

APR 4 1973

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Docket No. 50-220

Niagara Mohawk Power Corporation
ATTN: Mr. Philip D. Raymond
Vice President - Engineering
300 Erie Boulevard West
Syracuse, New York 13202

Gentlemen:

Your letter dated January 31, 1973, requested authorization to make changes consisting of the use of Type 4 gadolinia-bearing fuel for the first major refueling of the Nine Mile Point Unit No. 1.

We have reviewed the information you provided and have concluded that the proposed first major reload fuel involving a total of up to 32 Type 2 and up to 108 Type 4 fuel bundles and subsequent operation of the Nine Mile Point Unit 1 with this fuel does not involve a change to the Technical Specifications of Facility License No. DPR-17 nor does it introduce new considerations for the fuel densification evaluation which is being performed by the AEC. On this basis you may perform the refueling as you have described it in your letter of January 31, 1973, in accordance with paragraph 50.59(a) of 10 CFR Part 50.

Sincerely,

~~Original Signed by~~
D. J. Skovholt

Donald J. Skovholt
Assistant Director for
Operating Reactors
Directorate of Licensing

cc: J. Bruce MacDonald, Esquire
Deputy Commissioner and Counsel
New York State Department of
Commerce and Counsel to the
Atomic Energy Council

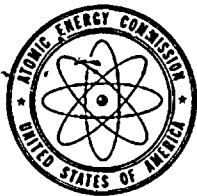
cc w/copy of NMP's ltr dtd
1/31/73:
Dr. William E. Seymour
Staff Coordinator
N. Y. State Atomic Energy Council
N. Y. Department of Commerce

Arvin E. Upton, Esquire
LeBoeuf, Lamb, Leiby & MacRae

OFFICE	L:ORB #2 X7403	L:ORB #2 RMDiggs	L:ORB #2 DLZiemann	L:RS VStello	L:OR DJSkovholt	
SURNAME	CJDeBevec:sjh	RMDiggs	DLZiemann	VStello	DJSkovholt	
DATE	4/3/73	4/3/73	4/3/73 -	4/4/73	4/4/73	



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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UNITED STATES
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

APR 4 1973

Files (Docket No. 50-220)

THRU: D. J. Ziemann, Chief, ORB #2, L

D. J. Ziemann

FIRST MAJOR REFUELING FOR NINE MILE POINT UNIT 1 REACTOR (NIAGARA
MOHAWK POWER CORPORATION)

By letter dated January 31, 1973, Niagara Mohawk Power Corporation described plans and included a safety analysis for the first major refueling of the Nine Mile Point Nuclear Station (NMP) Unit No. 1 reactor. This first major refueling is scheduled for April 1973 and is to consist of up to 108 new Type 4 fuel bundles and up to 32 Type 2 fuel bundles which are the balance of a previously authorized fuel reload. Two earlier refuelings were made involving a partial reload of up to 52 Type 2 fuel bundles which we reviewed previously ("Evaluation of Gadolinia-Bearing Reload Fuel for Niagara Mohawk Nine Mile Point Reactor" dated September 14, 1971) and a second partial reload of 40 Type 3 fuel bundles which we also reviewed previously ("Evaluation of Type 3 Reload Fuel for Niagara Mohawk Nine Mile Point Reactor" dated March 17, 1972). Although the current proposed refueling involves no change to the Technical Specifications, we have evaluated the proposed reload fuel since it may have involved an unreviewed safety question as defined in paragraph 50.59(c) of 10 CFR Part 50.

The Type 4 fuel bundles have the same basic dimensions as the present fuel with 49 fuel rods in a 7 x 7 array. Full length gadolinia-containing fuel rods are used for supplemental reactivity control similar to the Type 2 and Type 3 fuel. The Type 4 fuel bundle is the same as the Type 2 fuel bundle previously reviewed as regards the four fuel enrichments used that result in an average enrichment of 2.50 weight percent U-235 and the four gadolinia-containing fuel rods per bundle. The principal changes in the Type 4 fuel, as compared with previous fuel, consist of pellet geometry, clad and pellet dimensions, and the inclusion of a hydrogen "getter" in the fuel rod plenum. The dimensional changes involve reducing the pellet length to diameter ratio and include a chamfer of the pellet ends. The pellet length is reduced from about 3/4 inch to about 1/2 inch, and the diameter is reduced from 0.487 to 0.477 inch. The reduction in pellet diameter compensates for an increase of 0.005 inch in cladding thickness. The clad thickness increase compensates for the reduction in strength resulting from the increase in stress-relief annealing temperature that is designed to improve material ductility.

APR 4 1973

The licensee provided, by telephone on March 29, 1973, the following information on the hydrogen "getter" which is located in the upper plenum of each fuel rod of the Type 4 fuel. The hydrogen "getter" is an added precaution to reduce the potential for clad hydriding that leads to embrittlement and clad failure resulting from incomplete removal of hydrogen impurities in the fuel rod during fabrication; such extraneous hydrogen impurities will combine chemically with the "getter" in preference to the zircaloy cladding. The "getter" is composed of chips of a zirconium alloy located in a stainless steel container in the upper plenum. Tests have shown that the "getter" is effective for temperatures anticipated in a BWR fuel rod plenum and will not release hydrogen during normal operations or under accident or transient conditions. The "getter" material chip size has been selected such that the "getter" will not undergo a chemical reaction of such a nature as to contribute to the severity of transients or accidents. Detailed information in support of the above summary will be submitted by the licensee to the AEC by April 20, 1973.

On the basis of our previous reviews of Types 2 and 3 fuel for NMP, we find the proposed Type 4 reload fuel acceptable for the NMP Unit 1 first major refueling. Because the fuel types, including the initial core fuel, are similar, we conclude that the fuel densification properties of the refueled core will not be substantially different from those of the present core. The AEC review of fuel densification is being performed on a generic basis (i.e., review of report, NEDM-10735, "Densification Considerations in BWR Fuel Design and Performance"), and this review is not complete at this time. However, the refueling is not expected to change any action required as a result of the fuel densification evaluation. Niagara Mohawk has indicated that they will provide information describing the effect of the fuel densification on the accident analyses for the Nine Mile Point Unit 1.

We have concluded that no changes to the Technical Specifications are necessary and that there is reasonable assurance that the health and safety of the public will not be endangered by the proposed refueling and operation.

for James J. DeBevec
C. J. DeBevec
Operating Reactors Branch #2
Directorate of Licensing

cc: See next page

Files

- 3 -

APR 4 1973

cc: Niagara Mohawk Power Corporation
AEC PDR
Local PDR
RTedesco, L:CS (2)
DJSkovholt, L:OR
TJCarter, L:OR
RO (3)
DLZiemann, L:ORB #2
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