U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

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License No.	General Licensee
Licensee:	Wal-Mart Stores, Inc.
Address:	508 SW 8th Street Bentonville, Arkansas 72716-0505
Inspection Dates:	December 9, 2008 through May 7, 2009
Exit Meeting:	August 17, 2009

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EXECUTIVE SUMMARY

Wal-Mart Stores, Inc.
NRC Inspection Report No. 99990001/2008014

On February 11, 2008, Wal-Mart Stores, Inc. (Wal-Mart) notified the NRC that they were in the process of performing a comprehensive nationwide inventory and assessment of their program for utilizing tritium exit signs (TES) within Wal-Mart facilities. Wal-Mart reported that preliminary results of their inventory and assessment indicated that up to "several thousand" TES were missing from their facilities located in NRC States and Agreement States. Wal-Mart stated they could not be certain that any specific TES was missing until the inventory was completed. Wal-Mart regularly reported damaged TES identified during the inventory and, in June 2008, provided a report titled, "Wal-Mart Tritium Exit Sign Inventory Project (TESIP) Interim Report." This report provided an update on their inventory efforts. Wal-Mart indicated a final TESIP report would be provided in January 2009.

A special, announced team inspection was conducted to: (1) understand, verify, and assess the actions taken by Wal-Mart in response to identified TES damage and losses; (2) assess the safety significance of individual damage events, individual losses, and total losses by Wal-Mart; and (3) assess the overall effectiveness of Wal-Mart's general license program for the possession and use of TES under 10 CFR 31.5. The inspection began on December 9, 2008, and included a review of pertinent documents, interviews with Wal-Mart employees/contractors, and observations at ten Wal-Mart stores located in the NRC States of Indiana, Michigan, Missouri, New Jersey, Delaware and Virginia. Five site visits were also conducted in the Agreement States of North Carolina and Ohio. The inspection team received assistance from the North Carolina Radiation Protection Section and the Ohio Bureau of Radiation Protection.

A preliminary Exit Meeting was held at Wal-Mart Headquarters in Bentonville, Arkansas on January 13, 2009. Wal-Mart provided their Final TESIP Report on January 29, 2009. The final report described the loss of 2470 TES from 188 Wal-Mart facilities located in non-Agreement States and 13,388 TES from facilities located in Agreement States from a total inventory of approximately 79,000 TES. These losses include TES that were improperly transferred and TES that were abandoned. Additional information was provided by Wal-Mart through May 7, 2009. The information provided by Wal-Mart on May 7, 2009, indicated that 2,462 TES were actually lost from 188 Wal-Mart facilities located in NRC States and 13,401 TES were lost from Wal-Mart facilities located in Agreement States. A final Exit Meeting was conducted with licensee representatives by telephone on August 17, 2009.

Four apparent violations were identified:

(1) Failure of the general licensee to appoint an individual responsible for having knowledge of the appropriate regulations and requirements between the initial time of receipt of TES in October 2000 and January 2008 when a Radiation Safety Officer (RSO) was appointed as required by 10 CFR 31.5(c)(12);

(2) Failure of the general licensee to properly transfer and dispose of 2,462 TES as required by 10 CFR 31.5(c)(8);

(3) Failure of the general licensee to properly transfer 517 TES as required by 10 CFR 31.5(c)(9); and

(4) Failure to submit written reports of 5 damaged TES within 30 days as required by 10 CFR 31.5(c)(5).

Wal-Mart self-identified the apparent violations and took corrective actions beginning in May 2006 with the termination of TES purchases and the hiring of a contractor to assess the TES inventory; however, corrective actions were not fully initiated until early 2008 with the hiring of a "responsible individual," the issuance of the "TES Awareness" flyer to Wal-Mart facility managers designed to prevent additional TES losses, and initial notification of the NRC.

The inspectors concluded that the root cause of the apparent violations is that, prior to early 2006, there was no management oversight of the use of generally licensed devices and accountability for compliance was not owned by any one organization within Wal-Mart. The inspectors concluded that this root cause was responsible for the delay in the implementation of the general license program; however, it does not fully explain why the general licensee took an additional 18-months, after the time that they stated they first realized their status as a general licensee and the regulatory requirements associated with that status, to fully initiate corrective actions.

The inspectors were able to conclude that at least one vendor complied with regulatory requirements for distributing TES to general licensees. There is no evidence to suggest that other vendors failed to comply with their requirements.

The inspectors concluded that management oversight of the general license program began to improve in early 2006 with the beginning of the TESIP and substantially improved in January 2008 with the naming of the RSO. The inspectors concluded that once oversight of the generally licensed program was provided, Wal-Mart took extensive corrective and preventive actions to: (1) inventory all TES possessed under the general license; (2) improve control over TES found in Wal-Mart facilities nationwide; (3) assess the radiological condition of TES found in Wal-Mart facilities; (4) remediate facilities contaminated from damaged TES; (5) evaluate potential exposures to Wal-Mart employees, contractors and members of the public from exposure to damaged TES; and (6) remove all TES found in Wal-Mart facilities and replace them with signs not containing radioactive material. The inspectors concluded that the general licensee and its contractors performed this work in a safe manner.

The inspectors concluded that TES were not typically returned to the vendors by the general contractors and electrical contractors but were likely transferred by the contractors to other facilities not owned/operated by Wal-Mart or were left by the contractors in the Wal-Mart facility after construction was completed and were later disposed of with other construction waste in the normal trash. The inspectors concluded that once the Wal-Mart facility opened for business, some installed TES were removed from the facility for facility renovation or were removed from the facility after being damaged and were disposed of in the normal trash.

The inspectors also concluded that the loss and/or damage of the TES resulted in no significant exposure of Wal-Mart employees, Wal-Mart contractors, or members of the public and no significant contamination remains in Wal-Mart facilities that once housed TES.

REPORT DETAILS

I. History of the Wal-Mart General License Program

The inspectors interviewed Wal-Mart Stores, Inc. (Wal-Mart, Licensee or General Licensee) representatives and Wal-Mart contractors and reviewed Licensee, Wal-Mart contractor, vendor and NRC documents to determine the scope of Wal-Mart's general license program and to establish a timeline that begins with Wal-Mart's corporate decision to purchase tritium exit signs (TES) in October 2000 and ends with Wal-Mart's submission of their Tritium Exit Sign Inventory Program (TESIP) Final Report on January 29, 2009 and Wal-Mart's March 9 and May 7, 2009 responses to NRC's request for additional information.

In the late 1990s, Wal-Mart initiated a program to design new prototype Wal-Mart facilities. In 2000, the Lead Design Engineer for the Wal-Mart prototype facilities directed corporate purchasing agents, located in the Wal-Mart home offices in Bentonville, Arkansas, to purchase TES for use in Wal-Mart facilities across the United States. Wal-Mart stated they received their first TES purchase as a part of this new program in October 2000.[1] Between 2000 and 2003, TES were primarily purchased from SRB Technologies, Incorporated (SRB) of Winston-Salem, North Carolina and, between 2003 and 2007, TES were primarily purchased from Isolite Corporation (Isolite) of Berwyn, Pennsylvania. Both vendors were instructed to ship TES directly to the individual Wal-Mart facilities for installation by building contractors.

Wal-Mart reported that in April 2004, Isolite representatives visited the home offices in Arkansas to discuss TES. Eight managers from various departments within the company, including Construction Purchasing, Architecture, Licensing, Environmental Compliance and Maintenance, reportedly attended the meeting. A director-level manager from Wal-Mart's Environmental Compliance Department was the highest level manager in attendance. Wal-Mart attendees recalled that Isolite left written materials, including some NRC-related regulations and guidance; however, Wal-Mart reported that the lack of knowledge of attendees at this meeting resulted in their failure to recognize and appreciate the applicable federal and state regulatory requirements and associated required actions. Wal-Mart reported that several attendees recalled Isolite statements that Isolite would take responsibility for regulatory obligations regarding the return of TES on Wal-Mart's behalf and believed that, after Wal-Mart purchased the TES, it had no other obligations than to return the TES to the vendor at the end of the sign's use.

Wal-Mart reported that in May 2004, Isolite provided Wal-Mart's Lead Design Engineer for the Wal-Mart prototype facilities with copies of: NUREG-1556, Volume 16, Appendix L [ML010120151], which contains guidance related to TES; Isolite's packaging/handling instructions for the return of damaged TES; Isolite's TES disposal policy; and a list of disposal/transfer outlets for tritium compiled by the Conference of Radiation Control Program Directors.

