application.

J. C. McKinley  
Staff Assistant

cc: ACRS Members

OFFICE ▶						
SURNAME ▶						
DATE ▶						

120th ACRS MEETING SUMMARY

CHAIRMAN'S REPORT

April 23, 1970

Specific Projects

1. Midland Plant Units 1 & 2 - The Committee held the first of two scheduled meetings on the application by Consumers Power Company (Consumers), for authorization to construct the Midland Plant Units 1 & 2. A second meeting is scheduled for the May (121st) ACRS meeting. Items discussed during the meeting included:
  - a. Steam for use in the Dow Chemical Plant - The applicant and Dow Chemical representatives reviewed the proposed means of using steam from the Midland nuclear plant in the production of products in the Dow Chemical plant. They propose monitoring for radioactivity in the steam by detection of N-13 activity. Dow believes the radioactive materials which might be incorporated in their products will be at levels  $10^{-4}$  to  $10^{-9}$  of Part 20 limits. They will monitor their products for radioactive content before and after the use of the nuclear plant. The radioactive materials not returned to the nuclear plant (in the condensate return) will end up primarily in the river, in tars (to be burned), or in solids (to be buried). The applicant expects that other plant features (e.g., make-up capacity rather than limits or radioactivity), will be controlling in limiting leakage from the primary to the secondary system. A specific limit on leakage from the primary to the secondary system is therefore not proposed.

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Dr. Morris informed the Committee that Dow has been notified that the radioactivity levels in the steam may be unacceptably high when the plant goes into operation (e.g., from excessive leakage of primary coolant into the steam or fuel failure, possible reduction in Part 20 limits, possible carryover into their product). Dow has informed him that they were willing to take the risk and would comply with Food and Drug Administration (FDA) requirements regarding radioactivity in their products. The Regulatory Staff did not believe the Environmental Policy Act (implemented by AEC) requires that FDA review the Midland application. It was recommended that the Staff look further into the need for FDA review and comment. The Staff plans to wait until the operating license review before taking a final position on the process steam issue. It may be necessary for Dow to obtain a radioactive materials license to handle the radioactive material in their plant.

b. Difference between Midland and Indian Point/Zion (re: safety features).

Consumers concluded that the Midland plant has comparable safety features to those being incorporated in the Indian Point/Zion plants. Examples - capability to anneal reactor vessel, isolation valve seal water system, provision for emergency power, single failure criteria for ECCS, provision for PLOCAP. A few items which are different: reactor vessel cavity - Consumers does not believe catastrophic vessel failure is a credible accident, therefore the vessel cavity is not being designed to accommodate a longitudinal split of the vessel (Indian Point/Zion are). Consumers proposes venting of the containment as the means for coping with hydrogen buildup (post-LOCA); however, they are supporting research for various recombiner designs and will accept the "best" solution for this problem. Midland has a smaller design margin for containment overpressure. (The Staff was asked to provide at the next meeting the design margins for containment overpressure used by the Midland and Indian Point/Zion Plants). Consumers believe the CONTEMPT code (used by B&W) is more conservative than the COCO code (used by Westinghouse). NOTE: The Regulatory Staff was asked to provide a comparison, of the results obtained by both codes, to the Committee at the next meeting. The Staff was also asked to provide calculated off-site doses for Midland and Indian Point/Zion.

The Regulatory Staff identified basically the same differences noted by Consumers. The Staff believed the calculated off-site doses (post-accident) to be acceptable.

EXCERPT FROM  
120th ACRS MEETING SUMMARY

CHAIRMAN'S REPORT

April 23, 1970

c. Chlorine Release from Dow Plant (re: effect on Midland operators) -

Dow described their chlorine storage tank and the features to prevent gross leakage to the atmosphere. The tank is double walled; a containment pit below the tank and a caustic scrubber are available to help limit the quantity of chlorine which could be released to the air. Dow analyzed that the worst case of a chlorine spill would result in a 20 minute critical period. After this critical period, the scrubbers should be able to limit to a safe level the quantity of chlorine released. Mr. Allen did not believe a chlorine accident would jeopardize the Midland plant operations (operators).

d. Subsidence

The Staff noted that it had a draft report from the applicant on subsidence; the Staff asked for further studies by the applicant of the subsidence problem.

e. Backfitting

The Staff did not consider the statement of AEC policy on "backfitting" to alter its approach to reviewing applications for construction permits or operating license.