



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

July 7, 2023

EA-23-039

Don Dumas, President
ProTechnics Division of Core Laboratories LP
6510 West Sam Houston Parkway North
Houston, Texas 77041

SUBJECT: PROTECHNICS DIVISION OF CORE LABORATORIES LP - NRC INSPECTION
REPORT 030-30429/2022-002

Dear Don Dumas:

This letter refers to the announced routine inspection conducted from March 31, through April 26, 2022, with continued in-office review through April 27, 2023. The purpose of the inspection was to examine your licensed activities as they relate to public health and safety and to the U.S. Nuclear Regulatory Commission (NRC) rules and regulations. Within these areas, the inspection consisted of a selected examination of procedures and representative records and interviews with personnel. The enclosed report presents the results of the inspection. A final exit briefing was held telephonically with you and members of your staff, including David Trinker, current corporate Radiation Safety Officer, Jeremiah Diaz, pending corporate Radiation Safety Officer, and others on June 26, 2023.

Based on the results of the inspection, six apparent violations were identified and are being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's website at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. The apparent violations involve the failure to: (1) notify and seek NRC approval for the performance of an abandonment of a well logging source; (2) request an extension for a well logging source authorized for temporary storage within a well; (3) perform a timely abandonment for a well logging source authorized for temporary storage within a well; (4) demonstrate compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20 limits on the disposal of effluents within the Gulf of Mexico; (5) develop, document, and implement a radiation protection program sufficient to ensure compliance with 10 CFR Part 20, specifically with regards to a significant exposure recorded on two dosimeters; and (6) monitor a group of occupationally-exposed workers as a result of the loss of their dosimeters.

Before the NRC makes its enforcement decision, we are providing you an opportunity to: (1) request a predecisional enforcement conference (PEC); or (2) request alternative dispute resolution (ADR). If a PEC is held, it will be open for public observation and the NRC may issue a press release to announce the time and date of the conference. Please contact Dr. Lizette Roldán-Otero at (817) 200-1455 or via email at Lizette.Roldan-Otero@nrc.gov within 10 days of the date of this letter with your decision to either participate in a PEC or pursue ADR. A PEC should be held within 30 days and an ADR session within 45 days of the date of this letter.

If you choose to request a PEC, the conference will afford you the opportunity to provide your perspective on these matters and any other information that you believe the NRC should take into consideration before making an enforcement decision. The decision to hold a PEC does not mean that the NRC has determined that a violation has occurred or that enforcement action will be taken. This conference would be conducted to obtain information to assist the NRC in making an enforcement decision. The topics discussed during the conference may include information to determine whether a violation occurred, information to determine the significance of a violation, information related to the identification of a violation, and information related to any corrective actions taken or planned.

In presenting your corrective actions, you should be aware that the promptness and comprehensiveness of your actions will be considered in assessing any civil penalty for the apparent violations. The guidance in NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," may be helpful in preparing your response (Agencywide Documents Access and Management System (ADAMS) Accession No. ML061240509).

In lieu of a PEC, you may request ADR with the NRC in an attempt to resolve this issue. Alternative dispute resolution is a general term encompassing various techniques for resolving conflicts using a neutral third-party mediator. The technique that the NRC has decided to employ is mediation. Mediation is a voluntary, informal process in which a trained neutral mediator works with parties to help them reach resolution. If the parties agree to use ADR, they select a mutually agreeable neutral mediator who has no stake in the outcome and no power to make decisions. Mediation gives parties an opportunity to discuss issues, clear up misunderstandings, be creative, find areas of agreement, and reach a final resolution of the issues.

Additional information concerning the NRC's ADR program can be obtained at: <http://www.nrc.gov/about-nrc/regulatory/enforcement/adr.html>. The Institute on Conflict Resolution at Cornell University has agreed to facilitate the NRC's program as a neutral third party. Please contact the Institute on Conflict Resolution at 877-733-9415 within 10 days of the date of this letter if you are interested in pursuing resolution of this issue through ADR.

