



70-36

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 22, 1995

ABB Combustion Engineering Inc.
ATTN: Mr. S. B. Junkrans, Vice President, Fuel Operations
Hematite Nuclear Fuel Manufacturing
P.O. Box 107, Highway P
Hematite, MO 63047

Dear Mr. Junkrans:

In the spirit of the President's National Program Review, and to lessen the burden to licensees through cost reduction, we plan to revise our independent sampling verification program. The revised program will more effectively and efficiently verify the quality of licensee uranium destructive measurement systems through their participation in a sample exchange test program. The program will be administered, under NRC contract, by the Department of Energy's New Brunswick Laboratory (NBL), and will be conducted pursuant to 10 CFR 74.82 and 70.56, which state that each licensee shall perform any tests that the NRC deems appropriate or necessary for the administration of the regulations. This includes special nuclear material (SNM) and facilities, equipment, and devices used in connection with the production, utilization, or storage of SNM.

The present system is costly to both licensees and the NRC, and involves NRC inspectors taking onsite inventory verification samples for performance testing. Material randomly drawn during an inspection is split and submitted for measurement by the licensee and NBL for comparison and follow-up action. Another concern involves measurement uncertainties, such as attendant sampling variation and impurities that may cause interferences and complicate the evaluation of analytical data. Currently, typical annual fee-recoverable costs for NBL analytical measurements are approximately \$30 thousand for a licensee selected for verification activities. A program continued along the present lines would involve rising NBL measurements costs. It also would require additional sampling to achieve a level of confidence comparable to the round robin system, and consequent additional costs to the licensee. Presently, additional costs occur from physically drawing samples from process and storage, shipping the material to NBL, and destructively measuring the facility's portion of splits. Other fee-recoverable costs involve NRC inspector time for devising representative sampling plans, observing the drawing of sample material for splitting and shipping, statistically evaluating the resulting measurement data, and taking any necessary follow-up action. This may include supplementary onsite NRC sampling for NBL measurement, to resolve any significant differences.

The round robin testing program will provide a less costly, measurement method-specific approach for inspecting the performance of analytical measurement systems. Performance test results will enable the NRC to more directly evaluate the state-of-the-practice of the facility's selection and qualification of measurement methods, the maintenance and calibration program (including traceability), the training and qualification of facility measurement personnel, and the measurement control program.

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Annually, NBL will distribute well characterized, clean product material (UO_2 pellets that have been provided by an NRC licensee) for your semiannual analysis of elemental concentration and isotopic (U-235) abundances. Incorporated into each characterization protocol was a concurrent validation of measurements with suitable certified reference material, and the calculation of measurement uncertainties--as a 95-percent confidence interval. Comparative results from this interlaboratory "round robin" will be issued to all participants in coded form to maintain anonymity. The annual cost, on a licensing fee-recoverable basis, for each participating low-enriched uranium facility will be roughly \$5,100 to cover shipping, data analyses, and reports.

We expect the licensing fee-recoverable cost for each facility to be approximately a factor of ten lower than an equivalent practice of routinely taking random verification samples for NBL and licensee destructive analysis. Further, we will restrict, as needed, any future onsite material sampling efforts to special cases that may arise, e.g., potential problem areas involving heterogeneous or unique material. This redirected overall approach should improve inspection information, while lowering licensee costs substantially.

The brief enclosure outlines how the round robin would be run to fulfill routine NRC requirements, beginning in late 1995. Licensee participation will be part of NBL's Safeguards Measurement Evaluation (SME) Program, through which DOE has monitored its major facilities since 1985. You will be invited to attend the annual SME Program participants meeting that will be held at NBL in October 1995. NRC staff will attend that meeting, which should provide both a comprehensive, working level overview, and an opportunity to have any questions answered in detail.

Please contact Jerry Roth on (301) 415-7257 regarding our plans in the meantime.

Sincerely,
(Original signed by)
Philip Ting, Chief
Operations Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

Docket No. 70-36
License No. SNM-33

Enclosure: As stated

cc w/encl: R. W. Sharkey, Manager
Regulatory Compliance

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UO₂ PELLET ROUND ROBIN

The Safeguards Measurement Evaluation (SME) Program is a sample exchange program ("round robin") administered by the New Brunswick Laboratory (NBL) for the Department of Energy (DOE). It serves to monitor the quality and adequacy of destructive safeguards measurements, as performed by DOE contractor facilities. At the request of the NRC, and with the cooperation of DOE, NRC licensee facilities will participate in the SME Program to fulfil NRC inspection requirements.

NBL will ship samples once per year beginning in October 1995; each shipment will contain enough material to be analyzed on a semiannual basis. Analytical results are to be sent to NBL for statistical analysis semiannually, starting in late 1995. Statistical results will be sent to the participating facility and to the NRC semiannually. A report comparing all participating facilities in coded form, by material analyzed, will also be distributed.

Low-enriched UO₂ pellets are packaged in small snap-cap glass vials. Each analysis period's supply includes four pellets. Analyze two pellets for both uranium concentration and isotopic distribution on each of two analysis days. If a replicate is known to be invalidated, run another so that the appropriate number of analyses is done for each solution. This schedule will allow a statistical evaluation of both within-day and between-day variation. The samples are intended to be analyzed with other routine samples without special identification to the analyst utilizing your normal accountability measurement methods. For the isotopic measurements, only the U-235 content will be statistically analyzed; the percent relative differences will be given for the other isotopic values for diagnostic purposes.

Enclosure