APPENDIX A

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 30-05965/89-01 License: 35-13617-01

Docket: 30-05965

Licensee: Firestone Tire and Rubber Company
Oklahoma City, Oklahoma 73124

Inspection At: Oklahoma City, Oklahoma

Inspection Conducted: November 29-30, 1989

Inspector: Charles L. Cain for 1/5/90
Anthony D. Gaines, Radiation Specialist Date
Nuclear Materials Inspection Section

Approved: Charles L. Cain 1/5/90
Charles L. Cain, Chief, Nuclear Materials Date
Inspection Section

Inspection Summary

Inspection Conducted November 29-30, 1989 (Report 30-05965/89-01)

Areas Inspected: Routine, unannounced inspection of activities associated with the use of fixed gauges for level indications during the manufacturing of automobile tires. The inspection included a review of the radiation safety program including organization, management, and training; materials and equipment; and surveys.

Results: The inspection findings revealed a lack of management attention to the radiation safety program. Seven apparent violations were identified in three areas. In the area of organization, management, and training, two apparent violations were identified including failure to notify NRC of a change in the name of the licensee and failure to provide radiation safety training to personnel. In the area of materials and equipment, three apparent violations were identified including failure to lock out gauges during maintenance work; failure to secure licensed material from unauthorized removal (which resulted in the loss of one gauge); and unauthorized removal, installation, and repair of gauges. In the area of surveys, two apparent violations were identified including failure to conduct leak tests of sealed sources and failure to conduct inventories of licensed gauges.

DETAILS

1. Persons Contacted

*Tom Crofutt, Plant Manager
*George Burley, Manager, Engineering Services
*Phil McCowan, Senior Safety Engineer
*Jim Rowden, Senior Electrical Engineer and Radiation Protection Officer
Larry Worchester, Maintenance Supervisor (employee of licensee contractor)
Dave Seger, Maintenance Planner (employee of licensee contractor)
Raymond Hall, Maintenance Engineering Technician (employee of licensee contractor)
Ralph Vulgamore, Maintenance employee (employee of licensee contractor)
Henry Pendleton, Janitorial Supervisor
Videl Zuniga, Janitor
Jeff Kelley, Janitor

2. Followup on Previous Inspection Findings (February 19, 1976)

(Closed) (30-05965/76-01): Violation of 10 CFR 19.11(a) or (b) - Failure to post, or otherwise make available, documents required by 10 CFR 19.11(a). The inspector verified that a notice describing the documents and stating where they could be located was posted. This item is considered closed.

(Closed) (30-05965/76-01): Violation of 10 CFR 19.11(c) - Failure to post Form NRC-3. The inspector verified that the Form NRC-3 was posted. This item is considered closed.

3. Licensee's Program - Overview

The licensee uses fixed gauges containing radioactive material in the manufacturing of tires. The fixed gauges are both specifically and generally licensed.

The three generally licensed gauges possessed and used by the licensee are Measurex Model 2040s that contain 50 millicuries of strontium-90 each. These gauges are used for measuring thickness and are taken care of by a Measurex representative that is on site almost daily. No apparent violations were identified concerning the generally licensed gauges.

The specifically licensed gauges possessed by the licensee are Kay-Ray Model 7062-P which contain 25 millicuries of cesium-137 each. These gauges are mounted on banbury mixers and are used for level measurements. The licensee has three mixers which are numbered 271, 272, and 273. Mixers 271 and 272 each have three gauges mounted on them. Mixer 273 currently has only one gauge mounted on the unit, S/N 13658, but previously had two gauges, S/Ns 13658 and 13658A.

On December 27, 1984, a Kay-Ray gauge, S/N 13658A, fell off Mixer 273, and was damaged. NRC Region IV was notified and told the licensee to follow the manufacturer's instructions. The damaged gauge was prepared for shipment and returned to Kay-Ray per their instructions. Kay-Ray subsequently shipped a replacement gauge to the licensee, S/N 19348. This replacement gauge was to be mounted on Mixer 273, but apparently was never mounted and cannot be currently accounted for.

4. Organization, Management, and Training

License Condition 16 requires that licensed material be possessed and used in accordance with statements, representations, and procedures contained in the license application dated June 18, 1985. Item 2 of the application states that the applicant's name is Firestone Tire and Rubber Company. A licensee representative stated that on May 5, 1988, Bridgestone bought all the stock of the Firestone Tire and Rubber Company, but Firestone Tire and Rubber Company remained the same corporation. On August 1, 1989, the name of the corporation was changed from Firestone Tire and Rubber Company to Bridgestone/Firestone, Inc., without submitting an amendment request to NRC Region IV for a change in name. This failure was identified as an apparent violation of License Condition 16.

On November 29, 1989, the inspector interviewed three janitors in regard to training provided to them by the licensee. At the time, two of the janitors had been working in a drop chute requiring them to be positioned between the source housing and the detector. This area was considered a restricted area. When asked if they could show the inspector how they knew the source shutter was closed and thereby safe to enter the restricted area, none of the janitors knew anything about the shutter mechanism. The janitors stated that they did not know that radioactive material was used in the area where they were working and that they had never received training commensurate with 10 CFR 19.12. The failure to provide radiation safety training to personnel who frequent a restricted area was identified as an apparent violation of 10 CFR 19.12.

Two apparent violations were identified.