Since the NRC has not made a final determination in this matter, a Notice of Violation is not being issued for the apparent violations at this time. In addition, please be advised that the number and characterization of the apparent violations may change because of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room and from the NRC's ADAMS, accessible from the NRC website at: <http://www.nrc.gov/reading-rm/adams.html>.

D. Dumas

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If you have any questions concerning this matter, please contact Dr. Lizette Roldán-Otero of my staff at (817) 200-1455.

Sincerely,



Signed by Miller, Geoffrey
on 07/07/23

Geoffrey B. Miller, Director (Acting)
Division of Radiological Safety and Security

Docket No. 030-30429
License No. 42-26928-01

Enclosure:
NRC Inspection Report 030-30429/2022-002

cc w/Enclosure:
State of Texas

Nichole Young
US EPA Region 6
1201 Elm Street
Suite 500
Dallas, TX 75270-210

PROTECHNICS DIVISION OF CORE LABORATORIES LP - NRC INSPECTION
REPORT 03030429/2022002 – DATED JULY 7, 2023

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NRC-002

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**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Docket No.:	030-30429
License No.:	42-26928-01
Inspection Report No.:	2022-002
EA No.:	EA-23-039
Licensee:	ProTechnics Division of Core Laboratories LP
Locations Inspected:	Corporate Office at 6510 West Sam Houston Parkway North, Houston, Texas, and remote review of Temporary Job Sites in NRC Jurisdiction
Inspection Dates:	March 31, 2022 – April 27, 2023; Onsite April 25-26, 2022
Inspector:	Jason vonEhr, Senior Health Physicist Medical and Licensing Assistance Branch Division of Radiological Safety and Security, Region I
Approved By:	Lizette Roldan-Otero, PhD, Chief, Materials Inspection Branch Division of Radiological Safety and Security, Region IV
Attachments:	1) Supplemental Inspection Information 2) Letter from the U.S. Environmental Protection Agency Region 6 dated August 19, 2003

Enclosure

EXECUTIVE SUMMARY

ProTechnics Division of Core Laboratories LP NRC Inspection Report 030-30429/2022-002

Program Overview

ProTechnics Division of Core Laboratories LP (ProTechnics) is a licensee authorized for well logging and radioactive tracer operations under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 39. ProTechnics has four field offices authorized in the jurisdiction of the U.S. Nuclear Regulatory Commission (NRC) including the North Slope of Alaska, Rock Springs, Wyoming, Sidney, Montana, and Parkersburg, West Virginia. In addition, ProTechnics performs operations in the Gulf of Mexico within NRC jurisdiction from its Lafayette, Louisiana office. (Section 1)

Inspection Findings

Six apparent violations were identified through an announced routine inspection of ProTechnics and its performance of well logging and tracer activities within NRC jurisdiction. These apparent violations involve three general categories: sealed source well logging abandonments, unique NRC license conditions, and occupational monitoring.

Specifically, these six apparent violations involved the failures to: (1) notify and seek NRC approval for the performance of an abandonment of a well logging source; (2) request an extension for a well logging source authorized for temporary storage within a well; (3) perform a timely abandonment for a well logging source authorized for temporary storage within a well; (4) demonstrate compliance with 10 CFR Part 20 limits on the disposal of effluents within the Gulf of Mexico; (5) develop, document, and implement a radiation protection program sufficient to ensure compliance with 10 CFR Part 20, specifically with regards to a significant exposure recorded on two dosimeters; and (6) monitor a group of occupationally-exposed workers as a result of the loss of their dosimeters. (Section 2)

Corrective Actions

Following initial identification of the disposals related to No. 4 above, ProTechnics reached out to the NRC with a letter dated November 2, 2022 (ADAMS Accession No. ML22326A356) to describe their radioactive material disposals and request alternative approval by the NRC. The NRC's review of this request is, as of the date of this letter, under internal review within the NRC's Office of Nuclear Materials Safety and Safeguards. (Section 3)