Wal-Mart reported that in the summer/fall of 2005, Wal-Mart's Licensing Department received letters from the State of Nebraska's Agreement State program requesting completion of annual

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1 The NRC's General License Tracking System (GLTS) contains information indicating that less than 100 TES were transferred to Wal-Mart stores between 1989 and 2000 prior to Wal-Mart's corporate decision to purchase TES for new prototype facilities. Wal-Mart indicated that these TES were purchased by building contractors without direct involvement by Wal-Mart.

generally-licensed device inventory report forms. The State of Nebraska reported that, prior to 2005, the number of TES in Wal-Mart facilities within the State was small and, at that time, the State worked directly with the individual Wal-Mart stores, not the Wal-Mart home office, to complete the annual inventory.

Wal-Mart reported that in early 2006, the Wal-Mart Licensing Department briefed a limited number of Wal-Mart personnel regarding regulatory reporting requirements for TES and circulated copies of NUREG-1556, Volume 16, Appendix L, for information.

In March 2006, the Wal-Mart Purchasing Department decided to stop purchases of additional TES. Open purchase orders for TES were terminated effective in May 2006.

Wal-Mart reported that in May 2006, the State of Colorado's Agreement State program sent annual inventory forms to individual Wal-Mart stores in Colorado. The Colorado stores forwarded the forms to Wal-Mart's Facilities Maintenance Department located at the home office.

In May 2006, Wal-Mart retained Shaw Environmental, Inc. (Shaw), an environmental services company based in Baton Rouge, Louisiana, to inventory TES located in Wal-Mart facilities in the States of Nebraska and Colorado. This initial inventory was intended to identify the number of TES present in each facility and facility diagrams were annotated by Shaw personnel to identify the location of each TES found. Numbered identification labels and "Property of Wal-Mart" labels were placed on each TES. Wal-Mart reported significant challenges during the inventory process in identifying serial numbers on TES as some numbers were painted over or faded from exposure from direct sunlight, others were covered by mounting brackets, and still others were not visible because the TES was mounted too close to other equipment.

Based on the results of the Colorado inventory that identified missing TES, in June or July 2006, Wal-Mart expanded their inventory efforts in Colorado to include all Wal-Mart facilities within Colorado, including those facilities with no record of TES purchases. During this time, Wal-Mart and Shaw representatives visited the Isolite corporate offices in Pennsylvania to review Isolite records. Wal-Mart reported that they requested similar access to SRB's records but were denied. Notwithstanding the information provided by Isolite in April and May 2004, Wal-Mart officials stated that, until June or July 2006, they were unaware of Wal-Mart's status as a general licensee and the associated regulatory requirements.

In November 2006, Wal-Mart decided that the TES inventories conducted in Nebraska and Colorado did not provide an accurate representation or a large enough sample size to allow them to decide how best to manage the TES installed in Wal-Mart facilities so Wal-Mart elected to inventory all corporate facilities nationwide that had records of TES purchases. Shaw developed a plan to perform the nationwide inventory by the end of 2008.

On December 7, 2006, NRC issued Regulatory Information Summary (RIS) 2006-25 [ML062770363] to reiterate the requirements in 10 CFR 32.51a that distributors of TES must follow when transferring the devices to general licensees. In addition, the RIS reiterated the requirements in 10 CFR 31.5 for general licensees regarding transfer and disposal of tritium exit signs. Wal-Mart reports that they do not recall receiving this RIS when it was issued.

In early 2007, Wal-Mart determined that 46 facilities had received TES shipments between March 2006 and January 2007, despite the termination of TES purchase orders in May 2006.

Wal-Mart stated that an investigation determined the TES were purchased by building contractors on Wal-Mart's behalf but without Wal-Mart's knowledge.

In mid 2007, Wal-Mart received the results of inventories performed by Shaw in the States of Connecticut, Delaware, Massachusetts, Maryland, New York, Illinois, Indiana, New Jersey, Pennsylvania, Maine, New Hampshire, Ohio, Rhode Island, Virginia, Washington, and West Virginia. Wal-Mart began to consider replacing all TES with exit signs containing no radioactive material.

In December 2007, Wal-Mart decided to expand the inventory to include all 4545 Wal-Mart facilities in the United States, regardless of whether or not documentation showed TES were purchased for the facility.

In January 2008, Wal-Mart appointed a RSO to manage the general license program and to lead the TESIP. The Wal-Mart RSO indicated that the timing of the appointment coincided with Wal-Mart's enhanced awareness of regulatory obligations involving TES at that time and the desire to provide a single point of contact regarding TESIP activities.

In January 2008, the Wal-Mart RSO sent a "Tritium Exit Sign Awareness" flyer, via the Wal-Mart intranet, to all Wal-Mart store managers. The flyer describes the TES, the need to control the signs and not dispose of them in the normal trash, and the importance of notifying the RSO should a sign be lost or damaged. Wal-Mart established a "Hot Line" for reporting lost or damaged TES.

In February 2008, the Wal-Mart RSO contacted NRC and certain Agreement States to provide notification that up to "several thousand" TES could not be accounted for and to provide a briefing on anticipated actions. Wal-Mart also began submitting reports of damaged and transferred TES to NRC and the Agreement States.

In April 2008, Wal-Mart decided that it would replace all TES with exit signs containing no radioactive material. Shaw Environmental returned to each store, confirmed or revised the TES inventory, identified damaged or potentially damaged signs, removed and packaged undamaged signs and notified a contractor licensed to clean up damaged TES when damaged or potentially damaged TES were identified. In nearly every case, the licensed contractor was Dade Moeller and Associates, Inc. (Dade), a health physics services firm headquartered in Richland, Washington. Dade was licensed to provide these services by the States of Washington and Maryland. Work in other states was reportedly performed by Dade under reciprocity.

On June 5, 2008, Wal-Mart submitted its TESIP Interim Report to the NRC [ML081930102]. The Report included preliminary TES inventory results, a description of damaged TES response activities, and a damaged TES report summary.

In July 2008, Wal-Mart completed its nationwide inventory of TES in all facility locations.

On November 6, 2008, Wal-Mart notified NRC about the loss of 19 TES from facilities located in NRC States (or non-Agreement States) [ML083460441]. On December 5, 2008, Wal-Mart notified NRC about the loss of an additional 11 TES from facilities located in NRC States and about the identification of one TES that had previously been reported lost but had been found [ML083460331].

In December 2008, Wal-Mart completed the removal of all TES identified up to that point and replaced them with exit signs containing no radioactive material.

In January 2009, the RSO re-issued the "Tritium Exit Sign Awareness" flyer in order to help recover TES that were missing and presumed lost. Wal-Mart reported that Regional Environmental Compliance managers, who visit stores on a regular basis, were also trained to identify TES. The Wal-Mart RSO reported that a small number of TES have been identified and removed from stores due to these activities.

On January 7, 2009, Wal-Mart notified the NRC Headquarters Operations Center by telephone and submitted a written report to NRC advising NRC of the loss of an additional 2439 TES from facilities located in States under NRC jurisdiction [ML090160332]. Similar reports were made to each one of the Agreement States where TES were lost.

On January 29, 2009, Wal-Mart submitted its TESIP Final Report [ML090330489]. The report describes the loss of a total of 15,858 TES from 1,543 facilities located in the United States, including Puerto Rico.[2] Attachment F to the report [ML090330525] identifies lost TES from Wal-Mart facilities by state. Attachment F indicates that 2470 TES were lost from facilities located in NRC States and 13,388 TES were lost from facilities located in Agreement States. The Report also includes: a description of the TES inventory program, a description of the TES removal and replacement program, Wal-Mart's response to damaged TES, Wal-Mart's health and safety assessment for lost/damaged TES, Wal-Mart's procedures for TES data collection and an apparent cause determination.

In response to NRC's requests, Wal-Mart submitted additional information on March 9, 2009 [ML090710636] and May 7, 2009 [ML091820067 and ML091820091]. The March 9 and May 7 responses clarify and correct information provided in the January 29, 2009, TESIP Final Report. The correct number of TES that should have been reported as lost in the TESIP Final Report on January 29, 2009 is 15,863 with 2,462 TES lost from facilities that were located in NRC-States and 13,401 TES lost from facilities located in Agreement States. Wal-Mart reported that a small number of TES have been located in stores since the TESIP Final Report was issued.

II. Management Oversight of the Program

a. Inspection Scope

The inspectors interviewed representatives from Wal-Mart, Shaw Environmental and Dade Moeller and Associates, Inc. and reviewed Wal-Mart, Shaw, Dade and NRC documents to evaluate the adequacy of Wal-Mart's oversight of the general license program.

