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TELEPHONE
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June 11, 1984

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Re: McGuire Nuclear Station
Docket Nos. 50-369, 50-370

Dear Mr. Denton:

As requested in a May 30, 1984 telephone conversation between Bernard Turovlin, NRC/ONRR, and W. H. McDowell, Duke Power Company, attached is additional information concerning the McGuire spent fuel pool rerack modifications. If there are further questions regarding this matter, please contact us.

Very truly yours,

Hal B. Tucker

Hal B. Tucker

WHM:glb

cc: Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. W. T. Orders
Senior Resident Inspector
McGuire Nuclear Station

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DUKE POWER COMPANY
McGUIRE NUCLEAR STATION
SPENT FUEL POOL RERACK MODIFICATIONS
ADDITIONAL INFORMATION

1. The following is a list of materials used in the spent fuel pools.

   a. Leveling pads - 1.5" thick, type 304 S.S.
   b. Leveling pad screw - 3.5" dia and 4.0" dia, type 304 S.S., chrome plated
   c. Leveling pad support plate - 3.5" thick and 4.5" thick, type 304 S.S.
   d. Base plate - 1/2" thick, type 304 S.S.
   e. Cells - 0.075" thick, type 304 S.S.
   f. Poison wrapper - 0.02" thick, type 304 S.S.
   g. Cover plate and filler plate - 0.0747" thick, 304 S.S.
   h. Reinforcement Plate - 3.0" thick, type 304 S.S.
   i. Box Beam - 0.109" thick, type 304 S.S.
   j. Side Plate - 0.625" thick, type 304 S.S.
   k. Frame bar - 0.625" thick, type 304 S.S.
   l. Mock fuel assembly - 0.375" thick, type 304 S.S.
   m. Funnel segment - 0.25" thick, type 304 S.S.
   n. Coupon plate - 0.35" thick, type 304 S.S.
   o. Gusset plate - 0.625" thick, type 304 S.S.
   p. Channel - 0.50" thick, type 304 S.S.
   q. Filler wire - 0.12"/0.25" dia., Grade 308 or 308L, SFA 5.9, Section II Part C, ASME Code.

   A sketch of the wrapper plate details is included as Attachment 1.

2. Poison material venting occurs through cutouts at corners of the wrapper plate. The wrapper is spot welded to the cell wall along the vertical joint between the wrapper and cell.

3. There has been no change in the spent fuel pool water boron concentration. The proposed technical specification changes include a surveillance requirement to verify boron concentration once per 31 days. The boron concentration in the spent fuel pool is to be maintained at greater than or equal to 2000 ppm.

4. Details of the McGuire neutron poison surveillance program are as follows:

   Two boraflex coupon stringers will be installed in each McGuire spent fuel pool. In Region 1 a stringer will be attached to rack module 1 (ref. figures 4.2-9 and 4.2-10) along the non-poison cell wall between modules 1 and 2. A Region 2 stringer will be attached to module 3 along the non-poison cell wall between modules 3 and 4.

   Each stringer will contain 24 coupons in 8 packets of 3. Two coupons will be fabricated from each batch of poison material incorporated in the racks (12 in Region 1 and 11 in Region 2 for each pool) and mounted on the appropriate stringer. This will allow 100% representation of all poison batches

to be maintained throughout the first few surveillance periods currently scheduled at five year intervals. Beyond this point chemical composition and fabrication consistency between batches can safely be assured thus allowing continued examinations utilizing the second set of coupons.

As detailed in the attached sketch, each set of 3 coupons is to be mounted between two 75 mil stainless steel plates. This arrangement closely resembles that of the boraflex mounted on the rack cells. Wrapper and cell material is also 75 mil stainless.