REPORT DETAILS

1. Program Overview

1.1. Program Scope

ProTechnics Division of Core Laboratories LP (ProTechnics) is a licensee authorized for well logging and radioactive tracer operations under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 39. ProTechnics has four field offices authorized in the jurisdiction of the U.S. Nuclear Regulatory Commission (NRC), including the North Slope of Alaska, Rock Springs, Wyoming, Sidney, Montana, and Parkersburg, West Virginia. In addition, ProTechnics performs extensive operations in the Gulf of Mexico within NRC jurisdiction from its Lafayette, Louisiana office.

ProTechnics' NRC license was amended three times since that last routine inspection (performed on January 14, 2020): Amendment No. 52, issued April 16, 2020, changed the Radiation Safety Officer for the license; Amendment No. 53, issued May 4, 2020, granted an exemption from a timely abandonment of an irretrievable well logging source and added the associated well as a "temporary storage location" on the license; and Amendment No. 54, issued on July 13, 2021, removed the above-mentioned "temporary storage location" with the successful removal of the hitherto irretrievable well logging source.

Pending review and approval by the NRC were the following proposed amendments to the NRC license: (1) the amendment request dated May 5, 2022 (NRC Agencywide Documents Access and Management System (ADAMS) Accession No. ML22131A340; nonpublic), to update and clarify the license, in particular License Conditions 10.F through 10.I, which described the irretrievable well logging sources temporarily stored within wells. This action was prompted by internal NRC review of the unique subject license conditions; (2) the amendment request dated August 24, 2022 (ADAMS Package Accession No. ML22236A025; nonpublic except ML22285A192 and ML22374A224), requesting another irretrievable well logging source be authorized for temporary storage within a well; and (3) the amendment request dated November 2, 2022 (ADAMS Package Accession No. ML22353A616; nonpublic) requesting approval for the discharge of certain radioactive materials from oil and gas tracer operations into the Gulf of Mexico (more discussion on this item is offered below in Section 2.2.3).

1.2. Inspection Scope

The announced, routine inspection was an examination of ProTechnics' licensed activities conducted within the jurisdiction of the NRC. The scope of the inspection was to examine licensed activities as they related to public health and safety and to the NRC rules and regulations. Within these areas, the inspection consisted of a selected examination of procedures and representative records and interviews with personnel.

The inspection included a review of the licensee's occupational monitoring program and whether compliance was restored and would be maintained following the NRC's last routine inspection, performed on January 14, 2020, which included a Severity Level (SL) IV violation related to the licensee's occupational monitoring program. In addition, the review focused on the licensee's unique license conditions and operations, which differ markedly from other NRC 10 CFR Part 39 licensees.

1.3. Summary of the NRC's Previous Routine and Field Office Inspections

The previous NRC routine inspection was performed on January 14, 2020, with an in-office review through February 19, 2020. This inspection concluded with a SLIV violation. The SLIV violation involved the licensee's failure to identify and take adequate action after a West Virginia employee's dosimeter, representing the December 2018 monitoring period, went missing and was unaccounted for. The licensee failed to identify this missing dosimeter and thus failed to investigate the circumstances surrounding the loss or provide commensurate actions, such as an estimate for the occupational exposure that was not accounted for.

The NRC performed an inspection of the Parkersburg, West Virginia field office on March 8, 2022, with an in-office review through March 15, 2022. One area of concern and a minor violation was identified. The concern related to a weakness in the licensee's material accountability procedures, specifically with regards to the licensee's practices as they concerned the storage and labeling of the licensed radioactive material that caused the inspection's initial material verification to make an incorrect conclusion. The licensee's on-paper inventory and actual inventory were reconciled after some additional inspection effort. This concern was determined to not be a noncompliance of the regulations or the NRC license. The minor violation involved the licensee's posting of a "High Radiation Area" where radiation levels were far lower and thus inconsistent with the usage of this hazard communication and the definition in 10 CFR 20.1003 of a "high radiation area." While dosimetry was reviewed, the scope of the dosimetry review did not provide a sufficient basis for the inspector to close out the January 2020 inspection's SLIV violation.