2 The scope of Wal-Mart's TESIP did not include an inventory and assessment of TES that might be located in Wal-Mart facilities outside of the United States. Wal-Mart indicated that it was possible TES were installed in facilities located in Canada and Mexico. NRC's Office of International Programs notified regulatory authorities in Canada and Mexico.

b. Observations and Findings

The purchase of TES for all prototype Wal-Mart facilities was a corporate-level decision made by the Wal-Mart home office staff in Bentonville, Arkansas. This decision resulted in TES being distributed by the vendors to Wal-Mart facilities located throughout the United States, including Puerto Rico, where the TES were possessed under the general license authorized by 10 CFR 31.5. However, the inspectors noted that the general license authorized by 10 CFR 31.5 is tied to a specific facility in a specific location. The location of each generally-licensed device, in this case TES, is important to the regulatory control exercised over the device by the NRC or the Agreement State. The location of the device is reported to the NRC or the Agreement State by the vendor and any transfers of the device, except for transfers to another general licensee where the device remains in use at a particular location, must be reported to the NRC or the Agreement State. Therefore, inspectors concluded that each Wal-Mart facility with TES is a general licensee under 10 CFR 31.5 and the Wal-Mart corporate office in Bentonville, Arkansas is only a general licensee to the extent that TES were installed in the corporate office. The inspectors noted that while a corporate office may choose to provide oversight of the generally-licensed programs operating at each facility, responsibility for each generally-licensed program belongs to the management of each facility where TES are installed. In the case of Wal-Mart, it appears there were 1,543 facilities where TES were installed in the United States and therefore 1,543 general licensees.

The inspectors observed that, beginning with the Wal-Mart corporate decision to purchase TES in 2000, purchases of TES for the Wal-Mart facilities were made by agents located in the Wal-Mart home offices in Arkansas and direct contacts between the vendor and Wal-Mart occurred only at the corporate level. Wal-Mart reported that several of the purchasing agents believed, based on their conversations with the TES vendors, that the vendors would address regulatory requirements associated with TES, including reporting and ultimate disposal. In addition, in April 2004, Isolite met with Wal-Mart officials in Arkansas to discuss TES and Wal-Mart reported that several attendees recalled Isolite statements that Isolite would take responsibility for regulatory obligations regarding the return of TES on Wal-Mart's behalf and believed that, after Wal-Mart purchased the TES, it had no other obligations than to return the TES to the vendor at the end of the sign's use. The inspectors concluded that, to some extent, what the purchasing agents and meeting attendees believed is accurate regarding vendor involvement. Specifically, the vendors did register the TES devices with the regulatory authorities for the general licensees, the vendors would arrange for the proper disposal of the TES if contracted to do so, and if the vendors arranged for the TES device disposal, they would also report the transfer/disposal of TES to the regulatory authorities. However, the inspectors noted that the vendors were not responsible for all regulatory requirements. This may not have been clear to Wal-Mart.

Attendees at the April 2004 meeting recall that Isolite left written materials, including some NRC-related regulations and guidance, and in May 2004, Isolite provided Wal-Mart's Lead Design Engineer for the Wal-Mart prototype facilities with copies of: NUREG-1556, Volume 16, Appendix L [ML010120151], which contains guidance related to TES; Isolite's packaging/handling instructions for the return of damaged TES; Isolite's TES disposal policy; and a list of outlets for tritium compiled by the Conference of

Radiation Control Program Directors. Wal-Mart reported that the lack of knowledge of attendees at the meeting and the recipients of this guidance resulted in their failure to recognize and appreciate the applicable federal and state regulatory requirements and associated required actions.

10 CFR 31.5(c)(12) requires that any person who acquires, receives, possesses, uses or transfers byproduct material in a device pursuant to the general license contained in 10 CFR 31.5(a), shall appoint an individual responsible for having knowledge of the appropriate regulations and requirements and the authority for taking required actions to comply with appropriate regulations and requirements. Furthermore, the general licensee, through this individual, shall ensure the day-to-day compliance with appropriate regulations and requirements.

The inspectors identified a list of Wal-Mart facilities located in States under NRC jurisdiction (NRC States or non-Agreement States) where TES were utilized and queried the NRC's General License Tracking System (GLTS) to identify the "responsible individuals" for each one of the facilities. The names were provided to Wal-Mart and Wal-Mart identified these individuals as the store managers at the time that the stores received the TES. The inspectors determined that the transfer reports were made to NRC by the vendors, SRB and Isolite, and that the vendors would need to rely on Wal-Mart personnel, likely the purchasing agents, to provide the names of the store managers as the "responsible individuals." The inspectors concluded that communications between the vendors and the Wal-Mart purchasing agents were ineffective in that the communications did not result in a full understanding of the important role of the "responsible individual" by the Wal-Mart purchasing agents. Wal-Mart confirmed that the store managers did not have knowledge of general license requirements.

As indicated in Section I of this report, Wal-Mart management directed Shaw in their efforts to inventory missing TES beginning in the first half of 2006. While Wal-Mart's general license program oversight began in the first half of 2006 with the initiation of the inventory, full compliance with 10 CFR 31.5(c)(12) was not established until January 2008 when Wal-Mart appointed a RSO to oversee the general license program relative to TES.

Failure of the general licensee, between October 2000 and January 2008, to appoint an individual: (1) responsible for having knowledge of the appropriate regulations and requirements; (2) having the authority for taking required actions to comply with appropriate regulations and requirements; and (3) responsible for ensuring the day-to-day compliance with appropriate regulations and requirements is an apparent violation of 10 CFR 31.5(c)(12).[3]

The inspectors noted that Wal-Mart self-identified and corrected this apparent violation in January 2008; however, the corrective action could have been taken: (1) in April and May 2004, when Isolite met with and provided regulatory information to Wal-Mart representatives; (2) in the summer/fall of 2005, when the State of Nebraska requested an inventory of TES in Wal-Mart stores in Nebraska; or (3) in June or July 2006, when Wal-

3 As indicated in Footnote 1, Wal-Mart facilities received a small number of TES as early as 1989. This date is not referenced in the apparent violation because purchases of TES prior to 2000 were made by Wal-Mart contractors on Wal-Mart's behalf but without Wal-Mart's knowledge.

Mart met with Isolite at the vendor's offices in Pennsylvania. Wal-Mart later stated it was at the time of this meeting that they first became aware of their status as a general licensee and the associated regulatory requirements.

NRC regulations governing specific licensees who distribute devices to individuals under the general license authorized by 10 CFR 31.5 are contained in 10 CFR 32.51a. 10 CFR 32.51a requires that, before TES are transferred to a general licensee, the following must be provided to the general licensee by the vendor: (1) copies of the regulations in 10 CFR 31.2, 10 CFR 31.5, 10 CFR 30.51, 10 CFR 20.2201 and 10 CFR 20.2202; (2) a list of services that can only be performed by a specific licensee; (3) information on acceptable disposal options including estimated costs of disposal; and (4) documentation indicating that NRC's policy is to issue high civil penalties for improper disposal.[4]

The Wal-Mart vendors, Isolite and SRB, are currently licensed by the Commonwealth of Pennsylvania and the State of North Carolina, respectively; however, during the time that TES were sold to Wal-Mart, Isolite was licensed by the NRC. This is because the Commonwealth of Pennsylvania did not become an Agreement State and take responsibility for regulating the use of byproduct, source and special nuclear material in the Commonwealth of Pennsylvania until April 1, 2008. The inspectors reviewed the inactive Isolite license file and noted the licensee had developed a package of information that would be provided to their general licensees prior to shipping TES [ML070870706]. The inspectors noted that the package included everything required by 10 CFR 32.51a except for a copy of 10 CFR 31.2. The inspectors determined that, notwithstanding Isolite's failure to include a copy of 10 CFR 31.2, the package of information that was to be provided by Isolite to the general licensees contained all of the information contained in 10 CFR 31.2. Inspectors concluded that Isolite provided the general licensees all of the information required by 10 CFR 32.51a.

While the inspectors were not able to confirm this package of information was sent to each Wal-Mart facility prior to the shipment of each TES purchased, inspections of Isolite performed by NRC in September 2005 and May 2007 did not identify any deficiencies associated with the licensee's compliance with 10 CFR 32.51a. The inspectors identified no evidence that Isolite failed to provide the Wal-Mart facilities with the information required by 10 CFR 32.51a in advance of TES shipments; however, since the regulatory information was sent to the facilities where the TES were to be installed by building contractors, inspectors concluded it was not likely to have been viewed by Wal-Mart personnel whose primary job it would have been to assure regulatory compliance.

Wal-Mart concluded in its Final TESIP Report that, "when the decision was made to include TES in Wal-Mart construction, the structure of the company organization was such that responsibility for compliance was decentralized throughout the design, construction, purchasing and operations organizations, with no organization specifically responsible for compliance." The inspectors concluded that this decentralization of responsibility is the reason why regulatory information, provided by Isolite to Wal-Mart in April 2004 and in May 2004, did not result in the initiation of corporate corrective action until early in 2006.

