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March 3, 2010

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Subject: Response to February 5, 2010 NRC Letter – TerranearPMC LLC, Request for Additional Information Concerning Application for New License, Control No. 144347 (Docket No. 03038204, License No. 37-31379-02)

This letter and enclosures are provided in response to the U.S. Nuclear Regulatory (NRC) February 5, 2010 "Request for Additional Information Concerning Application for New License," Control No. 144347. The purpose of this letter is to transmit TerranearPMC, LLC's (TPMC) responses to the subject RAIs.

Enclosure 1 is provided in response to NRC's first RAI inquiry requesting copies of TPMC's procedure for Emergency Actions (FP17) and procedure for Handling, Storage and Disposal of Radioactive Materials (FP20). Procedures FP17 and FP20 are provided as requested. FP38 is also provided as it is referenced in FP17.

Enclosure 2 is provided in response to NRC's second RAI inquiry requesting a description of the process for procedure and program review and approval prior to implementing changes. This process is documented as an administrative procedure (AP03) and it is provided for NRC review.

Please contact Mr. Theodore Adams, Radiation Safety Officer (716) 592-3431, or Mr. Larry Saraka, Senior Program Manager (202) 204-2515 if you have questions or require additional information on this matter.

Sincerely,

Amar Raval
President and CEO

cc: K. Fillman
D. Siefken
T. Adams
L. Saraka
D. Caputo

Enclosures: As stated

144347
NMSS/RGN1 MATERIALS-002

ENCLOSURE 1

1.0 PURPOSE

This procedure details the specific actions to be taken in the event of radiological emergencies.

2.0 RESPONSIBILITIES

2.1 The TPMC Radiological Safety Officer (RSO) or designee is responsible for ensuring implementation of this procedure.

2.2 Radiological Control Technicians (RCTs) and site personnel are responsible for implementation of this procedure.

3.0 PREREQUISITES/REQUIREMENTS

The emergency actions presented in this procedure will be carried out consistent with the guidance provided in NUREG-1556, Vol. 7: Appendix P.

4.0 PROCEDURE

4.1 Emergency Action Requirements

The following procedures state the immediate, supplementary and any follow-up actions for high airborne, spills of radioactive solids or liquids, fire, and loss of radioactive material (RAM) and related notification to appropriate parties. Personnel will conform to these procedures in accordance with the requirements of 10 CFR 20.

4.1.1 High Airborne

Particulate radioactivity above 9 E-09 μCi/ml beta-gamma or 2 E-11 μCi/ml alpha in occupied radiological areas at the work areas.

NOTE: High airborne contamination is not expected in ground moving tasks. However, cutting, grinding, or burning of other material may be performed in containment, thus warranting these precautions.

(1) **Immediate Action**

Notify RSO or designee.

(a) Evacuate personnel from affected areas. Don respiratory equipment in accordance with FP31, "Airborne Radioactivity Program" for personnel who must return to the affected area.

(b) Verify that the high airborne results (i.e., from air sampling or elevated instrument readings) are correct.

(c) Stop operations which might be causing high airborne radioactivity until adequate control of airborne radioactivity is established.

(d) Secure air moving equipment (e.g., fans, window air conditioners, and unit heaters) in the affected spaces.

(e) Determine the extent of the airborne radioactivity by sampling the affected area and adjacent areas which might be affected using portable air samplers.

(2) **Supplementary Action**

(a) Attempt to identify the radionuclide causing the airborne radioactivity. For example, by promptly measuring the sample for alpha radioactivity and determining the half-life.

(b) Measure and control surface contamination in areas affected by high airborne radioactivity.

(c) Perform alpha and beta-gamma surveys of ventilation filters and ducts and measure surface contamination in the vicinity of the ventilation exhaust discharge point.

(d) When resuming operations, take a portable air sample to verify that the cause of high airborne radioactivity is corrected.

(e) Check personnel exposed to high particulate radioactivity for internal radioactivity.

(3) A report of any incident involving high airborne radioactivity other than fallout or natural background in areas occupied by personnel not wearing or wearing inappropriate respiratory equipment, will be prepared. The report will include results of internal monitoring and be submitted to the RSO, or designee within ten working days.

4.1.2 **Radioactive Spills**

The following steps will be followed in the event of a radioactive spill of liquids or solids:

(1) **Immediate Action**

If the spill is minor (e.g., a few milliliters of water with low radioactivity spilled on a smooth surface), immediately cover the spill with the most convenient absorbent paper or rags to soak up the liquid. Experience has indicated in most cases that for minor spills involving small amounts of radioactivity, wiping up the spill even though gloves are not available, will not result in additional contamination of the individual.

After the spill is covered, follow portions of steps (a) through (e) and (2) below, as necessary, to keep the incident under control.

