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APPENDIX C

INSPECTION CASEWORK REVIEWS

NOTE: ALL CASEWORK LISTED WITHOUT COMMENT ARE INCLUDED FOR COMPLETENESS ONLY; NO SIGNIFICANT COMMENTS WERE IDENTIFIED BY THE IMPEP TEAM.

File No.: 1

Licensee: Baptist Hospital

Location: Nashville, TN

Inspection Type: Routine, Unannounced

Inspection Date: 8/4/00

License No.: R-19044-J05

License Type: Medical

Priority: 3

Inspector: BM

Comments:

- a) See comments also in Accompaniment No. 5.
- b) Program scope does not discuss radiopharmaceutical therapy usage, which was observed by the reviewer during the accompaniment.
- c) Inspector did not address patient release criteria.
- d) Inspector did not address program oversight aspects, e.g., radiation safety committee activities and program audits.
- e) Report indicated "n/a" for independent measurements, however, reviewer observed inspector conduct surveys during the inspection.
- f) Documentation of personnel monitoring results did not specify period of time in which recorded doses were received, i.e., quarterly or annually.

File No.: 2

Licensee: Quality Control and Inspection

Location: Knoxville, TN

Inspection Type: Routine, Announced

Inspection Date: 8/3/00

License No.: R-47144-K00

License Type: Radiography

Priority: 1

Inspector: JT

Comments:

- a) See comments in Accompaniment No. 4.
- b) Report did not include results of personnel monitoring.

File No.: 3

Licensee: Volunteer NDT Corp.

Location: Chattanooga, TN

Inspection Type: Routine, Announced

Inspection Date: 8/2/00

License No.: R-33189-C04

License Type: Radiography

Priority: 1

Inspector: SS

File No.: 4

Licensee: Exam, Inc.

Location: Chattanooga, TN

Inspection Type: Routine, Announced

Inspection Date: 8/2/00

License No.: R-33138-A03

License Type: Radiography

Priority: 1

Inspector: JP

J/B

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File No.: 5

Licensee: Baptist Dekalb Hospital

Location: Smithville, TN

Inspection Type: Routine, Unannounced

Inspection Date: 2/9/00

License No.: R-21002-H01

License Type: Medical

Priority: 3

Inspector: JP

Comments:

- a) Report did not document observation of activities involving licensed materials.
- b) Five violations cited, three were not fully supported -
 - 1) First violation was for failure to have records available for dose calibrator tests; Requirement statement in citation was for the performance of the tests, not record retention;
 - 2) Requirement statement for third violation indicated that training for ancillary staff was required. "Contrary to" statement indicated that "...licensee representatives were not aware of such training for janitors....," which does not establish that a violation occurred;
 - 3) The fourth violation was for failure to perform contamination surveys on radioactive material packages at receipt. Licensee's response provided evidence of surveys, but results were recorded in "mR/hr" rather than levels of contamination, i.e., dpm.
- c) Violations were not described in inspection report, other than a check mark (✓) in a "NO" box on the form, without enough information to indicate what actually happened. (e.g., What was required? When did the violation occur? Why did violation occur? Who was involved in violation? How was the violation identified?)

File No.: 6

Licensee: Well Surveys, Inc.

Location: Crossville, TN

Inspection Type: Routine, Unannounced

Inspection Date: 8/24/98

License No.: R-18009-C02

License Type: Well Logging

Priority: 3

Inspector: JP

Comment:

- a) One violation identified - failure to perform annual reviews and inspections of well logging supervisors. Report indicated that licensee had not conducted licensed activities in the State of Tennessee since 1995. Did not indicate if work had been performed in other jurisdictions or not at all since that time. If no work performed, reviews and inspections may not have been required, or necessary. Documentation of violation in report did not address how long violation had occurred, or reason for violation (root cause).

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File No.: 7

Licensee: Syncor

Location: Nashville, TN

Inspection Type: Routine, Unannounced

Inspection Date: 4/20/00

License No.: R-19149-A00

License Type: Radiopharmacy

Priority: 1

Inspector: KL

Comments:

- a) One violation identified - failure to calibrate survey instrument at required frequency. Documentation of violation did not address why violation occurred.
- b) Documentation of licensee performance assessment was through observation of activities or interview of personnel.

Inspection Type: Routine, Unannounced

Inspection Date: 8/5/99

Priority: 1

Inspector: KL

Comments:

- a) Three violations identified:
 - 1) Failure to maintain written confirmation of receipts of waste shipments;
 - 2) No record of disposals made by decay in storage; and
 - 3) Failure to report a diagnostic misadministration.
- b) No details in report documenting violations 1) and 2) other than "NO" with a check mark (✓). Based on the State's regulations regarding misadministration reporting, since the licensee did not administer the dosage, it was not required to report the event.

File No.: 8

Licensee: Mobile Tech Service

Location: Athens, TN

Inspection Type: Routine, Unannounced

Inspection Date: 8/27/99

License No.: R-54007-G00

License Type: Mobile Nuclear Medicine

Priority: 2

Inspector: MW

Inspection Type: Routine, Unannounced

Inspection Date: 8/14/97

Priority: 2

Inspector: BS

Comment:

- a) One violation identified - records of total effective dose equivalent not available. Documentation in inspection report appears to contradict violation, since the results of personnel monitoring were included. Not clear what violation occurred.

File No.: 9

Licensee: AERC

Location: Oak Ridge, TN

Inspection Type: Routine, Unannounced

Inspection Date: 5/2-4/00

License No.: R-01068-B04

License Type: Decontamination Service

Priority: 1

Inspector: JT, CJ

Comments:

- a) Seven violations identified, four not fully supported or contradicted by information in inspection report.