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4 Prior to promulgation of a revised 10 CFR 32.51a on December 18, 2000 [65 FR 79189], vendors were only required to provide general licensees with a copy of 10 CFR 31.5.

The inspectors determined that once the regulatory issues became fully apparent to Wal-Mart in early 2008, they took actions to: (1) appoint an individual responsible for the generally-licensed program; (2) inventory and assess the condition of 63,409 TES found in 1,543 Wal-Mart facilities across the United States; (3) raise awareness of staff and management about the TES in Wal-Mart facilities to minimize additional TES loss; (4) promptly clean up damaged TES; (5) remove and return to the manufacturer 63,192 TES in the 1543 facilities where TES were found; (6) replace the TES with signs that did not contain radioactive material; and (7) report and investigate 15,863 TES that were declared lost in Agreement and NRC (non-Agreement) States.[5,6] Coordination and completion of this effort, known collectively as the TESIP, reportedly cost Wal-Mart more than $30 million dollars. The TESIP involved 11 managers and over 100 field personnel, including more than 25 professional health physicists. Inspectors noted that Wal-Mart believes there may be a relatively small number of TES remaining in their facilities. For this reason, they have developed a long-term program to respond to any TES found in the future. Wal-Mart reported that their long-term management strategy is comprised of continued communication, identification, tracking, reporting, disposition, and remediation of TES, as necessary. They reported that it also includes the semi-annual distribution of the TES awareness flyer described in the previous section of this report and training of Regional Compliance Officers who tour Wal-Mart facilities on a regular basis. The Wal-Mart RSO reported that the Hotline number listed on the TES awareness flyer was being used to report a small number of TES discovered after the submission of Wal-Mart's final report. Wal-Mart expects to maintain this program for a minimum of two years.

The TES awareness flyer was originally issued to all Wal-Mart facilities by the RSO in January 2008. Inspectors noted that the nationwide TES inventory performed in 2006-2007 identified 217 more TES than were identified during the final nationwide inventory performed in 2008 and these 217 TES were reported as lost; however, these 217 TES represent less than 1.4 percent of the total number lost and they could have been lost at any time between the beginning of the initial inventory in May 2006 and the end of the final inventory in July 2008. The inspectors concluded that the issuance of the TES awareness flyer, in conjunction with the TESIP activities, was effective in minimizing further loss of TES from Wal-Mart facilities.

c. Conclusions

The inspectors concluded that each individual Wal-Mart facility where TES was utilized was a general licensee. Wal-Mart chose to exercise management oversight of the general licensed programs from the corporate level; however, this oversight could have been provided at the facility level and, as a matter of fact, the "responsible individual" originally named in the GLTS for each Wal-Mart facility was the facility manager at the time the TES were received. Wal-Mart confirmed that the facility managers had no knowledge of the general license program.

One apparent violation was identified for the failure of the general licensee to appoint an individual responsible for having knowledge of the appropriate regulations and

5 The 217 TES difference between the number of TES found in Wal-Mart facilities and the number of TES returned to the manufacturer is the difference in the number of TES identified during the initial inventory performed in 2006-2007 and the final inventory performed in 2008. These 217 TES were reported as lost.
6 The 15,863 TES lost is a corrected value from the 15,858 number reported in the Final TESIP Report.

requirements between the initial time of receipt of TES in October 2000 and 2008 when a responsible individual was appointed as required by 10 CFR 31.5(c)(12). Inspectors concluded that Wal-Mart self-identified and corrected this apparent violation; however, Wal-Mart missed multiple opportunities to correct the apparent violation earlier.

The inspectors concluded that communication between the vendor and the Wal-Mart purchasing agents was ineffective because the importance of the "responsible individual" was not fully understood by the Wal-Mart purchasing agents and the purchasing agents believed that the vendors would address regulatory requirements associated with TES, including reporting and ultimate disposal. Wal-Mart officials who attended an April 2004 meeting with Isolite also reported they believed that Isolite would take responsibility for regulatory obligations regarding the return of TES on Wal-Mart's behalf and believed that, after Wal-Mart purchased the TES, it had no other obligations than to return the TES to the vendor at the end of the sign's use. The inspectors concluded that, to some extent, what the purchasing agents and meeting attendees believed is accurate regarding vendor involvement. Specifically, the vendors did register the TES devices with the regulatory authorities for the general licensees, the vendors would arrange for the proper disposal of the TES if contracted to do so, and if the vendors arranged for the TES device disposal, they would also report the transfer/disposal of TES to the regulatory authorities. However, the inspectors noted that the vendors were not responsible for all regulatory requirements. The inspectors concluded that while communication between the vendors and Wal-Mart was not effective, there was no apparent violation of NRC requirements.

Attendees at the April 2004 meeting recall that Isolite left written materials, including some NRC-related regulations and guidance and, in May 2004, Isolite provided Wal-Mart's Lead Design Engineer for the Wal-Mart prototype facilities with copies of NRC guidance. Wal-Mart reported that the lack of knowledge of attendees at the meeting and the recipients of this guidance resulted in their failure to recognize and appreciate the applicable federal and state regulatory requirements and associated required actions. The inspectors concluded that at least one vendor provided the written information required by 10 CFR 32.51a to the individual general licensees; however, because the TES were installed by building contractors, it is not likely that the information was received by Wal-Mart staff responsible for regulatory compliance.

The inspectors concluded the root cause of the apparent violation is that, prior to early 2006, there was no management oversight of the general license program, accountability for compliance was not owned by any one organization, and there was no culture of joint accountability across the organization. The inspectors noted, however, that this root cause does not fully explain why Wal-Mart failed to identify a "responsible individual" for a period of 18-months after the time Wal-Mart stated they first realized their status as a general licensee and the regulatory requirements associated with that status.

The inspectors concluded that management oversight of the general licensed program began to improve in early 2006 with the beginning of the TESIP and substantially improved in January 2008 with the naming of the RSO. The inspectors concluded that since the RSO was appointed, Wal-Mart has taken extensive actions to improve their oversight of the general license program.

The inspectors also concluded that the issuance of the TES awareness flyer in January 2008, in conjunction with the TESIP activities, was effective in minimizing further loss of TES from Wal-Mart facilities.

III. Material Receipt, Use, and Transfer

a. Inspection Scope

The inspectors assessed the adequacy of Wal-Mart's program for TES receipt, use and transfer by interviewing Wal-Mart and Wal-Mart contractor personnel, by reviewing the licensee's reports and GLTS records maintained by NRC, and by conducting a focused review of Wal-Mart's general licensed program at 15 Wal-Mart facilities representing a cross-section of TESIP findings. Inspectors toured the facilities; interviewed facility management present at the time of the inspection; reviewed invoices, inventory records, transfer/disposal records, and facility diagrams for the 15 store locations involved in the site visits; and reviewed NRC records maintained in the GLTS.

b. Observations and Findings

Wal-Mart management stated that the number of TES ordered by Wal-Mart purchasing agents for each store was dependent on the size and type of the facility. Purchasing agents directed that TES shipments be sent directly to the facility where the signs were to be installed. As discussed in Section II of this report, vendors were required by 10 CFR 32.51a to provide the general licensee with specific information, instructions and applicable regulatory requirements prior to shipping the TES. Inspectors confirmed that at least one vendor provided all of the required information; however, it is unknown who the information required by 10 CFR 32.51a was sent to. Transfer records in NRC's GLTS identify store managers as the responsible individuals required by 10 CFR 31.5(c)(12); however, it is likely the information was received by building contractors responsible for installing the TES.

Contractors building or renovating a facility installed TES according to local building and fire codes. Wal-Mart said that fire codes varied from one municipality to the next and implementation of the fire codes varied between the fire chiefs who enforced the codes. As a result, the number of TES installed in one facility could vary significantly from the number installed in a similar facility in a neighboring town. Wal-Mart indicated that TES were considered building materials and no attempt was made by Wal-Mart to account for excess TES when the project was completed.

As described in Section I of this report, in 2006 and 2007, Shaw traveled to each Wal-Mart facility to identify the number of signs present in each facility. Facility diagrams were annotated by contractor personnel to identify the location of each TES located. Numbered identification labels were placed on each TES found.

Isolite allowed Wal-Mart access to Isolite records of TES sold to Wal-Mart and TES returned for disposal. Wal-Mart reported that SRB denied Wal-Mart similar access to SRB records. The inspectors concluded that SRB's reported denial of Wal-Mart's request for access to SRB records made it more difficult to complete the TESIP and possibly introduced some inaccuracies into the results; however, the inspectors also

concluded that there is no evidence that SRB failed to meet any regulatory requirement and there is no requirement that SRB maintain the records that were being sought by Wal-Mart.

