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SUBJECT:
FURNISHING SUMMARY OF KEY RESULTS WHICH WILL BE DETAILED IN REPT DESCRIBING THE COOLING TOWER FAULT AND OTHER GEOLOGIC STRUCTURES AT UNIT 2 WHICH IS TO BE SUBMITTED ABOUT 02/15/78.

PLANT NAME: NINE MILE POINT - UNIT 2
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NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

January 17, 1978

Mr. Edson G. Case, Acting Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Nine Mile Point Unit 2
Docket No. 50-410

Dear Mr. Case:

We had previously informed members of your staff that the report describing the cooling tower fault and other geologic structures at Nine Mile Point Unit 2 would be provided about February 15, 1978.

Due to the extensive effort involved, this report is now scheduled to be submitted April 28, 1978. However, provided below is a summary of key results which will be detailed in this report.

The structural and mineralogical investigation which was conducted in connection with the cooling tower fault included detailed geologic mapping and structural interpretation from data gathered in six excavations located along the strike of the cooling tower fault, as well as two lines of vertical borings and two angle holes that intersected the fault to a depth of over 300 feet. Mineralogical analyses included sampling and examination of minerals from within and adjacent to the cooling tower fault. Fluid inclusion, ore microscopy, x-ray diffraction and fluorescence studies were performed. These extensive field, laboratory and analytic studies revealed a complex history of structural events initiated by development of a left lateral strike-slip fault approximately 300 million years ago. The regional joint pattern is viewed as conjugate strike-slip shear fractures; the orientation and sense of movement along the cooling tower fault is compatible with development as the left lateral member of that conjugate fracture system. Consequently, the first episode, formation of the strike-slip fault, is inferred to be contemporaneous with the formation of the regional joint system, generally attributed to late Paleozoic deformation. Examination

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of the rock core from borings intersecting the fault zone shows that development of the strike-slip fault is restricted to the more massive rock units of the Oswego sandstone. The underlying softer rocks were apparently too ductile to initiate and/or propagate a strike-slip shear fracture.

The second stage of fault development was characterized by normal-slip movement. This normal faulting also affected the underlying strata and has been encountered to the maximum depth investigated (300 feet). Analysis of fluid inclusion and correlation with similarly oriented normal faults both at the Nine Mile Point site and east of Rochester, New York, indicate that the normal faulting episode on the cooling tower fault was associated with tectonic activity of Cretaceous age (more than 65 million years ago).

The third episode of deformation superimposed the reverse slip displacement in the upper 200 feet of the rock section. This displacement took place in two different phases of reverse slip displacement. The two phases of reverse slip displacement can be inferred from the greater amount of stratigraphic offset in the bedrock than in the overlying glaciolacustrine sediments and from structural analyses that illustrate a rotation of the bedrock prior to deposition of the sediments. The first phase accounted for most of the observed stratigraphic separation and occurred prior to the deposition of overburden sediments. The second involved smaller movements of similar structural character which affected the sequence of late Wisconsinan sediments. Both phases of reverse slip displacement were produced by near surface buckling of the rock strata and, based on stratigraphic correlations between corings, extended only to a depth of approximately 200 feet. Based upon our understanding of the mechanism of deformation documented in extensive field observations, we conclude that the deformation was not seismogenic in nature. The definitive field observations include ductile deformation such as drag folding in the bedrock and folding and flow within the fault zone itself.

Overall, recent cooling tower fault investigations are consistent with earlier conclusions described in the Preliminary Safety Analysis Report. The Nine Mile Point site is in an area which is relatively free of earthquakes. The nearest significant historically recorded earthquake epicenter was located 80 kilometers to the east and no earthquakes have been recorded within 50 kilometers of the site.

Thus, we conclude that the recently discovered cooling tower fault and other geologic structures noted at this site do not present a safety hazard to the Nine Mile Point Unit 2 facility.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

Gerald K. Rhode, Vice President
System Project Management

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