

Request McGuire Nuclear Station Not Start Up Due to a Potential Meltdown (Ref. 10 CFR 2.206)

To: Executive Director for Operations

Attention: Mr. Luis Reyes

Date: April 5, 2008

Subject: REQUEST THAT MCGUIRE NUCLEAR STATION NOT START UP
DUE TO A POTENTIAL MELT DOWN (REF 10 CFR 2.206)

Action: Wiggins, NRR
Ref: G20080204

CYS: EDO
DEDMS
DEDR
DEDIA
AO
R11
OGC
Mensah, NRR
Marco, OGC

Please accept this letter as a supplemental letter to the one I sent to the NRC Executive Director for Operations dated March 24, 2008. Pertaining to the same above subject matter.

I now offer additional details, which I believe will substantiate my concern that the potential does exist for currently and badly damaged "A" Feed Water Heaters (FWHs) to experience a massive amount of tube failures (ruptures), which in turn would allow a large turbine water induction to occur and result in the complete destruction of the turbine(s), turbine building(s), and adjacent buildings, which includes the control room and its controls.

I first conveyed my concerns thru the CEO office of Duke Energy on March 7, 2008. My first meeting was held with Duke Power's President the next day, March 8, 2008. My second meeting was held on March 11, 2008 with the lead members of the Duke Power group assigned to investigate the problem. My third and most recent meeting was held at the McGuire Nuclear Station site on April 3, 2008. The third meeting was with the lead members of the Duke Power group assigned to investigate the problem and the McGuire Nuclear Station site Vice President. I was presented with the basic results of their in-house investigation of the problem at that time.

I took exception to part of their findings and Duke accepted some of the exceptions as follow up action items. The major exception that I had was that this problem can result in possible reactor meltdown and Duke's position was that in any case they would be able to safely shut down the reactor(s).

Some of the follow-up actions identified included: (1) What possible affect would the destruction of the high-pressure turbine have on the remaining three (3) low-pressure turbines and the generator. (2) What is the current condition of the extraction check valves and what is the extent of their preventive maintenance and what is their preventive maintenance schedules.

One of my major concerns and questions put to them during this meeting was "how could they continue to operate these past fourteen (14) years with broken and out of design "A" FWHs.? Duke's response to this was that they were following the recommendations listed in the "Under Shell Inspection Report" made by Mr. Thomas G. Haynes in October, 1990. Mr. Haynes's report is a very good detailed report about the results of his

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on site inspection of Unit Two's "2A2" FWH for probable cause of damage. They explained to me that they chose the less costly of the two recommendations listed in the report, which they stated was to perform follow-up tube leak and Eddy Current Testing (ECT) and continue to monitor the ECT results to aid in their on going monitoring of the existing damage.

I contacted Mr. Haynes within the past week to see if he would be willing to refresh my memory pertaining to this past problem. He invited me to meet with him a few days ago and at that time we discussed the problem. Prior to our meeting, Mr. Haynes had looked into some of his old files and happened upon his old personal file copy of his 1990 inspection report on McGuire's "2A2" FWH. I reviewed this report and realized how detailed the inspection results had been documented concerning this problem.

Mr. Haynes offered me the unconditional use of his personal file copy of the report and I accepted his offer. Mr. Haynes does not have a concern if anyone would like to use it as a reference or to make copies of the report to be included as an attachment to this letter. Prior to making any copies, the only enclosures that need to be removed from the report are any Duke Power company purchase order and payment information related to Mr. Haynes's charges. In addition, Mr. Haynes wants his original copy returned.

I therefore submit the above-mentioned report by Mr. Haynes to be included as attachment number one (1) to this letter contingent on the acceptance of above stated conditions, which are to ensure that Mr. Haynes will receive his original file copy back after the NRC makes any needed copies. In addition, I believe that Duke Power should be able to object to introducing this copy from Mr. Haynes personal file if for some reason they have a legitimate reason or do not want the committee or the public to be made aware of the extent of present damage of subject equipment.

During your review of Mr. Haynes report you will see that it is very thorough and identifies many details pertaining to the problem along with recommendations to fix the problem. The problems are so many that I cannot identify all of them in this letter.

Mr. Haynes report substantiates my concern that the potential does exist for current badly damaged and out of operating design "A" Feed Water Heaters to experience a massive amount of tube failures (ruptures), which in turn would allow a large turbine water induction to occur.

