



GA Technologies

In Reply  
Refer To: 67/7063

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4 June 1985

Dr. Cecil O. Thomas, Chief  
Standardization & Special Projects Branch  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Docket 50-163: R-67; Application for License Amendment and  
Technical Specification Change. (19 copies)

Dear Dr. Thomas:

GA Technologies Inc. (GA) has need to make a change in its subject reactor technical specification for reasons stated below. Accordingly we request that our subject license reactor technical specifications, Section 6.2.5, be amended to read:

"The reactor power measuring channels shall be calibrated by the calorimetric or heat balance method semiannually but at intervals not to exceed eight (8) months."

Attached are the fees required to accompany this license amendment request.

The purpose of this request is to seek authorization to perform calibration of the power channels by either calorimetric or heat balance methods at least semiannually but with no interval greater than eight (8) months. This would eliminate need to unnecessarily interrupt the extended runs of the experimental programs for the sole purpose of power channel calibrations by the calorimetric method.

For the conduct of extended reactor operations such as for the thermionic tests, certain surveillance tests of the reactor's safety systems normally performed daily are performed on a delayed basis as already provided by the Technical Specifications. See, for example, Section 6.2.4. However, Section 6.2.5 requires that the power measuring channels shall be calibrated at least quarterly by comparing with the heat balance. At present, certain of the thermionic tests would normally exceed three months in duration, but are now required to be terminated because of the requirement to perform a power calibration (Section 6.2.5).

Not only does this requirement interrupt an otherwise long run, but the thermionic devices are subjected to increased risks. When the reactor is shutdown these devices are subjected to thermal shock. Further, operation of the reactor at intermediate power levels to perform the power

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calibration produces intermediate temperatures within the devices that are especially risky because of the possibility of fuel migration. It is much gentler on the devices to operate as much as possible at the design temperature.

To shut the reactor down for performing a power calibration (at intermediate temperatures) is therefore doubly risky for the thermionic devices from (1) thermal shock due to temperature changes, and (2) extended operation at unsuitable, intermediate temperatures.

Justification for increasing the interval from three months to semi-annually:

1. The Mark III TRIGA reactor license (R-100) authorized extended thermionic tests in our San Diego facility. The Technical Specifications for that reactor required only semiannual power calibration and used the wording suggested above.
2. To instrument for the present continuous operation, we now have available a larger number of on-line power indicating monitors, namely:
  - 3 CIC chambers with Keithley channels
  - 1 fission counter with Wide Range Channel readout
  - 3 self-power, in-core power monitors
  - (3 thermocouple fuel elements are also monitored)

With such an array of power monitors, it is very unlikely that all channels could simultaneously fail in such a fashion as to falsify the true power level. On the contrary, it is clear that any significant deviation in the reading of one channel will be detected by the operator and called to the attention of the facility management for appropriate action. Enough channels remain for safe operations.

Although we have been required to perform power calibrations only quarterly, we have in the past regularly performed these calibrations monthly. During the past fifteen years, the longest Mark F reactor run was on the order of 60 hours, so there was no interference with a monthly power calibration. The facility management intends to continue the monthly power calibrations when there is a return to the former intermittent operating schedule.

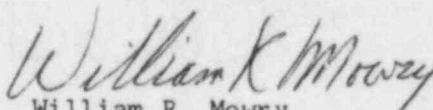
3. The facility management shall continue all the usual requirements as set forth in the facility written procedures. As an example, a new power calibration shall be performed whenever a significant change in core configuration (fuel or experiments) is made, regardless of when the previous power calibration was made. In addition, the facility management still intends to perform power calibrations monthly should the operation return to a series of short runs.

4. An important incentive for extending the interval between power calibrations (provided no fuel or experiment changes are made) is to protect the thermionic devices. As explained above, every time the reactor operation is shut down, the thermionic devices are subjected to undesirable thermal shock and to possible fuel migration should the operation involve extended intermediate temperatures within the devices.

GA judges that no safety considerations are altered by this request for decreased frequency of power calibrations. All the requirements suggested by good operating practice shall be in effect; therefore, power calibrations will be made as needed whenever core configuration changes so warrant. On the other hand, long term operations will not be interrupted solely for power calibrations except for the nominal semiannual tests.

We would appreciate your assistance in expediting this request and look forward to receiving the requested license amendment at your earliest convenience. Should you have any questions in the matter, please promptly contact by telephone either Dr. W. L. Whittemore at (619) 455-3277 or me (619) 455-2823.

Very truly yours,

  
William R. Mowry  
Licensing Administrator

WRM:hc

Attachment:  
Check for \$150.