The individual at the scene will take charge of the spill until relieved by a radiological controls representative (i.e., RSO or RCT). This individual organizes the personnel available and initiates action to control and correct the spill. It is important that this individual makes known both his presence and the fact that he is in charge to all others at the scene. On arrival of the designated individual in charge, the status of correction action taken or in progress will be immediately brought to his attention. The person in charge will designate available personnel to perform the following immediate actions:

(a) **Stop the Spill**. If the spill is from a system which might have more material (either airborne particulate radioactivity or fluids) to leak out, promptly stop the leak, if possible. If the spill is from an overturned container, try to set it upright if the contents have not all escaped. Wipe up spilled liquid to prevent it from spreading. The amount of time spent stopping a difficult leak depends upon the radiation levels involved, the possibility of inhaling airborne radioactivity from the spill, and the consequences of not making a prompt closure. In some cases, a prompt closure is unnecessary.

(b) **Warn Other Personnel**. Other personnel who might become contaminated by the spill or who might be able to help control it will be warned immediately. Notify radiological control personnel.

(c) **Isolate the Spill Area**. Keep unnecessary personnel away from the area affected by the spill to minimize spread of contamination.

(d) **Minimize Personnel Exposure to Contamination and Radiation**. Personnel in the spill area will remain at the edge of the area until radiological control personnel advise otherwise. Personnel will keep to the edge of the affected area, taking care to minimize spread of contamination. In some circumstances, stepping outside the room where a spill occurred and closing the access is necessary. Contaminated personnel will be decontaminated without delay.

(e) **Secure Ventilation in the Spill Area, Other than Filtered Exhausts**. Filtered exhausts in the spill area will also be shut down if air movement of exhausts or from supplies will result in spread of contamination or result in airborne activity from the spill. Ventilation supplies will be shut down when exhausts are turned off.

(2) **Supplementary Action**

Steps (a) and (b) below are actions to evaluate the extent of the problem and to recover from the spill. The designated supervisor will designate available personnel to perform specific portions of the steps below:

(a) **Measure Radioactivity Levels**. Measure contamination on personnel who could have been affected, make contamination surveys in the area adjacent to the spill outside the area isolated, determine the magnitude and extent of surface contamination in the spill area, and measure airborne radioactivity near the spill area. Monitor ventilation systems to determine if the spill has caused them to be contaminated. If it is suspected that radionuclides have been taken into the body or if skin contamination is detected, internal monitoring will be performed.

(b) **Take subsequent radiological control and cleanup actions per radiological control personnel instructions.**

(c) Do not resume operations without the RSO or designee approval.

4.1.3 **Loss of Radioactive Material**

If radioactive material is lost, the following procedures will be followed:

(1) The RSO will be immediately notified and a search conducted. The primary reason for this is to ascertain that no persons will receive inadvertent internal or external exposure from the material.

(2) If the material cannot be located before the end of the work day, the RSO or designee will prepare an incident report.

4.1.4 **Fire in a Controlled Area**

Areas will be evacuated by all non-emergency personnel when a fire, heavy smoke, or similar fumes occur in a controlled area. Radiological controls, operational and/or fire response personnel will be immediately notified. This is true for all fire events, including those where personnel in the immediate vicinity have extinguished a minor event, such as a wastebasket fire.

(1) When possible, the fire will be extinguished by personnel in the immediate vicinity (if safe) rather than allowing it to grow into larger proportions while designated personnel are on their way.

(2) The designated fire watch personnel during potentially hazardous work activities (e.g., welding) will have respiratory and firefighting equipment on hand for an initial response to an event.

(3) If a fire cannot be rapidly extinguished, a fire detail will be requisitioned by the lead RCT available:

- Fire detail will wear self-contained respiratory equipment, protective clothing, and any other items deemed necessary by the lead health physics individual.
- The primary function of the fire detail will be to evacuate personnel from the fire area.
- The secondary function of the fire detail will be to save valuable equipment properly without endangering their own or other lives.
- The tertiary function of the fire detail is to minimize the spread of contamination outside the controlled areas.

(4) Fire extinguishing agents, such as CO_2, foam, or dry chemicals, are preferred, as this minimizes the volume of potentially contaminated liquids.

(5) All firefighting personnel will be surveyed prior to exiting the event area, except for those in need of immediate medical assistance outside the controlled area. Minimization of the spread of contamination will be kept in mind at all times.

NOTE: Charcoal filter cartridges will clog rapidly upon exposure to any form of smoke. Remove charcoal filtered respirators and then leave the area if you are in a smoked environment. Remove any respirator and then leave the area if the device becomes clogged or difficult to breathe through.

4.1.5 **Emergency Notification**

In the event of a radiological emergency during working and nonworking hours, notification of the event can be made by calling the designated TPMC personnel/client at phone numbers to be provided by TPMC or the client prior to start of onsite work.

In addition, an emergency call list will be posted in the office area. This call list will provide the name and phone numbers of TPMC, NRC/agreement state representatives, and fire/first aid emergency response personnel.

Identification and reporting of emergencies/incidents will be carried out in accordance with FP38.

5.0 RECORDS

5.1 The records generated as a result of the implementation of this procedure include:

- Incident Reports
- NRC Notification Reports

These records will be maintained as part of the TPMC project files.

6.0 REFERENCES

6.1 10 CFR 20, *Standards for Protection Against Radiation,* as amended or agreement state equivalent.