In late 2007, Wal-Mart decided to remove and replace all TES in Wal-Mart facilities. Shaw personnel returned to each facility and performed a second TES inventory. Wal-Mart reported that during the removal and replacement phase in 2008, they identified TES that were not identified during the first inventory and could not locate TES that were identified during the first inventory. Wal-Mart also reported that they found cases where the record of the number of TES in a vendor shipment did not agree with the number of TES serial numbers recorded in the shipping records, cases where the serial number on the exterior of the TES case differed from the serial number on the inner components, and a few cases where duplicate serial numbers were identified in two different TES received from the same vendor. Wal-Mart concluded that these errors were the result of human error and made reconciling of the inventory difficult and possibly introduced some inaccuracies into the inventory.

During the removal and replacement phase, Shaw evaluated all TES for damage prior to removal from the installed location. Undamaged TES were packaged for return and exported through Isolite to Shield Source in Canada. Dade Moeller and Associates (Dade), a licensed professional health physics services contractor, was contracted to handle damaged or potentially damaged signs. Dade made surveys to assure that facilities could be released for unrestricted use, evaluated radiation exposures to potentially affected personnel, packaged radioactive waste for disposal and packaged damaged signs for return shipment through Isolite to Shield Source in Canada.

The inspectors observed that once the problem with the general licensed program was identified, Wal-Mart took extensive corrective and preventive actions to: (1) inventory all TES possessed under the general license; (2) improve control over TES found in Wal-Mart facilities nationwide; (3) assess the radiological condition of TES found in Wal-Mart facilities; (4) remediate facilities contaminated from damaged TES; (5) evaluate potential exposures to Wal-Mart employees, contractors and members of the public from exposure to damaged TES; and (6) remove all TES found in Wal-Mart facilities and replace them with signs not requiring the use of radioactive material.

In their January 29, 2009, TESIP Final Report, Wal-Mart reported that 75,286 TES were acquired for use at 1,426 Wal-Mart facilities located in NRC States and Agreement States. In addition, 3,765 “new” TES were found. A “new” TES was defined as a sign found in a Wal-Mart facility that was not on the original list of TES believed purchased by Wal-Mart. “New” signs included TES where a serial number could not be found and Wal-Mart was not able to match it with another sign. “New” signs could also include TES installed in a facility prior to acquisition of the facility by Wal-Mart. The addition of these “new” TES resulted in an inventory total for the United States (including Puerto Rico) of 79,051 TES. Wal-Mart reported that a total of 63,409 TES were found in 1,543 Wal-Mart facilities. A total of 4,545 facilities were visited during the TESIP, including facilities not originally listed as possessing TES. Wal-Mart stated that 63,192 TES have been returned through Isolite to Shield Source for recycling. Wal-Mart reported that the difference between the number of TES found in Wal-Mart facilities and the number of TES returned through Isolite to Shield Source is the 217 TES they identified during the initial inventory that were not located during the removal and replacement phase. As

indicated previously, the Wal-Mart RSO indicated that inquiries were made regarding the possible disposition of these TES but they could not be found and were ultimately declared lost.

Wal-Mart declared 15,858 TES lost in its final report. Of this total, 2,470 TES were reported lost from 188 Wal-Mart facilities located in the 15 States and Territories under NRC regulatory jurisdiction and 13,388 TES were lost from Wal-Mart facilities located in the 35 Agreement States. Attachment F of Wal-Mart's Final TESIP report summarizes the losses, by State, from the 50 States and Puerto Rico [ML090330525]. Inspectors reviewed the TESIP Final Report and previous Wal-Mart reports of TES losses dated November 6, 2008 [ML083460441], December 5, 2008 [ML083460331], and January 7, 2009 [ML090160332], and identified minor discrepancies in the number of TES lost. Wal-Mart submitted additional information, in response to NRC's requests, on March 9, 2009 [ML090710636] and May 7, 2009 [ML091820067 and ML091820091]. The March 9 and May 7 responses clarified and corrected information provided in the January 29, 2009 TESIP Final Report. The correct number of TES that should have been reported as lost in the TESIP Final Report on January 29, 2009, is 15,863 with 2,462 TES lost from 188 Wal-Mart facilities that were located in NRC States and 13,401 TES lost from Wal-Mart facilities located in Agreement States.

10 CFR 31.5(a) contains a general license issued to commercial and industrial firms to acquire, receive, possess, use or transfer, in accordance with the provisions of 31.5(b), 31.5(c) and 31.5(d), byproduct material contained in devices designed and manufactured for the purpose of producing light. Luminous signs containing tritium are possessed and used under this general license in NRC States.

10 CFR 31.5(c)(8) requires that any person who acquires, receives, possesses, uses or transfers byproduct material in a device pursuant to this general license shall transfer or dispose of the device containing byproduct material only by export as provided by paragraph (c)(7), by transfer to another general licensee as authorized in paragraph (c)(9) of this section, or to a person authorized to receive the device by a specific license issued under Parts 30 and 32, or Part 30 that authorizes waste collection, or equivalent regulations of an Agreement State, or as otherwise approved under 10 CFR 31.5(c)(8)(iii).

Failure of Wal-Mart, as the general licensee, to properly transfer or dispose of 2,462 TES that were received at facilities located in NRC States in accordance with paragraphs c(7) and c(9) of this section, or to a person authorized to receive the device by a specific license, or as otherwise approved under paragraph c(8)(iii) of this section, is an apparent violation of 10 CFR 31.5(c)(8).

Wal-Mart reported that 3,010 "transfers" were made between stores. This number includes 517 transfers from facilities located in NRC States. Wal-Mart defined a "transfer" as a case where a TES was expected at one facility, based on purchase records, but was found installed at another facility, sometimes across town and other times across the country. Inspectors reviewed records of transfers submitted by Wal-Mart to NRC. All records reflected transfers from Wal-Mart back to Isolite for return to Shield Source. No records of transfers between Wal-Mart facilities were identified.

10 CFR 31.5(c)(9) requires, in part, that any person who transfers byproduct material in accordance with 31.5(a), shall transfer the device to another general licensee only if the device remains in use at a particular location. As discussed in Section II of this report, each Wal-Mart facility that received TES is a general licensee.

Failure of the individual Wal-Mart stores to properly transfer 517 TES to another general licensee is an apparent violation of 10 CFR 31.5(c)(9). The inspectors determined that all TES losses associated with these transfers have been accounted for in the licensee's report and that NRC has been notified about all TES transfers made through Isolite to Shield Source for disposal. The inspectors noted that general and electrical contractors were likely to have been directly responsible for these transfers between facilities.

In Wal-Mart's TESIP final report, Wal-Mart stated they were able to access and inventory all of their facilities in the United States except for 9 facilities that were no longer owned or occupied by Wal-Mart. The inspectors requested additional information about the facilities and received Wal-Mart's May 7, 2009 response. Wal-Mart reported that of the 9 facilities: 2 facilities were destroyed by Hurricane Katrina, 3 facilities were demolished and, for the four remaining locations, Wal-Mart was unable to reach the landlord or legal counsel for the new owner despite numerous calls and attempts at contact. A total of 466 tritium exit signs were reportedly purchased for these facilities. Wal-Mart records indicate that 179 of the signs purchased for these facilities were returned to the manufacturer, leaving 287 unaccounted TES. The inspectors determined that these TES were included in the number of TES reported lost. The NRC's State Agreements Officers contacted the 8 States where these 9 facilities are located and provided them with this information so the States could take whatever actions they deemed necessary to prevent loss of tritium exit signs believed to be inside of these facilities. NRC Region III contacted the only facility located in an NRC State. NRC Region III reported that the owners of the facility identified only electrically powered exit signs on site; therefore, no apparent violation of 10 CFR 31.5(c)(6) was identified.

During the TESIP, Wal-Mart contacted a sample of the general contractors responsible for installation of the TES about what was done with excess TES. TES installations were generally performed by electrical subcontractors. Most of the general contractors said that excess owner-supplied materials would have been left at the store or returned to Wal-Mart. Some of the general contractors said they would have returned any excess materials to the vendor. One general contractor, who reportedly worked with Wal-Mart to build 21 stores, stated that all records were destroyed as a matter of practice once the job was completed. Wal-Mart concluded that excess TES were either returned to the vendor, transferred by the general contractor or electrical subcontractor to a facility not owned by Wal-Mart, or placed in storage at the store and eventually disposed of to the normal trash; however, Wal-Mart was unable to identify records indicating that a significant number of TES were returned to vendors by general or electrical contractors. The inspectors concluded that excess TES were either transferred by the general contractor or electrical subcontractor to a facility not owned by Wal-Mart or they were left in the facility and eventually disposed of to the normal trash.