I have listed additional information that could impact the operation or your review concerning ECT testing and the operation of equipment, which is in line between the FWHs and the turbine. This is the equipment that Duke is depending on to stop any TWI. This equipment is: (1) The Extraction Check Valves, (2) The Isolation Valves, (3) Dump Lines, (4) Eddy Current Testing concerns, and (5) FSAR review items.

My assessment of the above-mentioned equipment is as follows:

(1) The Extraction Check Valves

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- The extraction check valve (s) are not designed to stop water from backing up the extraction line to prevent turbine water induction (TW1).
- The extraction check valves (s) are only designed to check the high velocity moist vapor blow back from under the FWH shell during a turbine/unit trip and during a lack of over pressure under the FWH shell. When a FWH's water level is high, then that results in a higher volume of water and more flash back into the extraction lines.
- The extraction check valves on "A" FWH's are in direct contact with an increased steam flow, which appears to be well beyond the original design criteria. This condition appears to have started during the unit's early start up years and is still prevalent today, but is more severe. This can lead to the valve having an increase in internal erosion problems.
- Steam scaling on the valves internal parts and additional steam flow induced vibration, can impact the valve's proper operation.
- I would expect a possible warping and/or binding of the valves internal working parts if it suddenly went from a steam-operating environment to a cooler water-operating environment.
- I do not believe that the valve was designed or qualified for this sudden change of service conditions.
- Check valves are not stop valves!

(2) The Isolation Valves

- The Isolation Valves receive essentially the same operating conditions as the extraction check valves. I would expect similar problems. Their operation may be affected in a similar fashion as the check valves. One major difference is that a sudden cooling of the isolation valve's stem could result in a bent stem, which would not allow the valve to perform its normal design function of isolating the steam extraction flow from the turbine to the FWH's.
- The Isolation Valves's cycle time is 50 seconds, which would allow a lot of feed water to pass and be inducted into the turbine. I do not believe it was designed to prevent TWI!!

(3) Dump Lines

- It is my understanding that the FWH's Dump Lines are about the same size as the normal drain lines and may not be large enough to accommodate a massive amount of feed water tube leakage as I have envisioned.
- I believe that the dump lines are intended to control the feed water heaters rising level due to a much smaller number of leaking tubes.
- There are a number of normal and emergency drains interface problems identified by Mr. Haynes. Some of these problems result in line capacity loss.

(4) Eddy Current Testing concerns:

A copy of "Damaged tube/condition report" from Cramer & Lindell Engineers, Inc., on McGuire FWH 1A2 and dated 2-26-90 is included in Mr. Haynes report. This report

shows that some tubes had dents in the area at the top broken support plates (closest to the u-bent). The dents were in excess of .055 inch. I had Cramer & Lindell Eng. Inc. to use their ECT probe and take measurements to show the distortion of the top broken support plate.

I ask Duke personnel during the April 3, 2008 meeting if their follow up monitoring indicated additional movement since the problem was first documented in February 1990. Their reply was that the broken top support plates continued to move up at a rate of about ¼ to ½ inch during the next few cycles and is not moving now or is moving at a very slow rate. This may be an indication that the movement is now so small that it is not possible to measure with ETC probes. Also I would envision that the stresses now being imparted to the S.S. tubes are reaching a point that I would consider it to be very dangerous. As these stresses build-up, it is more likely that the massive amount of tube rupturing is getting closer and closer with each cycle.

(5) FSAR review items (possibly being referenced during review of this problem).

I do not have a copy of McGuire's FSAR to reference for items pertaining to this problem. But I am aware of two (2) items, which have been referenced during this problem review by the NRC and/or Duke Power. My assessment of these two FSAR items is as follows:

- (1) Tornado damage to the turbine building.
- (2) Turbine damage, which launches a (one) large missile.

I believe the possible damage arriving from a total turbine destruction would be many times greater than that listed in the FSAR for the above two items.

In conclusion, I have identified many more details for your additional consideration during your review of this problem. I still do not believe that the valves, piping and current operation parameters associated with the FWH's is adequate to prevent a large TWI. This seems to be supported by Mr. Haynes report. I also believe and expect that a large amount of TWI from any of the "A" FWH's will occur. When this happens I expect the high-pressure turbine to be totally destroyed. This will set in motion a drastic set of events which will result in the destruction of all turbine associated equipment, turbine building piping, turbine building and any adjoining buildings which includes the combined unit one (1) and unit two (2) control room. This could happen in a very short time span and the damage could render both of Duke Power's McGuire Station reactors uncontrollable and there by resulting in a very possible meltdown.

Thank You,

William E. Smith
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