6.2 FP31, "Airborne Radioactivity Program".

6.3 FP38, "Identification and Reporting of Incidents and Non-Compliance".

6.4 NUREG-1556, Vol. 7, Appendix P, *Program Specific Guidance about Academic Research and Development, and Other Limited Scope Including Gas Chromatographs and X-ray Fluorescence Analyzers,* (NRC, December 1999).

7.0 ATTACHMENTS

None.

TerranearPMC, LLC (TPMC) FIELD PROCEDURE		
Title **Handling, Storage, and Disposal of Radioactive Materials**		**No. FP20** **Revision # 0** **Page 1 of 5**
Effective Date	Approved by	Approved by

1.0 PURPOSE

The objective of this procedure is to set forth requirements and guidelines to control the movement of packages containing radioactive material (RAM) at the site.

The activities covered by this procedure are:

- Control of RAM packages (on site).
- Transfer of RAM packages (on site).
- Storage of RAM packages (on site).
- Disposal of RAM packages (off site).

2.0 RESPONSIBILITIES

2.1 The TPMC Radiation Safety Officer (RSO) or designee is responsible for ensuring implementation of this procedure.

2.2 Radiological Control Technicians (RCTs) are responsible for implementing this procedure.

3.0 PREREQUISITES/REQUIREMENTS

3.1 RAM Package

Radioactive material/waste will be packaged in proper containers meeting the requirements of 10 CFR 61 and 49 CFR; said RAM packages will not contain asbestos and/or other hazardous material or substance.

3.2 RAM Shipment

RAM package(s) removed from the storage area and transported for final disposition at a licensed facility.

3.3 DOT

US Department of Transportation (49 CFR Parts 100-199).

3.4 NRC

US Nuclear Regulatory Commission (10 CFR 19, 20, 30 and 61).

3.5 **Storage Area**

Outdoor area solely dedicated for the temporary storage of RAM packages to be disposed of at a licensed site. No mixed waste is allowed in the storage area.

3.6 Handling and disposal of RAM will be carried out consistent with the Model Waste Disposal Program guidelines contained in NUREG-1556, Vol. 18, Appendix N.

4.0 PROCEDURE

4.1 Requirements and Guidelines

The handling, shipment, and disposal of radioactive materials will be conducted in accordance with FP18, "Radioactive Waste Packaging" and FP30, "Surface Contamination Program", as applicable.

4.1.1 Control of RAM Packages

(1) All RAM packages will meet the requirements of Section 4.4 of FP18 "Radioactive Waste Packaging" (i.e., proper selection of container, identification, markings and tagging, etc.).

(2) A "Radioactive Material Tag" will be securely affixed to each loaded and sealed container prior to any movement of the RAM package out of the work area/packing area.

4.1.2 Transfer of RAM Packages

(1) All RAM packages will be transferred in a safe manner, utilizing rated hauling equipment (i.e., forklift truck, open truck, etc.).

(2) RAM packages will be transferred only between work areas and between work areas and the storage area.

(3) Transfer of RAM packages between authorized areas will be accomplished using the most direct approved route as practicable.

(4) Transfer of RAM packages will be made only by trained radiation workers.

4.1.3 Storage of RAM Packages

(1) **Storage Area Specific Requirements**

(a) RAM packages will not be opened at this location.

(b) Lids of RAM packages for disposal will have a gasketed closure.

(c) The storage area will be located away from heavily populated or normally traveled areas of the project site and secured as appropriate.

(d) The outdoor storage area will be curbed (if practical) in such a manner as to direct any runoff to a localized area of earth near the pad. Drain-off areas will not be located near storm sewer drains.

(e) The storage area's surface will be coated with a sealant or covered with heavy plastic to prevent absorption of contamination.

(f) RAM packages of the box type will be placed in the storage area.

(g) RAM packages of the drum type will be placed in the storage area.

(h) The storage area will be roped off or secured (or as directed by the RSO) to prevent unauthorized access.

(i) The storage area will be surveyed by Radiological Control personnel weekly or on a frequency designated by the RSO to detect possible contamination leakage from RAM packages.

(j) The storage area will be posted with appropriate radiological control signs.

(k) Radiological Control personnel will be notified prior to placing a RAM package in the storage area.

(l) Records of stored RAM packages will be kept using the "Radioactive Material Accountability Log Book" system or similar system.

4.1.4 **Disposal of RAM Packages**

(1) **Scope**

The scope of this subsection is to provide specific guidelines and instructions for shipping RAM packages to a licensed facility for ultimate disposal.

NOTE 1: Only RAM packages previously stored in the storage area will be loaded for shipment.

NOTE 2: The text of this subsection was prepared taking into consideration current laws and regulations for the transportation and disposal of low-level radioactive waste.

(2) **Shipping Instructions**

To be read prior to preparing a RAM shipment.

(a) **Equipment Required**

- Weighing equipment (i.e., scales).
- Transport vehicle.
- Lifting and loading devices.
- Shoring and bracing material/hand tools for shoring and bracing.

- Dose rate and contamination survey equipment.
- Placards and labels, as required.

(b) All transport vehicles will be radiologically surveyed prior to loading the vehicle.

(c) Loading of RAM packages onto transport vehicle will comply with applicable industrial safety procedures.

