ORGANIZATION: AKO, INCORPORATED
ENFIELD, CONNECTICUT

REPORT NO.: 99901172/89-01	INSPECTION DATE: November 27-29,1989	INSPECTION ON-SITE HOURS: 42

CORRESPONDENCE ADDRESS: AKO, Incorporated
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ORGANIZATIONAL CONTACT: Mr. Roland L. Leclerc, President
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NUCLEAR INDUSTRY ACTIVITY: AKO, Inc. provides equipment for the calibration of measuring devices and calibration services to many companies including nuclear utilities. It is estimated that the nuclear-related activities of AKO, Inc. represent less than 10 percent of its current business volume.

ASSIGNED INSPECTOR: Walter P. Haass 3/23/90
W. P. Haass, Special Projects Section (SPS) Date

OTHER INSPECTOR(S): H. Wescott, SPS

APPROVED BY: E. William Brach 3/26/90
E. William Brach, Chief, Vendor Inspection Branch Date

INSPECTION BASES AND SCOPE:

A. BASES: 10 CFR Part 50, Appendix B and 10 CFR Part 21

B. SCOPE: Review records and the quality assurance program for the calibration of tools and devices used by nuclear plant licensees in safety-related activities.

PLANT SITE APPLICABILITY: Combustion Engineering, UNC Naval Products Division, Alabama Power Company, Arizona Public Service, Boston Edison, Duke Power Company, General Electric, Illinois Power Company, Northeast Utilities, Public Service Electric and Gas, Southern California Edison, Tennessee Valley Authority, Texas

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PLANT SITE APPLICABILITY: (continued)
Utilities Electric, Washington Public Power System, Louisiana Power and Light, Virginia Electric Power, and Westinghouse.

A. VIOLATIONS:

None.

B. NONCONFORMANCES:

Contrary to the requirements of Criterion XII of 10 CFR 50, Appendix B, which states that measures shall be established to assure that tools, gages, instruments and other measuring and test devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits, the vendor failed to maintain the certification of weights utilized for the calibration of devices to be used in safety-related activities by Northeast Utilities in an up-to-date condition to attest to their continued accuracy. The failure to maintain proper certification included the lack of traceability to a nationally recognized standard. Also, contrary to the requirements Criterion XVII of 10 CFR 50, Appendix B, which states that sufficient records should be maintained to furnish evidence of activities affecting quality, no valid records were maintained to attest to the certification of the master weights used for the calibration of the torque measuring devices for safety-related application. The available records were apparently falsified. (89-01-01)

C. UNRESOLVED ITEMS:

None.

D. OTHER FINDINGS AND COMMENTS:

1. Background

During a source inspection of AKO, Incorporated (AKO) by Northeast Utilities on July 19-20, 1989, it was determined that the expiration dates of certain certification reports issued by the State of Connecticut, Weights and Measures Division, attesting to the accuracy of weights used in calibration of measuring devices (dynamometers, torque wrenches, and torque multipliers) to be used in safety-related activities, had either passed or had been falsely extended. The licensee issued a report, dated September 8, 1989, to the NRC describing their findings and planned corrective actions. As a result of their findings, the licensee contracted with another firm to recalibrate the devices.

The result was that no correction was warranted and therefore no substantial safety hazard existed. However, there was concern that other nuclear licensees or vendors had also contracted with AKO for similar calibration services with unknown results.

2. Inspection at AKO

AKO manufactures torque wrench calibrators and torque test systems for testing and calibration of many types of torque devices, and also provides calibration services for many types of torque devices. AKO has made its equipment and services available to all segments of industry.

For the performance of calibration services, the vendor maintains several sets of master weights including 2 sets of metric weights, 2 sets of avoirdupois weights, and a set of troy weights. These weights are required by State statutes to be certified by the State of Connecticut, Weights and Measures Division, for commercial use every 2 years with a 6 month period allowed for recertification. The vendor uses the certified master weights to calibrate corresponding working weights that in turn are used for everyday activities. Certification of weights used in calibration activities for the nuclear industry is not required to be performed by the Weights and Measures Division; however, use of State certifications provides the traceability to a national standard for safety-related activities as specified in ANSI/ASME NQA-1 (1983) endorsed by Regulatory Guide 1.28, Revision 3.

For the calibration service performed by the vendor for Northeast Utilities in June 1989, weights were utilized that had apparently been certified as accurate as of March 1988 based on the State of Connecticut certifications with expiration dates of March 18 and 21, 1986. The working weights had apparently been calibrated using the certified weights prior to the expiration of the certification period. However, documentation showing the recertification, dated March 21, 1986, was found to be falsified since the Weights and Measures Division stated that AKO, had not submitted weights for recertification during the period of March 14, 1984 through July 26, 1989, with the exception of chrome plated weights submitted on January 20, 1988 which were condemned for use by the State. Therefore, no certification documentation had been issued to AKO on March 21, 1986, making the internal AKO calibration of the working weights used for the Northeast Utilities contract also invalid.