- 1) "Requirement" statement for first violation limited time between receipt and shipment of waste to no more than 365 days. "Contrary to" statement indicated that licensee did not have a tracking system to demonstrate compliance, which does not establish a violation of requirement. Inspection report did not include examples of typical time that waste had resided onsite, i.e., "review of receipt records indicated that container number xxxxx was received on and was shipped out on, a period in excess of 365 days;"
- 2) "Requirement" statement for second violation referenced license possession limits. "Contrary to" statement indicated that licensee did not have a tracking system to demonstrate compliance, which does not establish a violation of requirement. Inspection report does not discuss projected throughput of licensed materials, or Inspector's tally of material onsite at time of inspection, or likelihood that licensee could exceed possession limits, i.e., licensee typically operating at 90 to 95 percent of limits;
- 3) Sixth violation was for failure to include wording in contracts to establish ability to return radioactive materials to customers from whom materials were received. The violation is not substantiated. The inspection report indicated that this issue was "unresolved" until the notice of non-compliance from the previous (3/2-4/99) inspection was issued on April 19, 2000. This inspection identified the current violation as a "repeat," based on three weeks notice from the previous violation. The reviewer questions whether the licensee had sufficient time to respond to the first violation prior to issuance of the repeat notice. The report also describes the issue as "unresolved" since Department management could not decide how specific the contract language had to be. The report included a contract proposal (which may be proprietary in nature) which includes the terms and conditions that the constraints of licensee's State of Tennessee license shall be passed on to the customer and made part of the contract;
- 4) Seventh violation was for failure to demonstrate compliance with the public dose limits. The violation is not substantiated. The report includes the results of annual TLD fence line monitoring. The highest recorded dose was 170 millirem in a year, with an occupancy factor of "1." A license condition allows 500 millirem in a year based on TLD results.

File No.: 10

Licensee: ABB Combustion Engineering

Location: Chattanooga, TN

Inspection Type: Routine, Unannounced

Inspection Date: 12/21/99

License No.: R-33001-B

License Type: Radiography

Priority: 1

Inspector: SS

Comments:

- a) Inspection only conducted with RSO. Management and radiographic personnel not contacted.
- b) Licensee authorized for in-house radiography, no observations or request for demonstration of work by inspector.
- c) Report indicated complete review of all records.

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**Inspection Type: Routine, Unannounced
Inspection Date: 12/17/98**

**Priority: 1
Inspector: JP**

Comments:

- a) Inspection only conducted with RSO. Management and radiographic personnel not contacted.
- b) Licensee authorized for in-house radiography, no observations or request for demonstration of activities by inspector.

File No.: 11

Licensee: H&H X-Ray Services

License No.: R-L1003-D03

Location: Finley, TN

License Type: Radiography

Inspection Type: Routine, Unannounced

Priority: 1

Inspection Date: 1/20/00

Inspectors: JG, GS

Comments:

- a) Five violations identified, two not supported by report.
 - 1) Second violation was for failure to conduct quarterly inventory; however, licensee only possessed one exposure device. Report states that record of inventory not available, not that it was not performed.
 - 2) The fourth violation was for failure to leak test sealed sources at six month intervals; however, report indicated that sources were exchanged and returned to supplier before leak testing would be required.
- b) Report documents a quarterly exposure of 2800 millirem without any explanation or inspector follow up.
- c) No observation of activities or request for demonstration of activities by inspector.

File No.: 12

Licensee: Law Engineering

License No.: R-19123-B05

Location: Nashville, TN

License Type: Portable Gauge

Inspection Type: Routine, Unannounced

Priority: 5

Inspection Date: 5/31/00

Inspectors: KB, BM

Comments:

- a) Two violations identified.
 - 1) Failure to maintain records of receipt/disposal. The licensee was unable to produce a receipt record for one of seven gauges possessed;
 - 2) Failure to turn personnel monitoring devices in for processing quarterly. The licensee indicated that if monitoring devices were not used during a quarter, they were not turned in for processing.
- b) Inspectors did not contact any gauge users or RSO, entire inspection spent with assistant vice president.
- c) Documentation of program scope does not address number of authorized users or frequency of use.

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File No.: 13

Licensee: Central Pharmacy Services

Location: Nashville, TN

License Type: Radiopharmacy

Inspection Date: 2/17/99

License No.: R-19214

Inspection Type: Routine, Unannounced

Priority: 1

Inspectors: KL, AH

Comments:

- a) Six violation identified, three not fully supported.
 - 1) First violation was for failure to ensure that dose to members of the public does not exceed 100 millirem in a year, which appears to indicate that a member of the public received greater than the limit. The report indicates that a more appropriate citation would have been failure to adequately evaluate public dose. The report does not address likelihood that a member of the public exceeded the limit. Empirically, it appears that no one likely would have exceeded the limit;
 - 2) Fifth and sixth violations were for recordkeeping requirements. The report provides no discussion of the violations, other than that the records were not available.
- b) The licensee's response to the first violation indicated that they intended to request a license amendment extending the restricted area boundary. The response did not include an evaluation of likely public dose, and, therefore, did not respond to the non-compliance. The response acknowledgment did not address the licensee's failure to address the violation.

File No.: 14

Licensee: Radiosurgical Center of Memphis

Location: Memphis, TN

Inspection Type: Routine, Unannounced

Inspection Date: 6/19/00

License No.: R-79245

License Type: Gamma Knife

Priority: 1

Inspector: AG

Comment:

- a) Entire inspection consisted of record review. No activities observed. Cannot determine by inspection report if the people contacted during the inspection were interviewed about their knowledge of license requirements and activities.

Inspection Type: Routine, Unannounced

Inspection Date: 9/18/97

Priority: 1

Inspector: AG

Comment:

- a) Entire inspection consisted of record review. No activities observed. Cannot determine by inspection report if any interviews were conducted.

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File No.: 15

Licensee: Nuclear Imaging Mgt. Corp.

Location: Gallatin, TN

Inspection Type: Routine, Unannounced

Inspection Date: 12/31/99

License No.: R-83009-G04

License Type: Mobile Nuclear Medicine

Priority: 2

Inspector: AH

Comments:

- a) Inspection report does not indicate size of program, such as number of staff.
- b) Results of independent and confirmatory surveys do not include numerical values.
- c) Report does not document any observation of licensed activities.
- d) Cannot determine from report if inspection included visits to any licensee client facilities.