2. **Observations and Findings (Inspection Procedure 87123)**

2.1. Summary of Routine Activities

The inspector requested recent examples of work from each of the NRC-licensed field offices, as well as work performed in the Gulf of Mexico, with the exception of the Parkersburg, West Virginia office, as it was independently inspected earlier in March 2022. There were limited licensed activities performed at temporary job sites in NRC jurisdiction from the Prudhoe Bay and Parkersburg field offices during the inspection period. The most recent work in Alaska was a pair of tritium injections in April 2019, and for West Virginia the most recent work was in June 2018 (note that work has been performed from the West Virginia facility since this date, but in Agreement State jurisdiction). The licensee performed primarily unsealed tracer studies with its Zero-Wash product (Accession No. ML033040193; nonpublic) with short-lived isotopes: predominantly iridium-192, scandium-46, and antimony 124. Antimony-124 was not utilized offshore for historical reasons that were not presently understood by the licensee. Tritium was noted in only two jobs from the Rock Springs, Wyoming office, performed in January 2020. The most recent work from the licensee's Sidney, Montana field office was a pair of tracer studies performed in December 2020.

The Gulf of Mexico represented the bulk of ProTechnics' NRC-licensed activities. The Gulf of Mexico region experienced by far the highest-frequency of licensed activity: on average, the licensee performed six logging jobs, five depth marker installations, and seven tracer jobs per month between 2020-March 2022. The Rock Springs, Wyoming field office did not perform logging or collar marker installations during the inspection period, but did perform tracer studies, with 32 jobs in 2020 (12 of which were in October), and 33 jobs in 2021 (14 of which were in May). No work was yet recorded in 2022 through March.

As of May 2022, the licensee had 48 qualified logging supervisors. Approximately half the ProTechnics staff who were issued dosimetry were terminated during the inspection period due to a slow-down in activities related to the COVID-19 pandemic.

As a result of the challenges in soliciting responses from the licensee, the inspector was unable to review a sample of jobs from each office that was active in performing NRC licensed activities since 2020 to review the associated information important to NRC oversight, such as calibration of survey meters, training for involved personnel, and leak tests for sealed sources.

2.2. Summary of Exemptions and Unique License Conditions

The licensee retained several exemptions and unique License Conditions (LCs) from historical requests. These included: LC 10.F through LC 10.I, which covered temporary storage of irretrievable well logging sources in order to delay final abandonment; LC 21 regarding higher activity collar and depth markers than generally authorized in 10 CFR 39.47; LC 22, 23, and 24 regarding alternative disposal pathways including shallow-earth disposal, Class-II disposal wells, and two landfills located in West Virginia. The inspector reviewed the licensee's use of each of these unique authorizations.

2.2.1. Temporary Storage Associated with Irretrievable Well Logging Sources

Regarding the temporary storage sites: LC 10.J was added by Amendment No. 53 (issued in May 2020) and subsequently removed with amendment No. 54 (issued in July 2021). The associated well logging source was declared irretrievable in early April 2020, and in March 2021 the well owner decided to remove the completion assembly within which the well logging tool and associated radioactive source were lodged. The licensee was onsite during the removal in April 2021 and recovered the associated cesium-137 logging source. The source was transferred to the licensee's Lafayette facility within Louisiana jurisdiction and leak tested to demonstrate the integrity of the source, with no leakage identified.

In the review of the remaining LC 10.F through LC 10.I that remained on the license as of amendment No. 54, two apparent violations were identified, and one item of interest was identified for further clarification with the licensee.