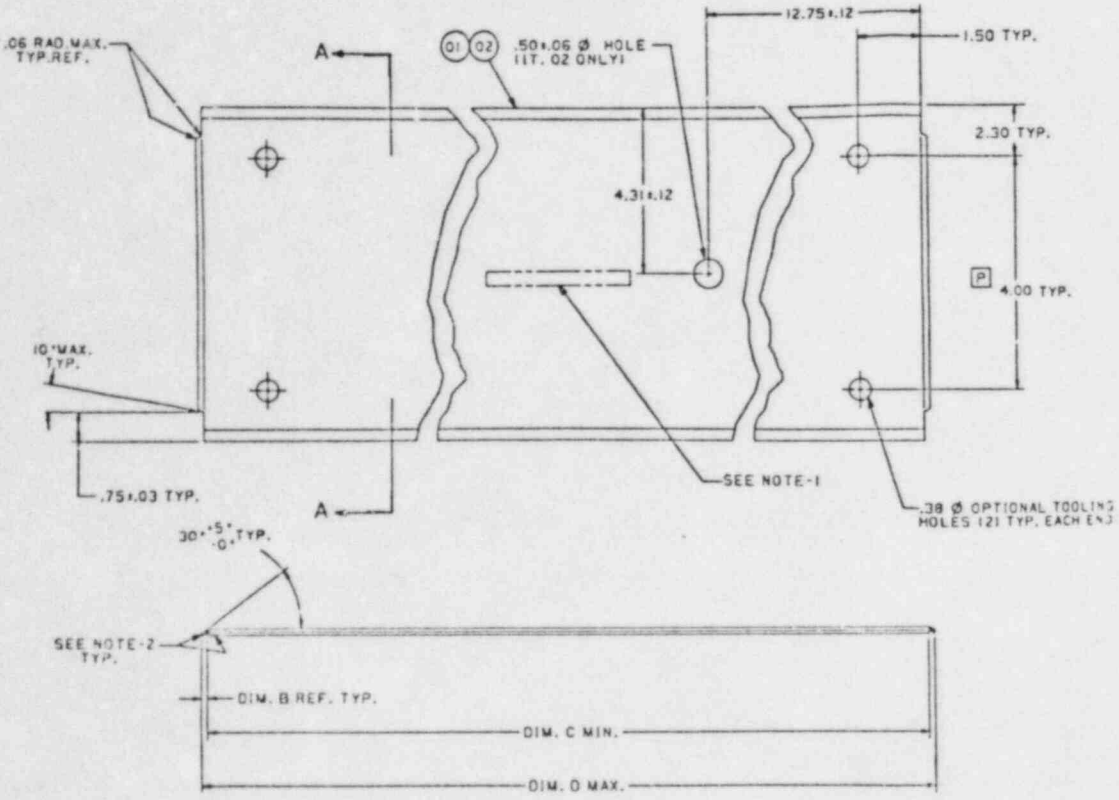
It is expected that Region 1 will be utilized for only periodic short term storage of irradiated fuel assemblies. Specifically, freshly discharged fuel assemblies will be placed in Region 1 until their transfer to Region 2 following minimum burnup verification. Plant refueling procedures will ensure that the stringers in each region receive a bounding cumulative gamma and neutron dose through placement of the "hottest" fuel assemblies in cells adjacent to the stringers.

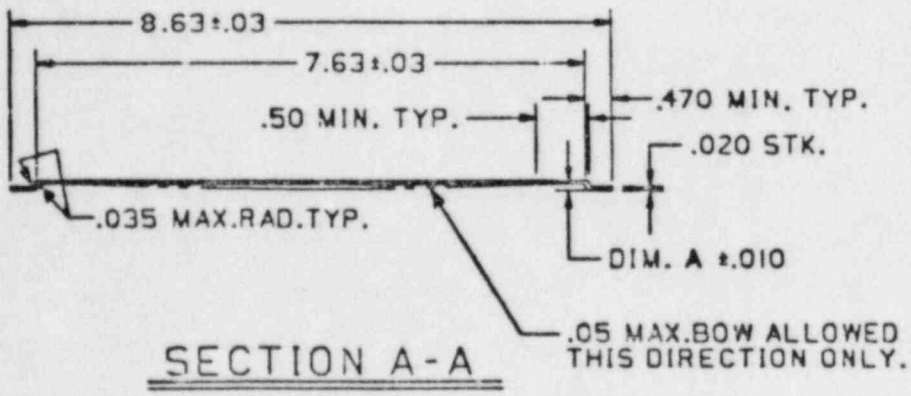
Calculations of nominal radiation exposure of poison material in high density poison racks predict cumulative gamma dose of $\sim 1 \times 10^{11}$R (which corresponds to the maximum test exposure of Boraflex) in approximately 5 years. Cumulative exposure to each McGuire region will be somewhat less than that since storage time will be divided between the 2 regions. Nevertheless, 3 coupons from each stringer will be examined no later than 5 years after the first discharge of irradiated fuel into the racks.