File No.: 16

Licensee: GA Technical Services

Location: Nashville, TN

Inspection Type: Routine, Announced

Inspection Date: 5/31/00

License No.: R-19168-G05

License Type: Portable Gauge

Priority: 5

Inspectors: KB, BM

Comments:

- a) Six violations identified, three not fully supported.
 - 1) First violation was for failure to perform sealed source leak tests at six month intervals. The report did not provide any information other than not performed at required interval, e.g., for all gauges or only a few? What was the frequency of testing? Were gauges used beyond the period that leak testing was required to have been performed? Why did violation occur? Were tests current as of the inspection?;
 - 2) Second violation was for failure to make records of personnel monitoring available. The report only indicates that "most" reports for 1998 could not be found. Report does not indicate if monitoring would be required (not likely under State's radiation protection regulations (i.e., 10 CFR Part 20 equivalent)).
 - 3) Fifth violation was for failure to post the storage area with a "CAUTION-RADIOACTIVE MATERIALS" sign. Based on inspectors' surveys, posting would not be required pursuant to State regulations (1200-2-5-.13, "Exceptions to posting requirements). Licensee's response to violation included a picture of new posting, which was a "CAUTION - RADIATION AREA" sign, which was not appropriate for the area (i.e., <5 mR/hr at 30 centimeters from the surface of the container).

File No.: 17

Licensee: ATG Catalytic, LLC

Location: Kingston, TN

Inspection Type: Routine, Unannounced

Inspection Date: 1/24-2/1/00

License No.: R-73020-K00

License Type: Waste Incinerator

Priority: 1

Inspectors: MA, RP, RF, JK, CB

Comments:

- a) Inspection identified twelve violations. Five were either not supported or were of indeterminate safety significance.

- 1) First violation was for failure to demonstrate compliance with release concentration limits for hydrogen sulfide scrubber blowdown. The requirement statement restated the license condition specifying the release concentration limits. The "Contrary to" statement of the violation indicated that the licensee failed to demonstrate compliance with release limits. The violation is not established. Furthermore, the inspection report concluded "...ATG does not appear to have released any material that would have been outside the limits defined in their license." Therefore, it appears that the licensee had established compliance through the use of administrative controls, which was documented in the report. The inspection identified concerns regarding the knowledge of some workers involved in the referenced process and a mathematic error in the spreadsheet used to maintain records of releases. However, these issues were not addressed in the letter transmitting the inspection results to the licensee;
- 2) Third violation was for failure to identify and control areas as contaminated when removable contamination levels exceed 1000 disintegrations per minute per 100 square centimeters. The level identified through the inspector's independent surveys was 1292 disintegrations per minute per 100 square centimeters. First, the requirement cited appears to only become applicable once the licensee identifies the contamination (i.e., identify the area as contaminated and control the area). Since the licensee was not aware of the contamination, it could not reasonably be expected to meet the license requirement. Second, it is difficult to establish that the inspector's wiping technique exactly approximated 100 square centimeters. Since it is common to "over wipe" areas during surveys, the actual contamination level was likely something less than 1292 disintegrations per minute per 100 square centimeters. Third, despite the likely variability in the area wiped by the inspector, issuing a violation for levels of contamination that close to the limit appears to be a heavy-handed approach to the inspector's perceived problem;
- 3) Sixth violation was for soil and sediment radioactive concentration levels exceeding the license limit of 5 picocuries per gram. The State's analysis of the inspector's sample was 7 picocuries per gram. The report does not discuss the relative safety significance of this finding. The sample chain-of-custody sheet was not completed. Review of the analysis results indicated that at least three individuals handled the sample. The failure of the State to maintain proper chain-of-custody limits the States ability to properly defend the results of their analysis;
- 4) Eighth violation was for failure to make air balance tests for the radiation controlled areas available for inspection. The only test that was not available, according to the inspection report, was for September 1998. The report also indicates that the raw data from the 9/98 test was available, but does not indicate whether the data was enough to determine the results. Since information was available to the inspectors, the reviewer was not able to determine the basis for this violation. The report does not discuss the safety significance of the violation;
- 5) Ninth violation was for failure to perform particulate removal efficiency testing on main building HEPA system semi-annually. The test dates referenced in the inspection report were December 18, 1998 and July 27, 1999, which indicates that the test was one month late, depending on the State's interpretation of "semi-annually;"

INSPECTOR ACCOMPANIMENTS

In addition, the following inspection accompaniments were performed as part of the on-site IMPEP review.

Accompaniment No.: 1

Licensee: St. Jude Research Med. Center

Location: Memphis, TN

Inspection Type: Routine, Unannounced

Inspection Date: 8/31/00

License No.: R-79056-B05

License Type: Limited Medical

Priority: 3

Inspector: AG

Do not deduct License

*no reduction
TAG
2-9-00*

Comments:

- a) Walk through not conducted until 4 - 5 hours into inspection. Initial phase of inspection (first 4 hours) limited to record review in RSO's office.
- b) Inspector did not observe any use of radioactive material.
- c) Inspector did not interview any licensee personnel regarding their use of material or understanding of radiation safety procedures.
- d) Inspection consisted of record review and compliance verification. The inspector did not assess licensee performance, adequacy of operations, or personnel knowledge of operating/emergency procedures.

Accompaniment No.: 2

Licensee: Volunteer NTD, Inc.

Location: Chattanooga, TN

Inspection Type: Routine, Announced

Inspection Date: 8/2/00

License No.: R-331339-C04

License Type: Industrial Radiography

Priority: 1

Inspector: SS

Comments:

- a) Inspection consisted of record review and compliance verification. The inspector did not assess licensee performance, adequacy of operations, or personnel knowledge of operating/emergency procedures.
- b) Licensee had gone through 2 inspection cycles without observation of any jobsite work. Yet the inspector did not consider/propose reinspection during time of year that licensee is active.