5. Materials and Equipment

Mixer 273, where the janitors were working on November 29, 1989, requires periodic cleaning. The cleaning requires the janitors to be inside the drop chute between the source and the detector. Before working inside the drop chute, the licensee is to follow their lockout procedure, as presented in Item 15-III of the application dated February 15, 1982. This lockout procedure requires the Radiation Protection Officer (RPO) to maintain the keys to the access door and insure that the source housings are locked in the closed position before granting access to the vessel. During the interview of the janitors at Mixer 273, it was noted that although the source shutter was closed, it was not locked in the closed position. When asked how the janitors knew when to enter the drop chute to do their cleaning, the inspector was told that a maintenance person

comes around and unlocks the door and if it is open, they enter and start cleaning. The janitors told the inspector that they were unaware of how to tell if the source shutter was closed or open. While the inspector demonstrated and explained the gauge shutter mechanism, one janitor stated that he and another janitor had already worked in the drop chute for about 5 minutes, between the source and detector, before a maintenance man came over and closed the shutter. License Condition 16 requires that licensed material be possessed and used in accordance with statements, representations, and procedures contained in the application dated February 15, 1982. The failure of the licensee to follow their lockout procedure, which allowed personnel to be in the drop chute when the beam was in the open position, was identified as an apparent violation of License Condition 16. The annex to this report includes inspector calculations of expected exposure rates and possible dose to the janitors.

During the inspector's walkthrough of the plant to examine the fixed gauges on the mixers, it was observed that Mixer 273 had only one source housing but two detectors. After further examination of Mixer 273, a broken bracket was found where the source housing would have been mounted. The RPO explained that a gauge had fallen from Mixer 273 in 1984 and had been damaged and returned to Kay-Ray. A subsequent records review and discussion with a Kay-Ray representative indicated that Gauge S/N 13658A was shipped back to Kay-Ray and replaced with Gauge S/N 19348. When the licensee's staff was questioned whether Gauge S/N 19348 was ever mounted on Mixer 273, no one was able to verify whether it had or had not been mounted. When asked of the whereabouts of Gauge S/N 19348, no one could determine its location. The staff seemed sure, but not positive, that it had to be in the plant somewhere. The failure to have licensed material secured from unauthorized removal, due to the fact that the licensee can not currently account for the gauge in question, was identified as an apparent violation of 10 CFR 20.207(a).

License Condition 14 requires, in part, that installation, initial radiation survey, relocation, removal from service, maintenance, and repair of devices containing sealed sources be performed only by device manufacturers or by persons specifically licensed by the Commission or an Agreement State to perform such services. While interviewing maintenance personnel, it was determined that sometime between September and December 1984, the drop chute on Mixer 273 was replaced. At that time, two gauges containing sealed sources were mounted on the drop chute. Therefore, to replace the drop chute, the maintenance personnel had to remove both gauges. After removal of the gauges it was discovered by the maintenance personnel that the shutter mechanism on one of the gauges was damaged, so they repaired the shutter. After the new drop chute was installed, the maintenance personnel reinstalled the gauges. Licensee personnel were not authorized by the license to perform these tasks; therefore, failure to have specifically licensed personnel perform removal, installation, and repair of gauges was identified as an apparent violation of License Condition 14.

Three apparent violations were identified.

6. Surveys

License Condition 13 requires, in part, that sources contained in devices manufactured by Kay-Ray shall be tested for leakage at intervals not to exceed 6 months. The test may be conducted at 3-year intervals provided the sources have been authorized by the Commission (or an Agreement State) for a 3-year leak test interval. Any source in storage and not being used need not be tested.

The seven gauges were approved for 3-year leak tests. The leak test records show that one gauge was last leak tested on April 4, 1985, and that the other six gauges were leak tested March 25, 1986. All seven gauges accounted for at the time of the inspection were in use beyond their required 3-year leak test intervals. This was identified as an apparent violation of License Condition 13.

License Condition 15 requires the licensee to conduct a physical inventory every 6 months to account for all sources and/or devices received and possessed under the license, and that records of inventories be maintained for 2 years from the date of each inventory. When reviewing records, the inspector could not find any records of 6-month physical inventories. This, coupled with the fact that the licensee could not account for a gauge that was supposed to be in their possession, led the inspector to conclude that 6-month physical inventories were not performed. The failure of the licensee to conduct 6-month physical inventories was identified as an apparent violation of License Condition 15.

Two apparent violations were identified.

7. Exit Meeting

The inspector met with the individuals identified in Section 1 and summarized the scope and findings of the inspection as presented in this report.

ANNEX

The exposure rate from any gamma point source is given by the following equation:

$R = AG/S^2$ where,
R = the exposure rate in mR/hr for the given isotope
A = the activity of the isotope in millicuries
G = the gamma constant for the given isotope in $mR\text{-}cm^2/hr\text{-}mCi$
S = the distance from the source in centimeters

For cesium-137 we have (from the Radiological Health Handbook):

G = .3,300 $mR\text{-}cm^2/hr\text{-}mCi$, and for the source in question
A = 25 mCi

If we assume, as the worst case scenario, that the janitors were 6 inches from the source then

S = 6 inches x 2.54cm/inch = 15.24 cm. Then,
$R = (25)(3,300)/(15.24)^2$ mR/hr = 355.21 mR/hr

A 5-minute exposure to the janitors at this distance would result in an accumulated dose of (355.2)(5)/60 = 29.6 millirems.

APPENDIX B

PROPOSED ENFORCEMENT CONFERENCE AGENDA

FIRESTONE TIRE AND RUBBER COMPANY

FEBRUARY 1, 1990 - 1 P.M.

I.	INTRODUCTION AND PURPOSE OF MEETING	A. B. BEACH
II.	NRC DISCUSSION OF APPARENT VIOLATIONS	C. L. CAIN
III.	LICENSEE COMMENTS AND RESPONSE	G. BURLEY S. MOSER
IV.	ENFORCEMENT POLICY	G. F. SANBORN
V.	CLOSING COMMENTS	A. B. BEACH