Additionally, some actual poison performance data will become available approximately 2-3 years into the program from the Oconee surveillance program currently underway. The Oconee program is very similar to the proposed McGuire program in that it utilizes Boraflex as the poison material and requires similar fuel loading procedures that insure maximum exposure to the coupons. Results of the Oconee program will be used to determine the need for examinations sooner than 5 years at McGuire. Beyond the first 5 year surveillance period, the necessity for shortening a particular 5 year period will be determined by the results of the preceeding examination.

Coupon testing with include a visual inspection for evidence of corrosion, cracking, or crumbling. The following physical and mechanical properties will be measured: width, thickness, weight, specific gravity, B^{10} content, hardness (as an indicator of embrittlement), and tensile strength. Additionally, a measurement of neutron attenuation will be recorded for each specimen. All tests will be consistent with the original qualifying tests of each batch. A sketch of surveillance specimen details is included as Attachment 2.

McGUIRE NUCLEAR STATION, UNITS 1 & 2
SPENT FUEL RACKS — WRAPPER PLATES





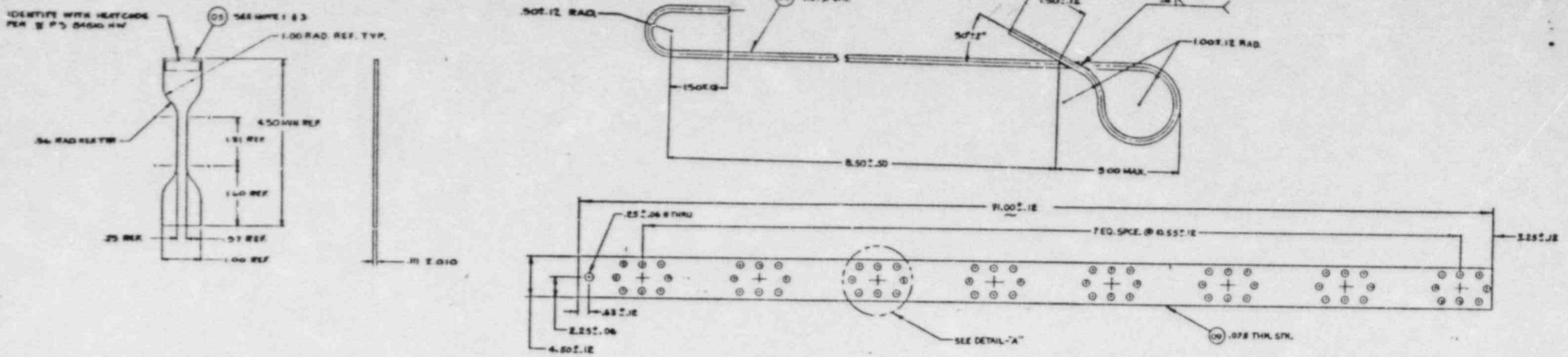
SECTION A-A

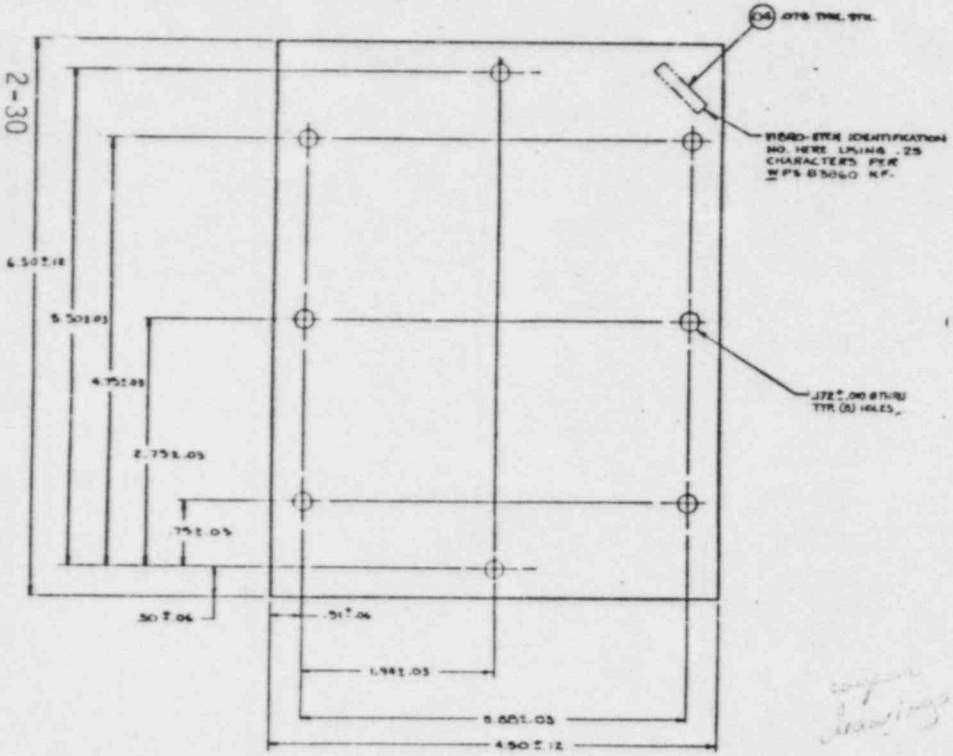
ITEM	DIM. A	DIM. B	DIM. C	DIM. D	DESCRIPTION
01	.090	.156	139.50	140.22	WRAPPER, REGION 1 (SEE NOTE X)
02	.048	.083	151.75	152.50	WRAPPER, REGION 2 (SEE NOTE X)

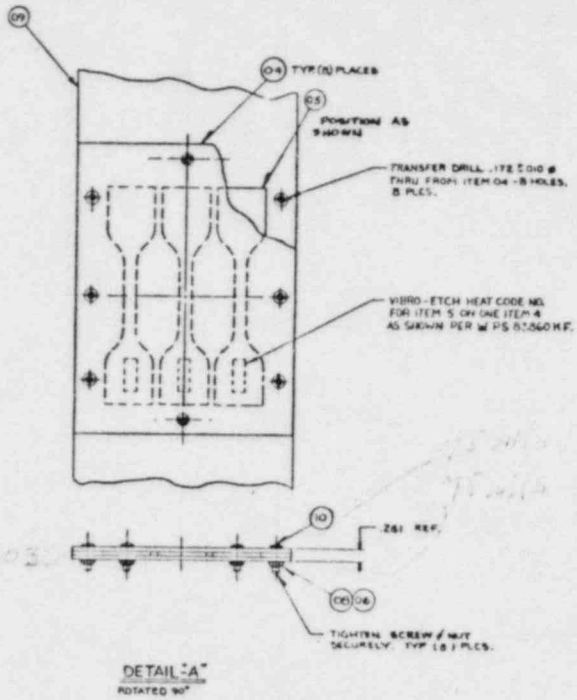
NOTES:

1. VIBRO-ETCH HEAT CODE NO. USING .12 HIGH (MIN.) CHARACTERS PER PS 83860 KF.
2. SIDE FLANGES AND TIP OF END TABS TO BE COPLANAR IN .50 ZONE AT EACH END OF WRAPPER. KNIFE EDGE ON END TABS AND AS-SHEARED INTERNAL EDGE CONDITIONS ACCEPTABLE.

X - ASME SA-240 (OR EQUIVALENT ASTM DESIGNATION PER NCA-1221.1), TYPE 304, NO.2 FINISH, COLD ROLLED STRIP. MATERIAL SHALL COMPLY WITH NF-2000 CLASS-3, SUBSECTION-NF, SECTION III, ASME B & PV CODE.







2-30

ATTACHMENT 2

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