Accompaniment No.: 3:

Licensee: EXAM, Inc.

Location: Chattanooga, TN

Inspection Type: Routine, Announced

Inspection Date: 8/2/00

License No.: R-33138-A03

License Type: Industrial Radiography

Priority: 1

Inspector: JP

Comments:

- a) At entrance, owner indicated that crew was at jobsite. No attempt made to determine location, or span of jobsite.
- b) Inspection consisted of record review and compliance verification. The inspector did not assess licensee performance, adequacy of operations, or personnel knowledge of operating/emergency procedures.

Accompaniment No.: 4

Licensee: Quality Consultants & Inspections, Inc.

Location: Knoxville, TN & jobsite

Inspection Type: Routine, Announced

Inspection Date: 8/3/00

License No.: R-47144-K98

License Type: Industrial Radiography

Priority: 1

Inspector: JT

Comments:

- a) During the inspection, the licensee indicated that it had recently changed its name to quality "control" versus quality "consultants." In the letter transmitting the inspection results, the inspector recommended that the licensee submit an amendment request notifying the State of the change in name. This should have been addressed as a non-compliance, rather than a recommendation.
- b) During the inspection, the licensee related a recent (time frame unspecified) transportation accident involving its Memphis satellite office. The inspector did not appear to be aware of the incident at the time of the inspection, and did not pursue the issue.

Accompaniment No.: 5

Licensee: Baptist Hospital

Location: Nashville, TN

Inspection Type: Routine, Unannounced

Inspection Date: 8/4/00

License No.: R-19044-J00

License Type: Limited Medical

Priority: 3

Inspector: BM

Comments:

- a) Entrance and exit with RSO only. Management not contacted during inspection.
- b) No observation of activities performed during inspection. During nuclear medicine department inspection, reviewer observed six opportunities to observe patient administration, including a 100 millicurie iodine-131 therapy, and inspector focused exclusively on record review.
- c) Inspector did not interview any licensee personnel regarding their use of material or understanding of radiation safety procedures.

APPENDIX D

LICENSE CASEWORK REVIEWS

NOTE: ALL CASEWORK LISTED WITHOUT COMMENT ARE INCLUDED FOR COMPLETENESS ONLY; NO SIGNIFICANT COMMENTS WERE IDENTIFIED BY THE IMPEP TEAM.

File No.: 1

Licensee: Aerojet Ordnance Tennessee

Location: Jonesborough, TN

Amendment No.: 133

Date Issued: 7/6/00

License No.: S-90009-H96

License Type: Source Material

Type of Action: Amendment

License Reviewer: SS

Amendment No.: 125

Date Issued: 9/1/99

Type of Action: Amendment

License Reviewer: JG

File No.: 2

Licensee: American Ecology Recycle Center, Inc.

Location: Oak Ridge, TN

Amendment No.: 139

Date Issued: 6/8/00

License No.: R-01037-B04

License Type: Waste Processor/Decontamination Services

Type of Action: Amendment

License Reviewer: CA

Amendment No.: 128

Date Issued: 12/25/99

Type of Action: Renewal

License Reviewer: CA

Comment:

- a) Licensee letter dated 3/18/98 referred to meeting held on 1/26/98 but no documentation of meeting in file.

Amendment No.: 129

Date Issued: 3/11/99

Type of Action: Amendment

License Reviewer: RF

File No.: 3

Licensee: ATG Catalytics LLC

Location: Kingston, TN

Amendment No.: 13

Date Issued: 4/28/97

License No.: R-73020-K00

License Type: Waste Processor

Type of Action: Amendment

License Reviewer: JG

Comment:

- a) All licensee letters and Department documents are proprietary information, maintained in a separate file. It is not clear why Department documents are considered proprietary.

File No.: 4

Licensee: Cardiology Associates of East Tennessee, P. C.

Location: Knoxville, TN

Amendment No.: 9

Date Issued: 2/6/98

License No.: R-47151-A05

License Type: Medical Private Practice

Type of Action: Amendment

License Reviewer: CA

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**Amendment No.: 13
Date Issued: 3/16/00**

**Type of Action: Amendment
License Reviewer: SK**

**File No.: 5
Licensee: Chattanooga Central Pharmacy
Location: Chattanooga, TN
Amendment No.: 11
Date Issued: 5/16/00**

**License No.: R-33133-A02
License Type: Radiopharmacy
Type of Action: Amendment
License Reviewer: RP**

**Amendment No.: 10
Date Issued: 4/7/00**

**Type of Action: Amendment
License Reviewer: GB**

**Amendment No.: N/A
Date Issued: 1/8/97**

**Type of Action: New
License Reviewer: RW**

**File No.: 6
Licensee: Chattanooga Central Pharmacy
Location: Chattanooga, TN
Amendment No.: N/A
Date Issued: 2/24/97**

**License No.: R-33134-B02
License Type: Service License
Type of Action: New
License Reviewer: RW**

Comment:

- a) Inspection list indicates this license is categorized as a leak test service with inspection Priority 7. It should be reviewed to determine if it is more appropriately instrument calibration, inspection Priority 5, or other services, inspection Priority 3. License reviewer interviewed stated that reviewers do not categorize licensees for inspection purposes.

**Amendment No.: 3
Date Issued: 8/17/99**

**Type of Action: Amendment
License Reviewer: RP**

**File No.: 7
Licensee: CRMC Cancer Center
Location: Cookeville, TN
Amendment No.: N/A
Date Issued: 4/4/00**

**License No.: R-71026-D10
License Type: Brachytherapy/Strontium-90 eye application
Type of Action: New
License Reviewer: RP**

**Amendment No.: 1
Date Issued: 5/8/00**

**Type of Action: Amendment
License Reviewer: SK**

Comment:

- a) No inquiry regarding if this indicated a change of ownership; during IMPEP review, supervisor agreed with reviewer that this appears to be name change only and does not require further information.