The well associated with LC 10.G was listed in a third-party data-aggregation entity and confirmed with the well owner, Exxon Mobile Production Company, to remain in production and active. In addition, the license commitment (Accession No. ML060620583; nonpublic) included, in part, for the licensee to request, in writing,

an extension to this temporary storage condition once the well is beyond the originally anticipated life (approximately 2026). As a result, no issues were identified.

The well associated with LC 10.I was listed in the third-party data-aggregation entity as “inactive.” In addition, according to the third-party data-aggregation entity, this well never entered into production. This was confirmed with the well owner, Murphy Exploration & Production. As the license commitment, captured in a letter dated January 30, 2013 (Accession No. ML13045B065; nonpublic), was prefaced on a final abandonment once the production was depleted, there did not appear to be a noncompliance. While the licensee did commit to request, in writing, an extension to this condition beyond the originally anticipated life of the well (2018), it is not clear how this commitment is conditioned on the well actually initiating production. Nonetheless, the licensee stated that it would communicate with the well owner to understand the potential future for the well and determine if final abandonment of the irretrievable well logging source would be appropriate. At the time of the termination of the inspection, it was not known if this communication occurred and whether the radioactive source would be abandoned and, if so, with what timeline.

A well in the Gulf of Mexico owned by Shell Offshore, Inc., described as OCS-G (Outer Continental Shelf – Gulf of Mexico) 11454 A-6, located in Garden Banks Block 128, offshore Louisiana, was referenced in the NRC license under License Condition 11 from Amendment No. 22 (Accession No. ML20195B016; nonpublic), issued on August 12, 1998, through Amendment No. 31 (Accession No. ML052090417; nonpublic), issued on July 28, 2005. The well was referenced with regards to an irretrievable well logging source that the licensee wished to delay implementing its abandonment procedures for. For unknown reasons, this license condition was removed with the issuance of Amendment No. 32, issued on February 28, 2006, which renewed the license.

Nonetheless, the licensee performed an abandonment of the well logging source within the aforementioned well in July 2021. This appears to have been performed without any notification to the NRC, as required by 10 CFR 39.77(c)(1), and without the associated approval of the NRC, as required by 10 CFR 39.77(c)(1)(i). The licensee produced a letter dated July 18, 2021 (later uploaded as part of Accession No. ML22131A340; nonpublic, pdf pages 48 and 53 of 217, as part a licensing action), addressed to the NRC related to the completion of this abandonment. This letter does not appear in the NRC’s ADAMS before the inspection, nor is there any record of a call with the Headquarters Operations Officer (a common method of requesting and receiving approval to abandon an irretrievable well logging source), or other event-related documentation in the Region. The senior license reviewer searched their email and other records and found no trace of this letter or other potentially related correspondence from the licensee or its representatives. It was noted by the inspector that the July 2021 letter was addressed to “611 Ryan Plaza, Suite 400, Arlington, TX,” which Region IV had not occupied since mid-2012.

The regulation has an exception to the notification and approval in the case of immediate threats to public health and safety, although post-abandonment notification requirements would then apply. No evidence has been provided to the inspector or the NRC, nor has the licensee suggested that this exception applied to the abandonment. As a result, this issue was identified as an apparent violation of 10 CFR 39.77(c)(1), and a draft violation appears below.

Apparent Violation No. 1: 10 CFR 39.77(c)(1)

Title 10 CFR 39.77(c)(1) requires, in part, that if a sealed source becomes lodged in a well, and when it becomes apparent that efforts to recover the sealed source will not be successful, the licensee shall notify the NRC Regional Office and: (i) obtain NRC approval to implement the abandonment procedures; or (ii) that the licensee implemented abandonment before receiving NRC approval because the licensee believed there was an immediate threat to public health and safety.

Contrary to the above, in July 2021, the licensee failed to notify and obtain NRC approval to implement the abandonment procedures and the licensee did not believe there was an immediate threat to public health and safety. Specifically, the licensee did not provide notice, either by phone or other mode of communication, to the NRC Regional Office or other NRC group, of the abandonment that was performed in July 2021 in order to receive NRC approval.