(d) RAM packages to be shipped for disposal have been previously selected and their weight and radiological data have been collected.

(e) Each RAM package to be shipped for disposal has been labeled in accordance with 49 CFR (use data from its Radioactive Material Tag and its Radioactive Waste Container Record).

(f) Confirm dose rate and contamination surveys for each RAM package prior to loading for shipment. Surveys will include maximum contact dose rate and the maximum dose rates at one meter (≈3 feet) from the surface.

(g) Above radiological surveys to be performed by a qualified individual using instruments with a valid calibration sticker.

(h) Select transport vehicle in accordance with Appendix A of this procedure, as applicable.

(i) Load transport vehicle in accordance with Appendix B of this procedure, as applicable.

(j) All transport vehicles will be radiologically surveyed after loading of the vehicle is completed.

(k) Prepare all required shipping documents in accordance with Appendix C of this procedure, as applicable.

Shipping instructions read and complied with:

Signature of qualified person
Date
Company
Title

5.0 RECORDS

5.1 The records generated as a result of the implementation of this procedure include:

- Radiation and Contamination Survey Results (Vehicle Survey Form) (Attachment C or equivalent)
- Shipping and Disposal Records and Manifests
- Radioactive Material Accountability Log Book

These records will be maintained as part of the TPMC project files.

6.0 REFERENCES

6.1 FP18, "Radioactive Waste Packaging"
6.2 FP30, "Surface Contamination Program"
6.3 Title 49 of the Code of Federal Regulations, Parts 100-199 (49 CFR DOT)
6.4 Title 10 of the Code of Federal Regulations, Parts 19, 20, 30 and 61 (10 CFR 19, 20, 30 and 61 NRC)
6.5 NUREG-1556, Vol. 18, "Program-Specific Guidance about Service Providers" (NRC November 2000)

7.0 ATTACHMENTS

Attachment A - Appendix A: Selection of Transport Equipment
Attachment B - Appendix B: Loading of RAM Packages for Shipment
Attachment C- Vehicle Survey Form 1
Attachment D - Appendix C: Shipping Documents

APPENDIX A
SELECTION OF TRANSPORT EQUIPMENT

1. Exclusive use open transport vehicles may be used to transport LSA Radioactive Material provided none of the following limits are exceeded.

   a. 200 mrem/hr on contact with the surface of the package.

   b. 10 mrem/hr at any point 2 meters from the vertical plan of the vehicle.

   c. 2,200 dpm/100 cm^2 beta-gamma loose surface contamination on the surface of the package.

   d. 220 dpm/100 cm^2 alpha loose surface contamination on the surface of the package.

   e. The dose rate in any normally occupied position in the truck cab will not exceed 2 mrem/hr.

2. Exclusive use closed transport vehicles may be used to transport LSA Radioactive Material provided none of the following limits are exceeded.

   a. 1,000 mrem/hr on contact with the surface of the package.

   b. 200 mrem/hr on contact with top, sides, and bottom of the exterior surface of the transport vehicle.

   c. 10 mrem/hr at any point 2 meters from the vertical plane of the transport vehicle.

   d. 2,200 dpm/100 cm^2 beta-gamma loose surface contamination on the surface of the package or any surface of the transport vehicle.

   e. 220 dpm/100 cm^2 alpha loose surface contamination on the surface of the package or any surface of the transport vehicle.

   f. The dose rate in an normally occupied position in the truck cab will not exceed 2 mrem/hr.

   NOTE: Regulatory reference is 49 CFR, sections 173.441 (a) and (b), and 173.443 (a), (b), and (c).

APPENDIX B
LOADING OF RAM PACKAGES FOR SHIPMENT

1. Loading of Open Flatbed Trailers

   a. Prior to loading any RAM package, perform an ENTRY radiological survey of the vehicle. Use Form 1 (or similar form) to record survey results.

   b. The total gross weight of the RAM packages will not exceed the maximum allowable payload for the particular vehicle used in shipment.

      NOTE: Overweight permit requests will not be granted since the load is divisible.

   c. The placement of the packages is dependent upon two factors:

      1) External Dose Rates. To the extent practicable, packages will be arranged with the highest dose rate surfaces facing inboard and to the rear of the trailer.

      2) Axle Weight Distribution. The driver should be consulted in this regard.

   d. Secure RAM packages to the trailer bed with chains, binders, straps, or winches. The fastening and securing devices are supplied by the carrier.

   e. Provide additional bracing by installing toeboards. Toeboards will normally be sections of 2x4s nailed to the bed of the trailer.

   f. Install a tamper indicating seal between the body of the liner or box and any lids or closures.

   g. Placard both sides, the front and rear of the trailer, and the front of the truck cab with signs stating "Radioactive."

   h. Perform an exit dose rate and contamination survey on the loaded trailer and truck cab. The survey will be performed and recorded on Form 1 (or similar form). DO NOT exceed the following dose rate and contamination limits:

      1) 200 mrem/hr on contact with the surface of any package or any surface of the transport vehicle.

      2) 10 mrem/hr at any point 2 meters (6.6 feet) from the vertical plane of the transport vehicle.