**Amendment No.: 2
Date Issued: 5/25/00**

**Type of Action: New
License Reviewer: RP**

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File No.: 8

**Licensee: Fort Sanders Parkwest Medical Center
Location: Knoxville, TN
Amendment No.: 56
Date Issued: 2/17/00**

**License No.: R-47047-J04
License Type: Medical Institution
Type of Action: Amendment
License Reviewer: SK**

**Amendment No.: 50
Date Issued: 7/21/98**

**Type of Action: Amendment
License Reviewer: RP**

File No.: 9

**Licensee: GE Inspection Services, Inc.
Location: Kingspoint, TN
Amendment No.: 25
Date Issued: 3/30/00**

**License No.: R-82045-C01
License Type: Field Radiography
Type of Action: Amendment
License Reviewer: SK**

**Amendment No.: 16
Date Issued: 10/17/97**

**Type of Action: Amendment
License Reviewer: RW**

File No.: 10

**Licensee: GTS Duratek Bear Creek, Inc.
Location: Gallaher Road Facility, Oak Ridge, TN
Amendment No.: 52
Date Issued: 1/16/97**

**License No.: R-73006-A02
License Type: Waste Processor
Type of Action: Renewal
License Reviewer: CA**

Comment:

- a) Most of the letters listed in these conditions, containing commitments and release criteria, are considered proprietary and separately filed. Review of documents in the proprietary file indicate that independent dose assessments were performed by the Department at the time of initial approval of these activities, but it is unclear why the Department assessments are considered to be proprietary.

**Amendment No.: 59
Date Issued: 12/8/97**

**Type of Action: Amendment
License Reviewer: JG**

File No.: 11

**Licensee: GTS Duratek Bear Creek, Inc.
Location: Metal Melt Facility, Oak Ridge, TN
Amendment No.: 50
Date Issued: 6/2/00**

**License No.: R-73016-B04
License Type: Waste Processor
Type of Action: Amendment
License Reviewer: JG**

Comment:

- a) Licensee letter dated 11/29/99 refers to telephone call from reviewer on 11/29/99; licensee letter dated 5/8/00 refers to telephone call from reviewer on 5/5/00; however, there is no reviewer record of telephone calls in the file.

**Amendment No.: 45
Date Issued: 2/11/99**

**Type of Action: Renewal
License Reviewer: CA**

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File No.: 12

**Licensee: Jackson Utility Division
Location: Jackson, TN
Amendment No.: N/A
Date Issued: 6/29/00**

**License No.: R-57012-J00
License Type: Portable Gauge
Type of Action: Termination
License Reviewer: SK**

File No.: 13

**Licensee: Kosa Environmental Restoration
Location: Oak Ridge, TN
Amendment No.: N/A
Date Issued: 4/16/99**

**License No.: R-01086-D09
License Type: Laundry
Type of Action: New
License Reviewer: CA**

File No.: 14

**Licensee: K.S. Ware and Associates, LLC
Location: Nashville, TN
Amendment No.: 1
Date Issued: 4/7/99**

**License No.: R-19218-D02
License Type: Portable Gauge
Type of Action: Amendment
License Reviewer: GB**

Comment:

a) Letter listed as 3/17/98 should be 3/17/99.

**Amendment No.: N/A
Date Issued: 4/23/97**

**Type of Action: New
License Reviewer: RW**

File No.: 15

**Licensee: LAW Engineering and Environmental Services, Inc.
Location: Chattanooga, TN
Amendment No.: 2
Date Issued: 8/11/00**

**License No.: R-33140-F09
License Type: Portable Gauge
Type of Action: Amendment
License Reviewer: RP**

**Amendment No.: N/A
Date Issued: 6/22/99**

**Type of Action: New
License Reviewer: RW**

File No.: 16

**Licensee: M4 Environmental, L.P.
Location: Oak Ridge, TN
Amendment No.: -25
Date Issued: 1/11/99**

**License No.: R-01077-C01
License Type: Waste Processor
Type of Action: Amendment
License Reviewer: RF**

**Amendment No.: 24
Date Issued: 12/21/98**

**Type of Action: Amendment
License Reviewer: RF**

**Amendment No.: 23
Date Issued: 12/10/98**

**Type of Action: Amendment
License Reviewer: RF**

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File No.: 17

Licensee: Nuclear Fuel Services, Inc.

Location: Erwin, TN

Amendment No.: N/A

Date Issued: 3/17/99

License No.: R-86009-L02

License Type: Waste Processor

Type of Action: Termination

License Reviewer: CA

Comment:

- a) The license was terminated without requirement for surveys. This location is currently authorized for activities pursuant to NRC License No. SNM-124 and final site decommissioning will be conducted under that license.

File No.: 18

Licensee: Parkway Cardiology Associates, P. C.

Location: Oak Ridge, TN

Amendment No.: 14

Date Issued: 2/9/00

License No.: R-01089-H00

License Type: Medical Private Practice

Type of Action: Amendment

License Reviewer: SK

Amendment No.: 13

Date Issued: 8/12/99

Type of Action: Amendment

License Reviewer: RP

File No.: 19

Licensee: Radiosurgical Center of Memphis, L.P.

Location: Memphis, TN

Amendment No.: 14

Date Issued: 1/19/00

License No.: R-79245-F05

License Type: Gamma Stereotactic

Type of Action: Amendment

License Reviewer: SS

Amendment No.: 10

Date Issued: 9/8/98

Type of Action: Amendment

License Reviewer: RP

File No.: 20

Licensee: Schering Plough Health Care Products, Inc.

Location: Memphis, TN

Amendment No.: N/A

Date Issued: 12/17/99

License No.: R-79208-A04

License Type: Laboratory

Type of Action: Termination

License Reviewer: CA

File No.: 21

Licensee: Summit Ancillary Services

Location: Knoxville, TN

Amendment No.: 8

Date Issued: 10/14/99

License No.: R-47159-E01

License Type: Medical Private Practice

Type of Action: Amendment

License Reviewer: SK

File No.: 22

Licensee: Teledyne Brown Engineering

Location: Knoxville, TN

Amendment No.: N/A

Date Issued: 7/11/00

License No.: R-47173-G10

License Type: Laboratory, Analytical Services

Type of Action: New

License Reviewer: CA

Comment:

- a) No program code assigned on inspection list; may be laboratory R&D, Priority 5 inspection or other services, Priority 3 inspection.