The licensee's failure to notify and seek NRC approval for a well logging source that was abandoned within a well was identified as an apparent violation of 10 CFR 39.77(c)(1). (030-30429/2022-002-01)

The well associated with LC 10.H was listed in ENVERUS and confirmed with the well owner, Occidental Petroleum (formerly Anadarko Petroleum, which was purchased in August 2019), to have terminated its production. The license commitment, captured in a letter dated May 8, 2006 (Accession No. ML061290405; nonpublic), was to request, in writing, an extension to this condition beyond the originally anticipated life of the well, which was in 2016. In communications with the NRC related to the simultaneous licensing and inspection efforts, ProTechnics provided an update (letter dated May 11, 2022, nonpublic, ML22131A340) that clarified that the well remained in production. However, this status was clarified again in an email dated May 31, 2022, that the well was shut-in and ready for permanent abandonment. As a result, an apparent violation of this license commitment was identified, and a draft violation appears below.

Apparent Violation No. 2: License Condition 10.D

License Condition 10.D of NRC License 42-26928-01, Amendment No. 49 and 50 (which was shifted to License Condition 10.H of NRC License 42-26928-01, Amendment No. 50 (corrected copy) to 54) requires, in part, that licensed material identified in a letter dated May 8, 2006, may be stored offshore at Anadarko Petroleum Company well API No. 60-811-40377-02 in accordance with the letter dated May 8, 2006.

The letter dated May 8, 2006, states, in part, that the well API No. 60-811-40377-02 had a life expectancy of 10 years and if the life of the well was longer, an extension would be filed.

Contrary to the above, from May 2016 through May 11, 2022, the licensee failed to file an extension when well API No. 60-811-40377-02 exceeded its life expectancy of 10 years. Specifically, the well continued in production from May 2016, the expected useful life of the well, through October 2021, and the licensee failed to request an extension of the condition to allow continued temporary storage of an irretrievable well logging source.

The licensee's failure to request an extension for a well logging source authorized for temporary storage within a well was identified as an apparent violation of License Condition 10.D. (030-30429/2022-002-02)

Finally, it was noted that the language surrounding the timing of the source's abandonment was "after production is depleted." During the turbulent oil market conditions at the beginning of 2020, the well owner shut in the well in April 2020, ceasing virtually all production (oil production was reduced to zero, and gas production reduced by 98.8% of its pre-COVID-19 pandemic production). The well was re-opened 16 months later in August 2021 with reduced production but was once closed in and production terminated in October 2021. At the time of the inspection, the licensee did not appear to have engaged the well owner to proceed with an abandonment of the associated radioactive source, contrary to the above license commitment. As a result, an apparent violation of this license commitment was identified, and a draft violation appears below.

Apparent Violation No. 3: License Condition 10.H

License Condition 10.H of NRC License 42-26928-01, Amendment No. 54 requires, in part, that licensed material identified in a letter dated May 8, 2006, may be stored offshore at Anadarko Petroleum Company well API No. 60 811 40377-02 in accordance with the letter dated May 8, 2006.

The letter dated May 8, 2006, required, in part, that after the production of the well API No. 60 811 40377-02 is depleted, the proper abandonment procedures will be implemented.

Contrary to the above, from October 2021 through April 27, 2023, the licensee failed to ensure the timely implementation of its abandonment procedures after the production of the well API No. 60 811 40377-02 was depleted. Specifically, the well was initially shut-in in April 2020, re-opened in August 2021, and subsequently terminated in production in October 2021, and the licensee has failed through the end of the 2022 inspection to perform an abandonment on the associated well logging source.