      3) 2,200 dpm/100 cm^2 beta-gamma loose surface contamination on the surface of any package or any surface of the transport vehicle.

   4) 220 dpm/100 cm^2 alpha loose surface contamination on the surface of any package or any surface of the transport vehicle.

   5) 2 mrem/hr in any normally occupied position in the truck cab.

2. Loading of Closed Vehicles

a. Prior to loading any RAM package, perform an ENTRY radiological survey of the vehicle. Use Form 1 (or similar form) to record survey results.

b. The total gross weight of the packages to be shipped in a van or shielded van will not exceed the maximum allowable payload for the particular vehicle used in the shipment.

c. Drums may be palletized or loose. Palletized drums are considered as boxes for loading purposes.

d. Segregate drums and boxes (may be double stacked). DO NOT stack drums on boxes, nor boxes on drums.

e. If both drums and boxes are to be loaded in the same van, load drums in the forward section, whenever possible.

f. The placement of packages is dependent upon two factors:

1) External Dose Rates. To the extent practicable, packages will be arranged with the highest dose rate surfaces facing inboard. If packages are double stacked in a shielded van, the highest dose rate packages will be on the bottom, as the shielding does not extend the total height of the van walls.

2) Weight Distribution. The weight will be distributed as evenly as possible. If packages are double stacked, the heavier packages will be on the bottom. The driver should be consulted regarding axle weight distribution.

g. Install bracing and shoring to prevent any movement or shifting of packages during transport.

h. Install a tamper indicating seal between the doors of the van. If the van has a side door, install an additional seal between that door and the side of the van.

i. Placard both sides, the front and rear of the trailer, and the front of the truck cab with signs stating "Radioactive."

j. Perform an exit dose rate and contamination survey on the loaded van and the truck cab. The survey will be performed and recorded on Form 1 (or similar form). DO NOT exceed the following dose rate and contamination limits:

1) 200 mrem/hr on contact with the top, bottom, and sides of the transport vehicle. Particular attention should be paid to sides of a shielded van which extend beyond the area of the shielding.

2) 10 mrem/yr at any point 2 meters from any vertical plane of the transport vehicle. Particular attention should be paid to the sides of a shielded van which extend beyond the area of the shielding.

3) 2,200 dpm/100 cm^2 beta-gamma removable contamination on any surface of the transport vehicle.

4) 220 dpm/100 cm^2 alpha removable contamination on any surface of the transport vehicle.

5) 2 mrem/hr in any normally occupied position in the truck cab.

NOTE: Regulatory reference is 49 CFR, sections 173.441 (a) and (b), and 173.443 (a), (b), and (c).

APPENDIX C
SHIPPING DOCUMENTS

The following documents (Sections 1 through 7) will be prepared by the organization responsible for shipment of the RAM packages, as applicable.

1. Bill of Lading

   a. Enclose a completed Bill of Lading with each shipment of LSA Radioactive Material.

   b. Most carriers provide their own Bill of Lading form. However, if the form is not provided, utilize Bill of Lading.

   c. As a minimum, the following information will be stated in the Bill of Lading.

      1) Carrier. The name of the carrier transporting the shipment.

      2) Shipment Number. From the Radioactive Material Shipment Log.

      3) Date. The date the shipment leaves the facility.

      4) Address of Shipper.

      _____
      _____
      _____
      _____
      _____

      5) The organization receiving the shipment.

      6) The delivery address of the shipment.

      7) Delivery Carrier. The name of the carrier transporting the shipment.

      8) The truck cab and trailer identification.

      9) Number of Packages. The total number of packages in the shipment.

      10) Enter: Radioactive Material, LSA, NOS, UN 2912, or other information as appropriate.

      11) Enter the type of packages. Examples:

         a) Strong-Tight Metal Boxes
         b) USDOT 17-H Drums
         c) Spec 7A Type A Metal Boxes
         d) Others as appropriate.

12) Enter the content of the packages.

13) Enter the total activity in curies or millicuries.

14) List each radionuclide present in the material being shipped.

15) List the physical and chemical forms of the material and the assigned waste classification.

16) Placarding and Labeling Requirements. Enter:

Placard - Radioactive
Label - Radioactive LSA - No Label Required

17) Enter: Exclusive use Vehicle

18) Weight. The total gross weight of all packages in the shipment.

19) The signature of the Radwaste Specialist/Generator.

20) The signature of the driver picking up the shipment.

2. Radioactive Material Shipment Manifest

a. Enclose a completed radioactive material shipment record with each shipment of LSA Radioactive Material.

b. Utilize the site specific disposal facility's Radioactive Material Shipment Record for radwaste shipments.

c. Specific instructions for completing Radioactive Material Shipment Record are provided in the site specific facility's Waste Acceptance Criteria Manual. Examples of specific information required for completing the Radioactive Material Shipment Record are provided in the following text:

1) Shipment Number. From the Radioactive Material Shipment Log.

2) Shipment Date. The date the shipment leaves the site.

3) Carrier. The name of the carrier transporting the shipment.

4) Driver Signature. The signature of the driver picking up the shipment.

5) Number of Packages. The total number of packages in the shipment.

