



Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

July 28, 1980

Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch 5
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Dresden Station Units 1 and 2
Response to Request for Information
Concerning Turbine Disks
NRC Docket No. 50-10

References (a): D. M. Crutchfield letter to D. L. Peoples
dated June 11, 1980

(b): R. F. Janecek letter to T. A. Ippolito dated
June 23, 1980

Dear Mr. Crutchfield:

Reference (a) requested information concerning turbine disk design and previous inspection results for Dresden Units 1 and 2. Our response for Dresden Unit 2 was provided in Reference (b).

The Attachment to this letter contains our partial response for Dresden 1. The information provided is that which was readily available in the response time requested. Because of the current extended outage of Dresden 1, the diversion of manpower from other ongoing projects to provide all the requested information was not considered to be warranted. The remaining information will be provided prior to startup of Dresden 1.

Please address any questions concerning this matter to this office.

One (1) original and thirty-nine (39) copies of this transmittal are provided for your use.

Very truly yours,

Robert F. Janecek
Nuclear Licensing Administrator
Boiling Water Reactors

SUBSCRIBED and SWORN to
before me this 28th, day
of July, 1980

Notary Public

800 7310 432

Response To Request For Information
Concerning Dresden Unit 1 Turbine Disc Inspection

1. Turbine type

The Unit 1 turbine is a General Electric non-reheat, tandem compound 1800 rpm unit with three elements; high pressure (HP), intermediate pressure (IP) and double-flow low pressure (LP) sections. Steam from the high pressure turbine exhausts to the intermediate pressure turbine. From there it exhausts through a large cross-over pipe equipped with the moisture extractor to the double flow low pressure turbine. The low pressure section exhausts to the condenser.

The high pressure element's discs (wheels) are an integral part of the rotor, having been machined out of a solid alloy steel forging. The intermediate and low pressure rotors have separate forged discs which are shrunk onto the shafts and keyed. There are seven discs on the IP rotor and three discs on each end of the double-flow LP rotor.

2. Operating Hours

The turbine had operated 111,196 hours prior to its inspection.

3. Disc Material

The nominal chemistry of the turbine disc material is 1Cr $\frac{1}{2}$ Mo.

4. Inspection Results

The results of the ultrasonic inspection of the wheel bore areas of the IP and LP rotors are summarized below.

| <u>Rotor</u> | <u>Wheel</u> | <u>No. of Indications (Keyway Corners)</u> | <u>Depth In.</u> | <u>Length In.</u> |
|--------------|--------------|--|----------------------|-----------------------|
| IP | 22 | 1 | < 0.030 | 1.5 |
| LP | 23T | 2 | 0.060 & 0.090 | 1.5 |
| LP | 23G | 1 | 0.030 | 1.5 |

The visual examination revealed water cutting on the face of the hubs of the wheels in line with the keyways. Water cutting emanating from the keyway of the first stage (wheel #23) of the LP rotor was visible. Fiber optics examination inside the first stage wheel keyway showed that the water cutting extended axially into the keyway in-line with the sonic indications picked up from the top of the hub. Photographs of the water cutting discussed above were presented to the Staff at the March 20, 1980 meeting with the Nuclear Regulatory Commission to discuss the results of the Pilgrim #1 (Boston Edison) and Dresden #3 disc inspections.

Thus, all of the inspections to date indicate that the sonic indications observed on the Dresden #1 IP and LP rotors are due to water cutting. No evidence of stress corrosion cracking was found.