File No.: 23

Licensee: The University of Memphis

Location: Memphis, TN

Amendment No.: 27

Date Issued: 2/15/00

License No.: N-79042-L03

License Type: Sealed Neutron Source/Academic Institution

Type of Action: Amendment

License Reviewer: SK

File No.: 24

Licensee: The University of Memphis

Location: Memphis, TN

Amendment No.: 36

Date Issued: 12/2/99

License No.: R-79073-K04

License Type: Laboratory

Type of Action: Amendment

License Reviewer: SK

Amendment No.: 34

Date Issued: 6/29/99

Type of Action: Amendment

License Reviewer: GB

File No.: 25

Licensee: Vanderbilt University

Location: Nashville, TN

Amendment No.: 94

Date Issued: 2/17/00

License No.: R-19021-E05

License Type: Academic/Medical Broad

Type of Action: Amendment

License Reviewer: CA

Comment:

- a) Adds a license condition specifying patient release criteria. This was issued at the discretion of the Department to all licenses authorizing therapeutic nuclear medicine procedures.

Amendment No.: 89

Date Issued: 9/15/99

Type of Action: Amendment

License Reviewer: CA

Amendment No.: 84

Date Issued: 9/17/98

Type of Action: Amendment

License Reviewer: CA

File No.: 26

Licensee: Manufacturing Sciences Corp.

License No.: S-01046-L00; R-01078-L00

Location: Oak Ridge, TN

License Type: Manufacturing/Decontamination

Amendment Nos.: 56, 57; 18, 19, 20

Type of Action: Amendment

Date Issued: 4/8/99, 7/19/99, 10/1/99

License Reviewer: JK, JG

Comment:

- a) The comments generated from the team review of this series of amendments for the MSC facility is being addressed in a separate report due to the detailed nature of the review.

APPENDIX E

INCIDENT CASEWORK REVIEWS

NOTE: ALL CASEWORK LISTED WITHOUT COMMENT ARE INCLUDED FOR COMPLETENESS ONLY; NO SIGNIFICANT COMMENTS WERE IDENTIFIED BY THE IMPEP TEAM.

File No.: 1

Licensee: Non-licensee - White Salvage

Site of Incident: Ripley, TN

Date of Incident: 1/6/97

Investigation Date: 1/6-13/97

License No.: N/A

Incident Log No.: TN-97-002

Type of Incident: Facility Contamination

Type of Investigation: On-site

Summary of Incident and Final Disposition: Contaminated aluminum was melted at the salvage company resulting in contamination of the unlicensed facility. The contamination was reportedly Am-241. This site was decontaminated by a contractor licensee. Two employees of the salvage yard went to RE/ACTS for bioassays. The file states "no americium was detected." There was no formal report of the bioassay results in the file.

Comment:

- a) Documentation is missing from the file, specifically the records of the decontamination of the site, the ultimate disposition of the material, and the estimated activity involved.

File No.: 2

Licensee: Clinical Pharmacy Services

Site of Incident: Gray, TN

Date of Incident: 3/1/00

Investigation Date: 3/6/00

License No.: R 90033 C 2001

Incident Log No.: TN-00-038

Type of Incident: Contamination of a licensed site:

Type of Investigation: On-site

Summary of Incident and Final Disposition: A nuclear pharmacy spilled 150 millicuries of I-131 in the restricted area. After initial decontamination attempts, the pharmacy elected to close the area to allow the material to decay.

Comments:

- a) There was insufficient information in the report of the incident to determine public dose resulting from the incident. The report stated that the impact on the releases could not be evaluated until the end of the year. A preliminary assessment could have been made by obtaining additional information to determine whether or not the pharmacy should have restricted future releases more stringently than normal until the end of the year.
- b) The report indicated that employees (and their dosimetry) became contaminated during the initial attempt to clean up the spill, but there was no assessment of skin dose as a result of the contamination, nor any follow-up with respect to the assessment of external dose to the employees whose dosimeters (both extremity and whole body) had become contaminated.

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File No.: 3

Licensee: Baptist Memorial Hospital

Site of Incident: Memphis, TN

Date of Incident: 1/30/99

Investigation Date: 2/1/99

License No.: R 79032 F 2004

Incident Log No.: TN-99-034

Type of Incident: Exposure to member of public

Type of Investigation: Phone

Summary of Incident and Final Disposition: The hospital's RSO discovered that a patient's relative had spent the night on a cot in the patient's room. The patient had received 100 millicuries of I-131 for the treatment of thyroid carcinoma. The hospital's dose assessment calculated the member of the public's dose to be approximately 300 millirem. The RSO discussed the dose assigned with the member of the public, and provided additional training to the hospital staff on this issue.

Comment:

- a) Although the hospital appeared to have this event under control, an on-site visit may have been appropriate given that this licensee was 61% overdue for inspection at the time of the incident.

File No.: 4

Licensee: GTS Duratek

Site of Incident: Oak Ridge, TN

Date of Incident: 6/29/98

Investigation Date: 6/30/98

License No.: R 73018 E 2001

Incident Log No.: TN-98-089

Type of Incident: HEPA filter failure

Type of Investigation: Phone

Summary of Incident and Final Disposition: An employee found HEPA filter material on the ground outside a stack. He brought the ventilation down to 20% of normal, visually inspected the filter bank and found additional material blowing around inside the bank; fourteen of thirty-two pre- and intermediate filters were installed backwards; two pre-filters not installed at all; two intermediate filters and their associated HEPA filters with their media pack completely blown out. The licensee replaced the filters, and in 10/98 provided additional training to the staff on proper filter installation.