6) Total Activity. The total activity (in curies or millicuries) of all packages in the shipment.

7) Total Weight. The total gross weight (in pounds) of all packages in the shipment.

8) Total Volume. The total volume (in cubic feet) of all packages in the shipment. The volume is based on the external dimensions of each package.

9) Proper Shipping Name/Identification Number. Radioactive Material, LSA, NOS UN 2912.

10) Enter the total number of pages.

11) Consignee. The organization receiving the shipment.

12) Contact. The individual within the receiving organization responsible for receipt of the shipment.

13) Address. The delivery address for the shipment.

14) Telephone Number. The telephone number of the receiving organization.

15) License Number. The radioactive materials license number of the receiving organization.

16) Exclusive Use Vehicle. Check: Yes.

17) Item Number. The serial number of each individual package.

18) Material Description. A brief description of the material.

19) Radionuclide. List each radionuclide present in the material.

20) Activity mCi. The activity, in millicuries, of each listed radionuclide. If activity is less than LLD, that will be noted and the LLD identified.

21) A_1 - A_2 - Enter: $< A_2$

22) Physical Form. Enter: Solid.

23) Chemical Form. The most prevalent chemical form of the material: metallic oxides, toluene, specific acids or bases, etc.

24) Type Package. Enter: Strong-Tight.

25) Package Weight. The total gross weight in pounds of the package.

26) Package Volume. The volume in cubic feet of the package based on the exterior dimensions.

27) mrem/hr Item Surface. The maximum dose rate on contact with the surface of any item placed in the package.

28) mrem/hr Package Surface. The maximum dose rate on contact with the surface of the package.

29) mrem/hr Package 1 Meter. The maximum dose rate at any point 1 meter from the package surface.

30) dpm/100 cm^2 Alpha. The maximum loose surface alpha contamination on the surface of the package. If less than 20 dpm/100 cm^2, may be entered as < 20.

31) dpm/100 cm^2 Beta-Gamma. The maximum loose surface beta-gamma contamination on the surface of the package. If less than 2,200 dpm/100 cm^2, may be entered as 2,200.

32) Label. Enter: Radioactive LSA - No Label Required.

33) The signature of the Radwaste Specialist or Generator.

34) Date. The date the certification is made.

3. Radioactive Waste Shipment Certification

   a. Enclose a completed Radioactive Waste Shipment Certification form with each shipment of radwaste material transported to a disposal site.

4. Driver Instructions

   a. Verbally brief the driver on applicable emergency instructions and procedures.

   b. Driver will follow any applicable "carrier" organization emergency procedures.

5. Other

   a. Complete the "Final Survey Form" (Form 1 or similar form) and attach to each shipping document package(s).

6. Shipping Documents Packages

   Prepare three or four packages of shipping documents for each shipment of LSA Radioactive Material. The packages are distributed as follows:

   a. Shipment Package. This package accompanies the shipment and is delivered to the receiving organization.

   b. Carrier's Package. This package is presented to the driver for delivery to the carrier office.

   c. File Package. This package is maintained on file by the Radwaste Supervisor/Generator.

TerranearPMC, LLC (TPMC) FIELD PROCEDURE		
Title **Identification and Reporting of Incidents and Non-Compliances**		**No. FP38** **Revision # 0** **Page 1 of 2**
Effective Date	Approved by	Approved by

1.0 PURPOSE

This procedure describes the actions to be taken by TPMC related to the identification and notification of various incidents and non-compliances that may occur at the temporary work site. This procedure addresses the telephone notification and written report requirements for the events specified in this document.

2.0 APPLICABILITY/SCOPE

This procedure applies to all TPMC work sites.

3.0 RESPONSIBILITIES

3.1 Site Supervisor or Project Manager

The Site Supervisor or Project Manager is responsible to ensure that the requirements of this procedure are implemented

3.2. Site Personnel

Site personnel are responsible for complying with the requirements of this procedure

4.0 PROCEDURE

4.1 Attachment 1 lists the typical NRC incident notifications required for Service Provider Licensees and the related NRC regulations.

4.2 The TPMC Site Supervisor or Project Manager will execute the required telephone and written notification to the NRC per Attachment 1 and/or the License Conditions upon becoming aware of the incident or non-compliance.

4.3 The TPMC Site Supervisor or Project Manager will execute additional telephone and written notifications to the Client, State regulatory agencies, and TPMC management, as required.

ATTACHMENT 1

Table 8.4 Typical NRC Incident Notifications Required for Service Provider Licensees.