The lack of proper certification of the weights used in the calibration activities is mitigated by the rather broad tolerance

requirements for torque measuring devices. Northeast Utilities indicated that the tolerance requirements for their devices is of the order of ±3 to 5 percent. The accuracy of the standard weights as determined by the State of Connecticut, using NBS Class F requirements is ±0.01 percent. The weights condemned twice by the State of Connecticut were generally accurate to ±0.1 percent, not acceptable for NBS Class F standards, but well within accuracy requirements for the Northeast Utilities devices. While the lack of proper certification and, the falsification of certifications are not acceptable practices, these actions had no safety effect on the performance of the calibration activities for Northeast Utilities.

The vendor indicated that the chrome plated weights, condemned by the Weights and Measures Division on January 20, 1988, were utilized during 1988 and 1989 to calibrate the measuring devices from Northeast Utilities for several contracts. Condemnation of the weights was accompanied by actual weight measurements as requested by AKO. These weight measurements, supplemented by corrections to the calibrated weights, were used to perform the calibrations and resulted in accurate calibrations as determined by subsequent recalibration checks by another firm.

AKO indicated that until recentl the State of Connecticut weight certification proress was relied upon to provide traceability to national standards. However, it has since been learned from AKO and the State that the weight standards utilized by the State were last certified by the National Bureau of Standards (NBS) approximately 20 years ago. AKO has now purchased a new set of master weights (Class S, 0.0001 percent tolerance) from Rice Lake Weighing Systems who in turn have certified them to NBS (now National Institute of Standards and Technology, NIST). In the future, the vendor plans to recertify its weights on a five year period with Rice Lake or another firm with more current traceability to NIST.

The inspectors reviewed a list of AKO customers that have been active for the previous 15 months. The vendor indicated that with the exception of Northeast Utilities, all purchases were nonsafety-related. The primary purchase was for torque calibrating machines and related parts that AKO manufactures.

3. Inspection at the State of Connecticut

The inspectors reviewed the general procedures for obtaining a certificate for submitted weights. The primary activity is to compare the submitted weights to the State standards that are traceable to national standards.

If the weights fall within the accepted tolerance band for the weight class, a test report is issued to certify acceptability. If requested, and at an extra charge, the apparent mass value of the weights will be measured and reported including the measurement uncertainty. Until recently, there was no fee for any of these services. The State regulations have since been changed to authorize the assessment of a fee. It should be noted that the intended purpose of the State certification process is to determine whether the submitted weights satisfy the NBS Class F requirements. As noted above, these requirements are more restrictive than those required for the calibration of torque measuring devices used for nuclear safety-related applications.

The Weights and Measures Division does issue a standard form to its licensees as a reminder of the need to periodically recertify their weights and measures. This is followed up with a telephone call. The State's responsibilities only address the certification of weights for commercial applications; these responsibilities do not include nuclear applications.

At the time of the Northeast Utilities audit of AKO, the certification documents believed to be false were brought to the Weights and Measures Division to determine their authenticity. It was at that time that the documents were confirmed to be false. State representatives informed the inspectors that they have since revised the document format to include an impressed seal that cannot be duplicated.

The State representatives also informed the inspectors that the AKO weights submitted for certification on January 20, 1988 were condemned and labelled so with red tags. The vendor apparently removed the tags and used the weights for calibration purposes anyway.

4. Review of Northeast Utilities Audit

The inspectors reviewed the procedures and results of the audit conducted at AKO on July 19-20, 1989. As part of their corrective action, the licensee has reviewed the acceptability of all devices calibrated by the vendor since March 1986 (the expiration date of the most recent valid weight certificate). All devices were determined to be of the proper accuracy.

The licensee has presently listed AKO as "pending" (i.e., unapproved) with regard to future contracting status. This condition requires that a source inspection be performed should it be necessary to contract for services from this vendor.

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E. PERSONS CONTACTED:

During this inspection, the following personnel were contacted:

- AKO
  - # Roland L. Leclerc, President
- State of Connecticut:
  - # Allan M. Nelson, Director, Weights and Measures Division
  - # Michael Dynia, Metrologist, Weights and Measures Division
- Northeast Utilities:
  - # Robert W. Bonisolli, Procurement Quality Services
  - # Thomas B. Silko, Generation Facilities Licensing
  - # R. L. McGuiness, Generation Facilities Licensing
  - # Mark Surprenant, Quality Services Department

- Attended entrance and exit meeting at respective site

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