Comments:

- a) There was no written report by the inspector involved in this investigation.
- b) This event appears significant enough to have required an on-site response.
- c) The data provided by the licensee was not sufficient to determine whether there was an actual potential for significant releases.
- d) The licensee's notation that immediate corrective actions included "three hours of decon in P-4 - water, sludge and filter media," but there was no documented follow-up by the inspector with respect to this comment. It appears to be inconsistent with the inspector's notes in file stating there were no releases as a result of this event.

File No.: 5

Licensee: GTS Duratek - West (Frank W. Hake and Assoc.)

Site of Incident: Memphis, TN

Date of Incident: 11/23/99

Investigation Date: 11/23/99

License No.: R 79171 | 2001

Incident Log No.: TN-99-164

Type of Incident: Fire

Type of Investigation: On-site

Summary of Incident and Final Disposition: A spark from a cutting torch ignited material in the dust collection system, as the licensee was cutting apart a contaminated moisture separator. At the time of the fire, the alarm activated, and all employees were evacuated. The local fire department responded, and put out the fire. There were no injuries. The firemen's clothing had "marginal" contamination and it was retained by the licensee. According to the licensee, there were no significant releases as a result of this event, and damage was limited to replaceable filter cartridges.

Comments:

- a) There was no written report by the inspector involved.
- b) The information reported by the licensee regarding release concentrations at the stack and at the "roll-up" door were insufficient to determine the impact of the releases. The licensee stated that the dose at the fence-line was 2E-4 millirem over four hours, but there did not appear to be any independent confirmation of the calculation, nor assessment of the method by which it was reached.
- c) The licensee stated contamination of the clothing of two of the firefighter's responding to the incident was "marginal," although they retained the clothing. There was no indication of the actual levels of contamination on the clothing, nor the estimated activity involved in the incident.
- d) The licensee reported that mixed fission products were involved, but there was no statement regarding the potential for alpha contamination from this event.
- e) The file indicates that bioassay results and results of the nasal smears would be sent by the licensee, but there were no results in the file.
- f) There did not appear to be an independent evaluation of the licensee's root cause analysis or corrective actions. A similar incident occurred three months later at the same facility.

File No.: 6

Licensee: GTS Duratek - West (Frank W. Hake and Assoc.)

Site of Incident: Memphis, TN

Date of Incident: 2/4/00

Investigation Date: 2/4/00

License No.: R 79171 | 2001

Incident Log No.: TN-00-019

Type of Incident: Fire

Type of Investigation: Phone

Summary of Incident and Final Disposition: As the licensee was cutting apart a turbine rotor, a spark from a cutting torch ignited material in the dust collection system. At the time of the fire, the sprinkler system activated and extinguished the fire. According to the licensee there was no damage to the filters and no significant releases as a result of this event.

Comments:

- a) There was no written report by the inspector involved.
- b) This event appears similar to one which occurred at this facility just three months prior, yet there was no site visit as a result of this report.

- c) There is no release data in the file, just the licensee's statement that the "air sample [was] found to be within acceptable release limits."

File No.: 7
Licensee: Stone's River Hospital
Site of Incident: Woodbury, TN
Date of Incident: 8/19/99
Investigation Date: 10/14/99

License No.: I 08002
Incident Log No.: TN-99-118
Type of Incident: Misadministration
Type of Investigation: Next inspection

Summary of the Incident and Final Disposition: The licensee originally reported that 12.5 millicuries of I-131 had been administered to a patient who was supposed to receive 200 microcuries of I-123. The hospital corrected this report, however, and stated the actual dosage administered was 12.5 microcuries of I-131. The label from the pharmacy indicated that the dosage prepared was 12.5 microcuries of I-131. The hospital counseled the technologist involved and notified the pharmacy of their error in delivering a dosage other than that prescribed. The Division followed-up on this incident during the 10/99 inspection.

File No.: 8
Licensee: Methodist Hospital
Site of Incident: Memphis, TN
Date of Incident: 4/21/98
Investigation Date: 4/23/98

License No.: R 79027 G 2004
Incident Log No.: TN-98-050
Type of Incident: Equipment failure
Type of Investigation: Phone

Summary of Incident and Final Disposition: The licensee reported that an HDR source prematurely retracted during treatment, and the treatment computer locked up. There was no misadministration as a result of this event. The unit was serviced by the manufacturer. There had been a malfunction in a computer board and the board was replaced.

File No.: 9
Licensee: Non-licensee - Federal Express
Site of Incident: Memphis Airport
Date of Incident: 10/22/98
Investigation Date: Not reported in file

License No.: N/A
Incident Log No.: TN-98-164
Type of Incident: Contamination Event
Type of Investigation: Not reported in file

Summary of Incident and Final Disposition: This event involved the spill of 100 millicuries of I-131 outside of the Memphis Airport. A contractor licensee decontaminated the site to the extent possible, then used paint and sealants to prevent further spread of contamination until the material decayed.

Comments:

- a) There was no written report by the inspector involved.
b) Most of the documentation relative to this event was not in the incident file. There was a note stating that "the rest of the file is in Memphis."

File No.: 10

Licensee: G.E. Inspection Services

Site of Incident: Kingsport, TN

Date of Incident: 7/15/99

Investigation Date: 7/19/99

License No.: R 82045 C 2001

Incident Log No.: TN-99-095

Type of Incident: Overexposure

Type of Investigation: On-site

Summary of Incident and Final Disposition: A radiographer's assistant was exposed to 17 rem due to an improper survey of the camera, and the failure to have an alarming dose-rate meter with him. According to the licensee, the source had not been fully retracted, and the Assistant Radiographer involved did not perform a proper survey to detect this. The licensee suspended operations at their Kingsport, TN site until retraining and testing could be completed. The two employees involved were removed from radiographic operations for one year. The site RSO was removed from his position. The Division is pursuing escalated enforcement sanctions against this licensee.