The licensee's failure to perform a timely abandonment for a well logging source authorized for temporary storage within a well was identified as an apparent violation of License Condition 10.H. (030-30429/2022-002-03)

2.2.2. Exemption from NRC Collar Marker Activity Restrictions

The licensee requested and was approved in the late 1990s for the authorization to possess and use collar and depth markers with activities in excess of the general authorization in 10 CFR 39.47 (which references 10 CFR 30.71, Schedule B), which appeared on its license in LC 21 as of Amendment No. 54. The licensee reviewed its activities between 2018 and the date of the inspection and determined that no markers were emplaced for clients that exceeded the general authorization in 10 CFR 39.47, and as a result did not utilize the exemption provided in LC 21. As a result, no further review was conducted of the commitments made in the letters incorporated into the associated LC.

2.2.3. Alternative Radioactive Material Disposal Pathways

With regards to the alternative disposal pathways approved in LC 22 through 24: the disposal activities of the Parkersburg, WV office was reviewed as part of Inspection Report No. 2022-001, performed onsite in March 2022, and is documented therein. Of ProTechnics' other NRC-licensed activities, or activities occurring outside NRC jurisdiction but where the waste is brought into NRC jurisdiction for disposal: the licensee reviewed its records from 2018 through the date of the inspection and determined that in no instance was shallow-earth disposal (LC 22), Class II disposal wells (LC 23), or use of the landfills in WV (LC 24) utilized. The radioactive waste generated from the licensee's other offices located within NRC jurisdiction was disposed of using U.S. Ecology in Idaho or Phoenix Disposal in Utah, and therefore utilized the generic authorizations provided under 10 CFR Part 20 Subpart K.

In contrast, the licensee's offshore unsealed tracer activities resulted in wastes, in the form of production flow-back and completions discharges, that were disposed of by alternative means. Some of these wastes and the associated NRC-licensed byproduct material appear to have been disposed of as effluents into the Gulf of Mexico. The inspector questioned this disposal pathway, and in response the licensee provided a letter from the U.S. Environmental Protection Agency (EPA), Region 6, dated August 19, 2003 (Attachment 2). The letter nominally agreed that the discharge of flowback wastes which include byproduct material (limited to iridium-192 and scandium-46) did not appear to be inconsistent with the associated permit (National Pollutant Discharge Elimination System (NPDES) General Permit No. GMG290000) authorizing related bulk oil and gas waste discharge and with general environmental laws governing offshore oil and gas production. The NRC met with the EPA in May 2022 to understand if this position remained the same contemporarily to the inspection.

NOTE: with respect to these oil and gas production waste discharges, EPA has the regulatory lead, as opposed to the Bureau of Safety and Environmental Enforcement (BSEE), who oversees other safety and engineering matters offshore, or the NRC, who oversees the use of radioactive materials.

The EPA and NRC held a meeting on May 25, 2022, during which the EPA clearly communicated their understanding of the regulatory boundary between the EPA and NRC, and acknowledged that it did not, and could not, unilaterally authorize disposal of NRC-licensed byproduct material. The EPA took the additional steps following this meeting to add explicit language to the above-quoted general permit, which was under review for revision and re-issuance, to clarify this regulatory separation between the NRC and EPA (see Federal Registry entry 87 FR 43847, dated July 22, 2022, available online at: <https://www.federalregister.gov/documents/2022/07/22/2022-15648/proposed-npdes-general-permit-for-new-and-existing-sources-and-new-dischargers-in-the-offshore>).

In response to these preliminary findings and discussions, ProTechnics submitted a letter dated November 2, 2022 (Accession No. ML22285A192), requesting alternative waste disposal approval under 10 CFR 20.2002. This matter is presently under review with the NRC as of the date of this inspection report, however it would appear that the disposal of the licensee's completions and post-production radioactive tracer material may be disposed of as effluents under 10 CFR 20.2001(a)(3), subject to the limitations in 10 CFR 20.1301. As the licensee did not appear to have performed an assessment of

the doses related to this effluent discharge prior to the letter dated November 2, 2022, nor performed surveys or otherwise demonstrated compliance with 10 CFR 20.1301, the NRC identified an apparent failure to demonstrate compliance with the dose limits associated with 10 CFR 20.1301 as required by 10 CFR 20.1302. As a result, an apparent violation of this regulatory requirement was identified, and a draft violation appears below.