Between December 10, 2008, and January 2, 2009, inspectors visited the 15 store locations identified in the table below. Inspectors who visited stores located in the two Agreement States (Ohio and North Carolina) notified the States' Radiation Control Program in advance. Inspectors toured public and non-public areas in the facilities and

utilized the facility diagrams that had been annotated by Shaw to observe locations where TES were previously installed and to verify that the TES had been removed. In one facility, inspectors observed the removal and replacement of 2 TES. Shaw had determined during an earlier visit to the facility that the two TES remaining in the store were undamaged. Shaw made this determination based on visual inspection of the exterior of the TES casing and by placing a box over the TES to see if the TES self-illuminated in the darkness. The absence of illumination would indicate that one or more of the glass tubes present in the TES was broken and had released the tritium it had contained to the atmosphere. The two undamaged TES were removed from the locations in which they were originally installed. The removal was performed by Shaw personnel utilizing the "Tritium Exit Sign Services" procedure. The inspectors observed that this work was performed in a safe manner. At another store, inspectors found one TES that had been presumed lost. Wal-Mart stated that they did their best to identify, remove and replace all of the TES in their inventory; however, they recognize that they are likely to have missed a small number of TES and for this reason they continue to: send the "Tritium Exit Sign Awareness" flyer to the individual store managers; train their Regional Environmental Compliance managers to look for TES during their regular visits to the stores; and staff their TES "HOTLINE."

List of Wal-Mart Facilities Visited During the Inspection

Store #	Address	TES Inventory	TES Returned	Lost TES	Damaged TES[7]
923	Noblesville, IN	12	11	1	0
2339	W. Lafayette, IN	56	35	21	0
884	Shelbyville, IN	68	66	2	1
30	Dexter, MO	55	53	2	0
1642	Charlotte, MI	43	40	3	0
6661	Portage, MI	46	44	2	0
1423	St. Johns, MI	66	59	7	2
1726	Harrisonburg, VA	67	59	8	0
5436	Wilmington, DE	79	70	9	0
2518	Hamilton, NJ	67	60	7	1
5063	Charlotte, NC	69	68	1	0
6540	Charlotte, NC	8	8	0	0
1552	Salisbury, NC	71	65	6	1
5104	Moraine, OH	68	61	7	0
3571	Middletown, OH	51	49	2	1

Inspectors noted that many TES had been installed in areas and at room elevations where they were particularly vulnerable to collision from forklifts and similar devices. If Wal-Mart had identified missing or damaged TES in a particular store, inspectors attempted to interview management and/or maintenance personnel present to gauge their knowledge of the missing or damaged TES; however, turnover was such that many of the personnel were not present at the time that the TES were damaged or lost. If a damaged sign was identified in a particular store, inspectors reviewed the adequacy of the decommissioning surveys performed by Wal-Mart's licensed professional health

7 Damaged TES are included in the number of TES returned.

physics services contractor, Dade, and at two facilities, the inspectors performed confirmatory surveys. Inspectors concluded that facilities were properly released for unrestricted use.

10 CFR 20.2201(a)(1) requires that each licensee report by telephone as follows:
(i) Immediately after its occurrence becomes known to the licensee, any lost, stolen, or missing licensed material in an aggregate quantity equal to or greater than 1,000 times the quantity specified in Appendix C to part 20 under such circumstances that it appears to the licensee that an exposure could result to persons in unrestricted areas; or
(ii) within 30 days after the occurrence of any lost, stolen, or missing licensed material becomes known to the licensee, all licensed material in a quantity greater than 10 times the quantity specified in Appendix C to part 20 that is still missing at this time.

The Appendix C to Part 20 value for tritium (hydrogen 3) is 1 millicurie and one thousand times the Appendix C value is 1 curie. At the time of manufacture, the nominal activity for the TES purchased by TES ranged between 11.5 and 20 curies; however, the inspectors noted, and Wal-Mart concluded, that the losses were not under such circumstances that it appeared to the licensee that an exposure could result to persons in unrestricted areas. Therefore, Wal-Mart was required by 10 CFR 20.2201(a)(1) to make a telephone report within 30 days after the loss of the material becomes known.

10 CFR 20.2201(b)(1) requires each licensee required to make a report under paragraph (a) of this section shall, within 30 days after making the telephone report, make a written report setting forth the following information: (i) a description of the licensed material involved, including kind, quantity, and chemical and physical form; (ii) a description of the circumstances under which the loss or theft occurred; (iii) a statement of disposition, or probable disposition, of the licensed material involved; (iv) exposures of individuals to radiation, circumstances under which the exposures occurred, and the possible total effective dose equivalent to persons in unrestricted areas; (v) actions that have been taken, or will be taken, to recover the material; and (vi) procedures or measures that have been, or will be, adopted to ensure against a recurrence of the loss or theft of licensed material.

The inspectors determined that Wal-Mart could not conclude a single TES was missing until they completed their nationwide inventory. Wal-Mart completed their inventory in July 2008 and worked with the data collected to complete the inventory. In accordance with a schedule agreed to by NRC, Wal-Mart provided NRC with an interim TESIP written report in June 2008 and made a telephone notification to the NRC Headquarters Operations Center and submitted a written report on January 7, 2009. The final TESIP report was provided to NRC on January 29, 2009. The inspectors identified no apparent violation of 10 CFR 20.2201(a)(1) or 20.2201(b)(1).

10 CFR 31.5(c)(5) requires, in part, general licensees to immediately suspend operation of the device if there is a failure of, or damage to, or any indication of a possible failure of or damage to, the shielding of the radioactive material or the on-off mechanism or indicator, or upon the detection of 185 Becquerel (0.005 microcurie) or more removable radioactive material. The device and any radioactive material from the device may only be disposed of by transfer to a person authorized by a specific license to receive the byproduct material in the device or as otherwise approved by the Commission. A report containing a brief description of the event and the remedial action taken; and, in the case of detection of 0.005 microcurie or more removable radioactive material or failure of or

damage to a source likely to result in contamination of the premises or the environs, a plan for ensuring that the premises and environs are acceptable for unrestricted use, must be furnished to the Director, Office of Federal and State Materials and Environmental Management Programs, within 30 days.

Attachment I of the TESIP report [ML090330545] provides a summary of all reports of lost and damaged TES. Inspectors reviewed Attachment I and determined that written reports of all damaged TES were not submitted within the required 30-day period. Specifically, with regard to damaged TES located in NRC (non-agreement) states, Attachment I indicates that reports for damaged TES at stores in Elkins and Barboursville, West Virginia; Kendallville, Indiana; and Waterbury, Connecticut, exceeded the 30-day requirement. The recorded incident date for Store #1522 (Elkins) was August 14, 2007 and the written report date was recorded as March 19, 2008. The recorded incident date for Store #5296 (Barboursville) was September 9, 2008 and the written report date was recorded as October 30, 2008. The recorded incident date for Store #1388 (Kendallville) was June 1, 2008 and the written report date was recorded as September 10, 2008. The recorded incident date for Store #3548 (Waterbury) was June 19, 2008 and the written report date was recorded as September 10, 2008. The inspectors noted that the "Incident Date" reported by Wal-Mart is actually the date that Wal-Mart was on site and identified the damaged TES, not the date that the damage occurred. In almost all cases, the date that the damage occurred is unknown. The inspectors concluded that it is appropriate in this case to use the date the damage was identified for purposes of regulatory reporting; however, if Wal-Mart had been more aware of its regulatory responsibilities when the TES were installed, it is likely that damaged TES would have been identified and reported much earlier. Wal-Mart also determined that a TES located in Store #1423 (St. Johns, Michigan) was damaged despite initial tests performed by Shaw during the TES removal that demonstrated the TES was not damaged. This determination was based on a routine contamination survey that revealed tritium contamination where no contamination was expected. Damage to this TES should have been identified during the TES removal on September 9, 2008 and reported within 30 days of this date; however, because of the time required to process the swipes taken during the survey, the written report was not made until October 15, 2008.

Failure of Wal-Mart, as the general licensee, to report all damaged TES from 5 facilities within 30-days is an apparent violation of 10 CFR 31.5(c)(5).

c. Conclusions

Wal-Mart reported the loss of 15,863 TES from facilities located in the United States, including Puerto Rico. Of this total, 2,462 TES were lost from 188 Wal-Mart facilities located in States under NRC jurisdiction while 13,401 TES were lost from facilities located in States under Agreement State jurisdiction.