File No.: 11

Licensee: Non-licensee - Federal Express

Site of Incident: BFI Landfill/Federal Express facility

Date of Incident: 3/2/00

Investigation Date: 3/2/00

License No.: N/A

Incident Log No.: TN-00-036

Type of Incident: Loss of Material

Type of Investigation: On-site

Summary of Incident and Final Disposition: BFI reported that waste from Federal Express had alarmed their radiation monitors. Federal Express had mis-placed a package containing 1 curie of I-131, and it accidentally went out with their normal waste stream. Subsequently, the container was found, damaged, but the contents were not leaking. The contents were ultimately shipped to the original intended recipient, but the shipment was not labeled in accordance with Department of Transportation regulations.

Comment:

- a) The issue regarding the improper shipment to Massachusetts of the I-131 after it was recovered from the waste has not yet been resolved.

File No.: 12

Licensee: Mid-Continent Labs, Inc.

Site of Incident: Arkansas

Date of Incident: 3/2/99

Investigation Date: 3/2/99

License No.: R 79129 I 2009

Incident Log No.: TN-99-030

Type of Incident: Lost Gauge

Type of Investigation: Site Visit

Summary of Incident and Final Disposition: A private citizen in Arkansas found a portable moisture density gauge, belonging to a Tennessee licensee. The Tennessee license involved had expired in 1995. The gauge was recovered by the owner at Tennessee's request. Tennessee denied reinstatement of this license and pursued escalated enforcement actions against this licensee.

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File No.: 13

Licensee: Non-licensee - Tennessee Program

Site of Incident: Nashville, TN

Date of Incident: 12/13/96

Investigation Date: 12/13/96

License No.: N/A

Incident Log No.: TN-96-113

Type of Incident: Leaking sources

Type of Investigation: On-site

Summary of Incident and Final Disposition: The Tennessee Program received three 10 microcurie ¹³⁷Cs-36 check sources from a licensee in another Agreement State. The sources were leaking upon their receipt by the Tennessee Program. Tennessee notified the NRC, the Agreement State licensee, and the Agreement State program. The Division surveyed and decontaminated the affected areas, re-packaged the sources and returned them to the manufacturer.

File No.: 14

Licensee: Cooperheat MQS, Inc.

Site of Incident: President's Island, Ergon

Date of Incident: 1/20/00

Investigation Date: 1/20/00

License No.: R 79026 J 2004

Incident Log No.: TN-00-012

Type of Incident: Equipment damage

Type of Investigation: On-site

Summary of Incident and Final Disposition: A radiography camera was run over at a temporary job-site. The camera was damaged, but the source remained fully shielded. The camera was returned to the manufacturer for repair or disposal.

APPENDIX F

SEALED SOURCE & DEVICE CASEWORK REVIEWS

NOTE: ALL CASEWORK LISTED WITHOUT COMMENT ARE INCLUDED FOR COMPLETENESS ONLY; NO SIGNIFICANT COMMENTS WERE IDENTIFIED BY THE IMPEP TEAM.

File No.: 1

Manufacture: Perkin Elmer Instruments, Inc.

Date Issued: 1/26/00

Registry No.: TN-1031-D-101-B

SS&D Type: Gamma Gauge

File No.: 2

Manufacture: Perkin Elmer Instruments, Inc.

Date Issued: 1/26/00

Registry No.: TN-1031-S-102-S

SS&D Type: Gamma Source

File No.: 3

Manufacture: Perkin Elmer Instruments, Inc.

Date Issued: 1/26/00

Registry No.: TN-1031-S-103-S

SS&D Type: Gamma Source

Comment:

- a) A license reviewer who has not attended either of the SS&D workshops signed the registration sheet, as well as the Section Manager. The review involved only minor modifications to the attachment of the device.

File No.: 4

Manufacture: Perkin Elmer Instruments, Inc.

Date Issued: 2/28/00

Registry No.: TN-1031-D-104-B

SS&D Type: Gamma Gauge

File No.: 5

Manufacture: Perkin Elmer Instruments, Inc.

Date Issued: 2/28/00

Registry No.: TN-1031-D-105-B

SS&D Type: Gamma Gauge

Comment:

- a) The device sheet contained a reference to a telephone conversation, which was documented in the file. Conversations are usually not referenced in the device sheet; however, the substance of a conversation may be referenced if confirmed and documented in writing with the applicant.

File No.: 6

Manufacture: Perkin Elmer Instruments, Inc.

Date Issued: 1/26/00

Registry No.: TN-1031-D-111-B

SS&D Type: Sulfur analyzer

File No.: 7

Manufacture: Perkin Elmer Instruments, Inc.

Date Issued: 1/26/00

Registry No.: TN-1031-D-112-B

SS&D Type: Mass flow

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File No.: 8

Manufacture: Energy Technologies, Inc. (ETI)

Date Issued: 3/12/98

Registry No.: TN-0799-D-101-B

SS&D Type: Rapid Ashmeter

Comment:

- a) The device sheet was signed by a license reviewer that has not been to the SS&D workshops, as well as the Section Manager. Changes were related only to reclassification of device for distribution to general licensees.

File No.: 9

Manufacture: Energy Technologies, Inc. (ETI)

Date Issued: 4/14/98

Registry No.: TN-0799-D-102-B

SS&D Type: Density Gauge

Comment:

- a) The device sheet was signed by a license reviewer that has not been to the SS&D workshops, as well as the Section Manager. Changes were related only to reclassification of device for distribution to general licensees.

File No.: 10

Manufacture: Electronic Systems, spa

Date Issued: 10/17/97

Registry No.: TN-1036-101-S

SS&D Type: Beta Gauge

File No.: 11

Manufacture: CTI PET Systems, Inc. (CPS)

Date Issued: 5/07/99

Registry No.: TN-1067-D-102-S

SS&D Type: Source Holder

Comments:

- a) The device sheet was signed by a license reviewer that has not been to the SS&D workshops, as well as the Section Manager. Changes were minor and related only to labeling and shipping changes.