Event	Telephone Notification	Written Report	Regulatory Requirement
Theft or loss of material	immediate	30 days	10 CFR 20.2201(a)(1)(i)
Whole body dose greater than 0.25 Sv (25 rems)	immediate	30 days	10 CFR 20.2202(a)(1)(i)
Extremity dose greater than 2.5 Sv (250 rems)	immediate	30 days	10 CFR 20.2202(a)(1)(iii)
Whole body dose greater than 0.05 Sv (5 rems) in 24 hours	24 hours	30 days	10 CFR 20.2202(b)(1)(i)
Extremity dose greater than 0.5 Sv (50 rems) in 24 hours	24 hours	30 days	10 CFR 20.2202(b)(1)(iii)
Whole body dose greater than 0.05 Sv (5 rems)	none	30 days	10 CFR 20.2203(a)(2)(i)
Dose to individual member of public greater than 1 mSv (100 mrems)	none	30 days	10 CFR 20.2203(a)(2)(iv)
Defect in equipment that could create a substantial safety hazard	2 days	30 days	10 CFR 21.21(d)(3)(i)
Filing petition for bankruptcy under 11 U.S.C.	none	immediately after filing petition	10 CFR 30.34(h)
Expiration of license	none	60 days	10 CFR 30.36(d)
Decision to permanently cease licensed activities at entire site	none	60 days	10 CFR 30.36(d)
Decision to permanently cease licensed activities in any separate building or outdoor area that is unsuitable for release for unrestricted use	none	60 days	10 CFR 30.36(d)
No principal activities conducted for 24 months at the entire site	none	60 days	10 CFR 30.36(d)
No principal activities conducted for 24 months in any separate building or outdoor area that is unsuitable for release for unrestricted use	none	60 days	10 CFR 30.36(d)
Event that prevents immediate protective actions necessary to avoid exposure to radioactive materials that could exceed regulatory limits	immediate	30 days	10 CFR 30.50(a)
Equipment is disabled or fails to function as designed when required to prevent radiation exposure in excess of regulatory limits	24 hours	30 days	10 CFR 30.50(b)(2)
Unplanned fire or explosion that affects the integrity of any licensed material or device, container, or equipment with licensed material	24 hours	30 days	10 CFR 30.50(b)(4)

ENCLOSURE 2

TerranearPMC, LLC (TPMC) FIELD PROCEDURE		
Title **Program, Plan, and Procedure Changes**		**No. AP03** **Revision # 0** **Page 1 of 4**
Effective Date	Approved by:	Approved by:

1.0 PURPOSE

It is the policy of TerranearPMC (TPMC) to request, review, and approve requests for changes to previously approved programs, plans, and procedures prior to the changes being implemented. It is also TPMC policy to have the flexibility to make changes to programs, plans, and procedures which were previously approved by the U. S. Nuclear Regulatory Commission (USNRC) and incorporated into the TPMC license without prior USNRC approval, under the controls specified in this procedure.

The purpose of this procedure is to provide written requirements pertaining to the request, review, and approval of changes to existing programs, plans, or procedures prior to implementing these changes.

2.0 RESPONSIBILITIES

2.1 Project Manager, Program Director, Project Health Physics Manager/Radiological Control Supervisor, and Radiation Safety Officer

The Project Manager (PM), Program Director (PD), Project Health Physics Manager (PHPM)/Radiological Control Supervisor (RCS) and Radiation Safety Officer (RSO) or their respective designees are responsible to review and approve all proposed major changes. The Corporate Environmental Safety and Health (ES&H) Director or designee will have final review and approval of all proposed major changes.

The PHPM/RCS and RSO or designees are responsible to review and approve all proposed minor changes.

2.2 Project/Site Personnel

All Site Personnel are responsible to request a change and receive authorization for such changes prior to implementation of the changes, when appropriate.

2.3 Client and US Nuclear Regulatory Commission

2.3.1 Client

On certain projects, review and approval of major changes may be required by the Client prior to implementation, as required by contract.

2.3.2 US Nuclear Regulatory Commission

In those cases/projects in which the change(s) does not meet the requirements listed in Section 3.0, the revised/changed document will be sent to the US NRC for approval prior to implementation.

3.0 PREREQUISITES/REQUIREMENTS

Changes to programs, plans, and to procedures which were previously approved by the U. S. Nuclear Regulatory Commission and incorporated into the license can be made without prior Commission approval as long as:

a) the proposed revision is documented, reviewed, and approved by the licensee in accordance with TPMC established procedures prior to implementation,

b) the revised program is in accordance with regulatory requirements, will not change the license conditions, and will not decrease the effectiveness of the TPMC Radiation Safety Program,

c) the TPMC staff is trained in the revised procedures prior to implementation and,

d) the TPMC audit program evaluates the effectiveness of the change and its implementation

4.0 PROCEDURE

Changes to previously approved programs, plans, procedures and documents will be defined as either major or minor.

4.1 Major Changes

Major changes will be defined as either major or special major

4.1.1 A major change will:

1) Adversely affect the quality of the data;
2) Cause a significant change in the cost;
3) Create a significant change in the scope;
4) Cause a significant delay(s) in the schedule;
5) Correct a major deficiency, (e.g. form, fit, function or process);
6) Make a significant change in the design, operation, or logistic.

Examples of major changes include but are not limited to:

- Significantly changing the number of drill rigs, wells, drilling locations, or sampling points;
- Changing sampling/drilling methods for borings or well construction;
- Changing sampling methodology and/or laboratory analysis;
- Changing the number of project personnel
- Changing the operation of a decontamination program (i.e., tooling, process, waste generation)

4.1.2 A special major change will:

1) Result in a noncompliance with approved regulatory requirements
2) Result in an unreviewed safety question;
3) Result in a changes to license condition;
4) Result in a decrease in the effectiveness of the TPMC Radiation Safety Program.