Three apparent violations were identified: failure to properly transfer and dispose of 2,462 TES as required by 10 CFR 31.5(c)(8), including 217 TES identified during the initial inventory that were not located during the final inventory and removal and replacement phase; failure to properly transfer 517 TES as required by 10 CFR 31.5(c)(9); and the failure to submit written reports of 5 damaged TES within 30 days as required by 10 CFR 31.5(c)(5).

The inspectors noted that the “Incident Date” referenced by Wal-Mart in their 10 CFR 31.5(c)(5) reports is actually the date that Wal-Mart was on site and identified the damaged TES, not the date that the damage occurred. In almost all cases, the date that the damage occurred is unknown. The inspectors concluded that it is appropriate in this case to use the date the damage was identified for purposes of regulatory reporting; however, if Wal-Mart had been more aware of its regulatory responsibilities when the TES were installed, it is likely that damaged TES would have been identified and reported much earlier.

The inspectors concluded that Wal-Mart made telephone reports and written reports of lost TES to NRC in accordance with the agreed upon schedule and no violation of 10 CFR 20.2201(a)(1) or 20.2201(b)(1) occurred. The inspectors also concluded that no violation of 10 CFR 31.5(c)(6) was identified for abandonment of TES in NRC jurisdiction.

The inspectors concluded that once oversight of the generally licensed program was provided, Wal-Mart took extensive corrective and preventive actions to: (1) inventory all TES possessed under the general license; (2) improve control over TES found in Wal-Mart facilities nationwide; (3) assess the radiological condition of TES found in Wal-Mart facilities; (4) remediate facilities contaminated from damaged TES; (5) evaluate potential exposures to Wal-Mart employees, contractors and members of the public from exposure to damaged TES; and (6) remove all TES found in Wal-Mart facilities and replace them with signs not requiring the use of radioactive material. The inspectors also concluded that the general licensee and its contractors performed this work in a safe manner.

The inspectors concluded that excess TES were not returned to the vendors by the contractors but were likely transferred by the contractors to other facilities not owned/operated by Wal-Mart or were left by the contractors in the facility after construction was completed and were later disposed of with other construction waste in the normal trash. The inspectors concluded that once the contractors left and the facility opened for business, it is likely that the installed TES were removed from the facility after being damaged and were disposed of in the normal trash. Ultimately these disposals would go to the municipal landfills. Section V of this report discusses the safety assessment performed to estimate the radiation exposures resulting from damaged TES in the Wal-Mart facilities and disposal of TES in the municipal landfill.

The inspectors concluded that SRB’s reported denial of Wal-Mart’s request for access to SRB records of TES sold to Wal-Mart and returned from Wal-Mart made it more difficult to complete the TESIP and possibly introduced some inaccuracies into the results; however, the inspectors also concluded that there is no evidence that SRB failed to meet any regulatory requirement and there is no requirement that SRB maintain the records that were being sought by Wal-Mart.

IV. Radiation Surveys

a. Inspection Scope

The inspectors assessed the adequacy of Wal-Mart's radiation survey program by interviewing Wal-Mart and Wal-Mart contractor personnel and by conducting a focused review of surveys performed at the 15 Wal-Mart facilities listed in Section III of this report.

b. Observations and Findings

Wal-Mart contracted with Shaw to perform TES inventory, evaluate TES condition, remove each TES from its installed location, recheck the TES condition, and package the TES for export through Isolite to Shield Source in Canada. If during this process a damaged TES or a TES suspected of being damaged was identified, Shaw notified the RSO and a licensed professional health physics service contractor, in almost all cases Dade Moeller and Associates (Dade), was contacted to conduct store visits for radiological assessment, remediation if necessary, and shipping of damaged TES. Wal-Mart protocol required that Dade dispatch a health physicist to any site determined to possess a "critically damaged" TES. A "critically damaged" TES is one that involves the breakage of glass tubes housing the tritium gas. This critical damage determination was made by checking the illumination of tubes using a cardboard box to shield ambient light. Wal-Mart reported that Dade's response to critically damaged signs was prioritized by urgency and date of damage. An urgent visit was requested where critical damage occurred and quick response was warranted because conditions existed where exposures could be incurred or contamination could be spread if not promptly addressed. Urgent visits required a certified health physicist (CHP) and were to be performed within 24 hours or after NRC or Agreement State reciprocity arrangements were made. Rapid Response Team (RRT) visits were required where TES critical damage occurred within the previous 4 months. These were staffed by a CHP and an attorney. The 4 month period was selected because the internal dose assessment model used by Dade could assess internal personnel exposures due to tritium intake up to fours months post exposure. Regular visits were scheduled where TES critical damage occurred more than four months prior to damage assessment and were staffed by a qualified health physicist or CHP. Wal-Mart reported that all visits were to be performed within 21-28 days after the initial report of TES damage. Inspectors concluded that Wal-Mart's protocol for responding to critically damaged TES was appropriate. "Urgent visits" were only required when response actions could mitigate personnel exposures or the spread of contamination and "RRT visits" were only required when meaningful personnel dose assessments were possible.

In its final report, Wal-Mart stated that Dade responded to 444 locations nationwide with reports of damaged TES and provided disposition of 779 damaged TES. Wal-Mart reported that Dade conducted 547 separate store visits in 45 states and Puerto Rico between February 18 and December 23, 2008. Of these, 118 were reported to be RRT visits and only 3 were urgent visits. Urgent visits were made to Wal-Mart facilities located in Clermont, Florida on April 30, 2008; in Colonial Heights, Virginia on May 20, 2008; and in Cincinnati, Ohio on July 15, 2008. The Colonial Heights, Virginia visit was to follow up on Wal-Mart's discovery that TES had recently been placed into the facility's compacting

dumpster. Dade personnel determined that the TES were not damaged. Attachment C of the final report provides a list of stores visited by health physicists [ML090330494].

Wal-Mart established a removable contamination action limit of 1000 disintegrations per minute (DPM) per 100 square centimeters (cm^2) and a fixed contamination action level of 15,000 DPM/100 cm^2. The TESIP report indicated that all surfaces where wipes were taken, and where contamination was identified, were decontaminated below the action limits with the exception of two locations. Wal-Mart explained in their March 9, 2009 response to NRC's request for additional information that at one location in Austin, Texas, removable contamination levels in two locations were 1184 DPM/100 cm^2 and 1154 DPM/100 cm^2 and at a second location in Wylie, Texas, fixed tritium contamination was as high as 74,000 DPM/100 cm^2 with an average of 11,000 DPM/100 cm^2. In the Wylie facility, Wal-Mart's contractor stated they believed they exhausted all reasonable decontamination options and provided NRC with a copy of an assessment of potential exposure and effective dose from exposure to the tritium that remained at the sites that was provided to the Texas Radiation Control Program.

Inspectors noted that the action limits are well within NRC guidelines for tritium in unrestricted areas. Wipe test analyses were performed by Dade under a current license issued by the State of Maryland (MD-31-244-01). Shaw also possessed a current license issued by the State of California (7704-30) in April 2008 for wipe testing, decontamination, and disposal of TES.

Wal-Mart presented records indicating that contamination wipes were taken by a Dade CHP at 7 of the 15 sites visited by inspectors. In addition, Dade also conducted a limited number of surveys with a portable survey meter, equipped with a tritium probe. These surveys were evaluated by the inspector and no concerns were identified. Confirmatory wipes were taken by NRC at two of the locations (Store #884 and #3571) determined to have possessed a critically damaged sign. Wipe samples taken by NRC were sent to the Oak Ridge Institute for Science and Education (ORISE) for evaluation. Results did not identify any residual tritium contamination.

c. Conclusions

Inspectors concluded that Wal-Mart's protocol for responding to critically damaged TES was appropriate. "Urgent visits" were only required when response actions could mitigate personnel exposures or the spread of contamination and "RRT visits" were only required when meaningful personnel dose assessments were possible.

Inspectors concluded that the decontamination action limits established by Wal-Mart are well within NRC guidelines for tritium in unrestricted areas. The inspectors concluded that no significant contamination remains in Wal-Mart facilities that once housed TES.

No violations or safety concerns were identified.

V. Radiation Protection

a. Inspection Scope

Inspectors interviewed Wal-Mart personnel and contractors, reviewed the contractor's bioassay methodology, and reviewed the health and safety assessment performed by the contractor.

b. Observations and Findings

Wal-Mart presented records indicating that 79 urine bioassays were performed on Shaw, Wal-Mart, and other personnel (e.g. contractors) who may have handled, or were in the immediate vicinity of critically damaged TES. The highest internal exposures calculated were for Wal-Mart contractors and employees (7.0 millirem, 5.6 millirem and 1.2 millirem), with no other exposures exceeding 1 millirem. The analyses were performed by Dade under their Maryland license. Attachment B of the TESIP report provides Dade's dose calculation methodology from urine bioassay results for a hypothetical employee [ML090330492]. Attachment E includes measured doses for individuals for whom urine samples were taken during the TESIP [ML090330518]. The licensee's bioassay methodology and internal exposure results was reviewed and determined to be accurate.