Examples of special major changes include but are not limited to:

- Making changes that would result in an unreviewed safety question such as a decision after the start of a project to use, introduce and disperse a radioactive tracer into a well for testing purposes or to use a new technology, process, method which has not been previously reviewed for potential environmental, health and safety impacts;

- Making changes that would result in changes in the license condition such as a change in the design, process, condition, operation, or discharge(s) to the environment of a radioactive materials processing facility;

- Making changes that would result in a decrease in the effectiveness of the TPMC Radiation Safety Program, such as a reduction in the number of radiological control/protection personnel or radiological instrumentation available to support the project activities.

4.1.3 The person requesting the change will fill out the Change Request Form (Figure 1) (or equivalent) in its entirety. Completion of the Change Request Form will include the performance and documentation of a Safety Evaluation, when applicable. The Change Request Form will be forwarded to the PM, PHPM/RCS, RSO, and Client's Engineer/Representative (as appropriate), or their designees for final concurrence of the change request.

4.1.4 Review and approval of all major changes to programs, plans, procedures, and documents previously approved, will be performed consistent with the requirements contained in Corporate Quality Implementing Procedure (QIP) 4.1, Document Control, as applicable. Major changes to documents will be reviewed and approved by the same individuals and in the same manner that the original document was reviewed and approved, unless specifically designated otherwise. At a minimum, major changes will be reviewed and approved by the TR, PM, PD, SSO, PHPP, RSO, QAM, QAD, (unless specifically designated otherwise) and Client, if required . (See Table 7.1 of QIP 4.2)

4.1.5 Changes (special major changes) to programs, plans, procedures and documents previously approved by the USNRC or Agreement State Agency, which are not in compliance with requirements specified in Section 3.0, will be reviewed by the TPMC individuals identified in Section 4.1.4 and will be submitted to the NRC or Agreement State Agency for approval prior to implementation.

4.2 **Minor Changes**

A minor change will not:

1. Adversely affect the quality of the data;
2. Create a major change in the scope;
3. Cause a significant change in the schedule
4. Be a special major change(s) (see Section 3.0)

Examples include by are not limited to:

- Changing a plan or procedure to make it confirm to a Quality Implementing Procedure (QIP) or requirement;

- Changing a plan or procedure to make it reflect a change in the corporate organization that results in a change in reporting relationships;

- Changing a plan or procedure to make it confirm to a Client procedure or requirements, as required by the contract;

- Changing the sequence of activities, the type of survey instrumentation used.

4.2.1 The person requesting the change will fill out the Change Request Form (or equivalent) (Figure 1) in its entirety. The Change Request Form will be forwarded to the PHPPM/RCS and the RSO or designees for final concurrence of the change request.

4.2.2 Review and approval of all minor changes to programs, plans, procedures, and documents previously approved will be performed consistent with the requirements contained in Corporate QIP 4.1, as applicable. Minor changes do not necessitate the same review and approval as the original document. Any change to a quality program document requires review by the QAM or QAD prior to making the minor change. Other documents, at a minimum, require review and approval by the PD or DPD for program level documents and the PM for project level documents. Documents related to radiological safety/protection will require the review and approval of the PHPPM/RCS and the RSO or designees. The revision of the document is not changed.

5.0 RECORDS

5.1 The records generated as a result of the implementation of this procedure include:

- Change Request Form (or equivalent) and related correspondence
- Safety Evaluation and related correspondence

5.2 All Change Requests will be maintained as part of TPMC Project files and in accordance with the requirements of Corporate Quality Implementing Procedure (QIP) 4.2, as applicable.

6.0 REFERENCES

Corporate Quality Implementing Procedure (QIP) 4.1, "Document Control", Rev 0.
Corporate Quality Implementing Procedure (QIP) 4.2, "Records Management", Rev 0.

7.0 ATTACHMENTS

Figure 1 - Change Request Form (or equivalent)

FIGURE 1
CHANGE REQUEST FORM

Change No._____ **Page** ___ **of** ___

Date: _____

Project: _____

Type of Change ☐ **Major** ☐ **Special Major** ☐ **Minor**

Applicable Document _____

Description _____

_____

_____

Reason/Basis for Change _____

_____

_____

Impact on: 1) Present and Completed Work Scope, Schedule, Cost, 2) Compliance with Regulatory Requirements, 3) Unreviewed Safety Question, 4) Change in License Condition, 4) Decrease in Effectiveness of Radiation Safety Program, _____

_____

_____

Safety Evaluation (if applicable) Evaluate 1) Identify Potential Safety Hazards, 2) Corrective Actions Taken to Eliminate, Mitigate, or Control Hazards to Acceptable Level 3) All Realistic Accidents/Failure Modes with Protection Commensurate with Potential Consequences 4) All Applicable Regulatory Requirements

_____

_____

_____

Requested by_____

Approvals:

_____
Project Health Physics Manager/ Radiation Control Supervisor or Designee / Date

_____
Project Radiation Safety Officer or Designee / Date

_____
Project Manager or Designee / Date

_____
Client's Engineer or Designee / Date