Wal-Mart also submitted a health and safety assessment for damaged TES in their TESIP report. Exposure scenarios were outlined and included a shopper or non-involved Wal-Mart associate near a damaged TES, a Wal-Mart associate involved with mechanical impact and clean-up of TES, an associate directly and immediately involved in TES damage, and inadvertent disposal and damage of TES in a municipal landfill. All scenarios, except the landfill scenario, were based upon empirical data obtained by Wal-Mart during the TESIP. The municipal landfill exposure scenario utilized dose modeling. The most likely and reasonable maximum exposures were determined to be highest for the associate directly and immediately involved in TES damage. Estimates were 5 and 10 millirem, respectively. The inspectors determined that the assumptions used in these exposure scenarios were technically sound and that these exposures are representative of the exposures that were actually received. Wal-Mart provided a modified version of the landfill scenario in their March 9, 2009, response to NRC's request for additional information [ML090710636]. The landfill scenario was found to be based on conservative assumptions and is therefore bounding of the exposures that would result from this scenario.

c. Conclusions

The inspectors concluded that the licensee's methodology for calculating exposures from bioassay results were accurate. The health and safety assessment was reviewed and it was concluded that the loss of the TES resulted in no significant exposure of Wal-Mart employees, Wal-Mart contractors, or members of the public.

No violations or safety concerns were identified.

VI. Radioactive Waste Management

a. Inspection Scope

Inspectors interviewed Wal-Mart and Wal-Mart contractor staff and reviewed pertinent records of radioactive waste generated during the TESIP. Inappropriate disposal of TES is addressed in Section III of this report.

b. Observations and Findings

Wal-Mart presented documents indicating that a small volume of radioactive waste (plywood TES mounting), generated as a result of decontamination activities, was disposed of through Philotechnics, a waste broker, operating under a license issued by the State of Tennessee (R-01084-A08). Attachment D of the TESIP report provides a summary of locations where tritium-contaminated waste was generated [ML090330500]. The inspectors determined that Wal-Mart and their contractors disposed of contaminated materials in an acceptable manner.

c. Conclusions

No violations or safety concerns were identified.

VII. Transportation

a. Inspection Scope

The inspectors assessed the adequacy of Wal-Mart's program for transporting TES off site by interviewing Wal-Mart and Wal-Mart contractor personnel and by conducting a focused review of transportation activities performed at the 15 Wal-Mart facilities listed in Section III of this report.

b. Observations and Findings

Wal-Mart reported that Isolite agreed to accept returns of all manufacturers' TES for export to Shield Source in Peterborough, Ontario, Canada. Isolite required that Wal-Mart review and sign Department of Transportation (DOT) HazMat training and Acknowledgement Forms and return the forms to Isolite before a Return Material Authorization number was generated along with a custom-printed United Parcel Service label. Isolite agreed to take possession of the packaged TES at the Wal-Mart facility and made arrangements for package pick up by United Parcel Service. The Wal-Mart RSO indicated that Isolite agreed to take possession of TES at Wal-Mart facilities and become the shipper of record so that more signs could be included per shipment and the TES replacement could be completed at an earlier date. Wal-Mart secured the packaged TES until pickup. Wal-Mart reported that 63,192 TES located at Wal-Mart facilities in both NRC and Agreement States were exported through Isolite Corporation for recycling by Shield Source (NRC export License XB1315). The inspectors determined that Wal-Mart and their contractors disposed of the TES in an acceptable manner and that the TES transfers through Isolite to Shield Source from facilities located in NRC States were appropriately reported to NRC.

The inspectors observed the packaging of two TES shipped from the Wal-Mart facility (Store #5104) located in Morraine, Ohio. The inspectors determined that the TES were double-boxed and the shipment was secured in the Claims Department pending UPS pickup. The shipment was packaged and tracked in accordance with DOT regulations. Inspectors also observed that Isolite's DOT HazMat Training and Acknowledgement Forms and spreadsheets were completed prior to shipment of TES. The inspectors also reviewed packaging and shipping records for the 15 selected sites.

c. Conclusions

TES were packaged and transported in accordance with DOT requirements. No violations or safety concerns were identified.

VIII. Exit Meeting

The results of the inspection were discussed with Wal-Mart representatives during a preliminary Exit Meeting held in Bentonville, Arkansas on January 13, 2009. A final Exit Meeting was held with licensee representatives during a telephone conference on August 17, 2009.

PARTIAL LIST OF PERSONS CONTACTED

The following individuals were present during the Entrance Meeting held in Dayton, Ohio on December 9, 2008:

Representing NRC

James P. Dwyer, Chief, Commercial and R&D Branch, Division of Nuclear Materials Safety (DNMS), NRC Region I
Willie Lee, Health Physicist, Office of Federal and State Materials and Environmental Management Programs (FSME), NRC Headquarters
Michele Burgess, Senior Program Coordinator, FSME, NRC Headquarters
Michael LaFranzo, Health Physicist, DNMS, NRC Region III

Representing the State of Ohio

Karl Von Ahn, Health Physicist, Bureau of Radiation Protection, Ohio Department of Health

Representing Wal-Mart

Richard Dailey, Senior Manager of Environmental Services and Radiation Safety Officer (RSO), Wal-Mart
Wendy Widener, Project Manager, Tritium Exit Sign Inventory Project (TESIP), Wal-Mart
Greg Coffman, District Manager, Shaw Environmental, Inc.
Greg Butler, Client Program Manager, Shaw Environmental, Inc.
Tracy A. Ikenberry, Certified Health Physicist, Dade Moeller and Associates, Inc.

The following individuals were present during the Preliminary Exit Meeting held in Bentonville, Arkansas on January 13, 2009:

Representing NRC

George Pangburn, Deputy Director, FSME, NRC Headquarters
John Kinneman, Director, DNMS, NRC Region I
Arthur Howell, Director, DNMS, NRC Region IV
Randy Erickson, State Agreements Officer, DNMS, NRC Region IV
Willie Lee, Health Physicist, FSME, NRC Headquarters
Michele Burgess, Senior Program Coordinator, FSME, NRC Headquarters
Michael LaFranzo, Health Physicist, DNMS, NRC Region III

Representing the Agreement States

Jared Thompson, Director, Radioactive Materials Program, Arkansas Department of Health

Representing Wal-Mart

Harry Eng, Vice President, Facilities Management and Environmental Services, Wal-Mart
Richard Dailey, Senior Manager of Environmental Services and RSO, Wal-Mart
Jennifer May-Brust, Vice President, Wal-Mart Realty
Angela Washington, Wal-Mart Legal
Meredith Taylor, Wal-Mart Real Estate Legal
Tom Gean, Chief Legal Compliance Officer, Wal-Mart
Bernie Coerber, Senior Realty Compliance Manager, Wal-Mart
Karen Roberts, Wal-Mart Compliance
Wendy Widener, Manager, TESIP, Wal-Mart
Erin Edwards, Manager, TESIP, Wal-Mart
Tom Poindexter, Attorney, Morgan, Lewis & Bockius LLP
Greg Coffman, District Manager, Shaw Environmental, Inc.
Greg Butler, Client Program Manager, Shaw Environmental, Inc.
Asuncion Hostin, Managing Director, Kroll Associates, Inc.
Julian Grijins, Associate Managing Director, Knoll Associates, Inc.
Tracy Ikenberry, CHP, Dade Moeller & Associates, Inc.

The following individuals participated in the Final Exit Meeting by telephone conducted on August 17, 2009:

Representing NRC

Arthur Howell, Director, DNMS, Region IV
James P. Dwyer, Chief, Commercial and R&D Branch, DNMS, Region I
Mark Haire, Enforcement Staff, Region IV
Christie Maier, Enforcement Staff, Region IV

Representing the Agreement States

Jared Thompson, Director, Radioactive Materials Program, Arkansas Department of Health

Representing Wal-Mart

Richard Dailey, Senior Director, Environmental Management and Support and RSO, Wal-Mart
Phyllis Harris, Vice President, Environmental Compliance, Wal-Mart
Jennifer May-Brust, Vice President, Wal-Mart Realty
Angela Washington, Wal-Mart Legal
Meredith Taylor, Wal-Mart Real Estate Legal
Tom Poindexter, Attorney, Morgan, Lewis & Bockius LLP