Apparent Violation No. 4: 10 CFR 20.1302

Title 10 CFR 20.1302(a) requires the licensee to make or cause to be made, as appropriate, surveys of radiation levels in unrestricted and controlled areas and radioactive materials in effluents released to unrestricted and controlled areas to demonstrate compliance with the dose limits for individual members of the public in 10 CFR 20.1301.

Title 10 CFR 20.1302(b) requires the licensee to show compliance with the annual dose limit in 10 CFR 20.1301 by (1) demonstrating by measurement or calculation that the total effective dose equivalent to the individual likely to receive the highest dose from the licensed operation does not exceed the annual dose limit; or (2) demonstrating that: (i) the annual average concentrations of radioactive material released in gaseous and liquid effluents at the boundary of the unrestricted area do not exceed the values specified in Table 2 of Appendix B to 10 CFR Part 20; and (ii) if an individual were continuously present in an unrestricted area, the dose from external sources would not exceed 0.002 rem in an hour and 0.05 rem in a year.

Contrary to the above, from August 19, 2003, to November 2, 2022, the licensee released radioactive effluents without demonstrating compliance with 10 CFR 20.1301 as described above. Specifically, the licensee released radioactive materials as effluents into the Gulf of Mexico as a matter of routine operations authorized under 10 CFR Part 39 without: (1) having performed a survey or caused a survey to be performed; and (2) an assessment by measurement or calculation to demonstrate its compliance with the NRC's established dose limits and the average effluent concentration limits at the boundary of an unrestricted area.

The licensee's failure to demonstrate compliance with 10 CFR Part 20 limits on the disposal of effluents within the Gulf of Mexico was identified as an apparent violation of 10 CFR 20.1302. (030-30429/2022-002-04)

2.3. Occupational Monitoring Program

The inspector discussed with the licensee principal and primary dosimetry reviewer the licensee's processes and procedures with respect to dosimetry (i.e., handling lost dosimeters, reviewing anomalous high or low results, and correcting records as deemed necessary). The inspector reviewed dosimetry reports for calendar year (CY) 2020 through year-to-date 2022 for the licensee's three permanently manned NRC-licensed field offices (excludes Alaska), as well as the licensee's operations out of Lafayette, Louisiana, as it pertained to the NRC-licensed activities offshore in the Gulf of Mexico. The inspector noted, with an exception noted below, maximum occupational exposure results of 3,329 mrem (Lafayette) for CY2019, 1,733 mrem (Lafayette) for CY2020,

and 1,143 mrem (Sidney) for CY2021. Year-to-date 2022 was available through March 2022, which recorded a maximum exposure of 122 mrem (Lafayette).

The last NRC routine inspection identified a violation associated with occupational exposure monitoring, specifically regarding an individual who participated in NRC-licensed activities and had a monitoring period without any dosimetry results.

This was determined to be the result of a dosimeter that was never turned in, and the missing dosimeter was not identified or assessed by the licensee prior to the NRC's 2020 inspection.

The inspector's 2022 review of the dosimetry results was challenged by the high departure rate of licensee staff – approximately half of the licensee's personnel who were issued dosimetry in the above-quoted offices departed employment from ProTechnics between 2020-2022. The review identified five examples of dosimetry results that were recalculated by the licensee – including two cases involving ring (extremity) dosimeters. In most of these cases the individual lost the subject dosimeter, and the licensee identified the loss of the dosimeter and performed an occupational exposure recalculation to fill in the otherwise missing occupational exposure record. The outlier for these examples was a July 2020 whole body and ring dosimeter from an employee of the Sidney, Montana office. These dosimeters were processed by the dosimetry provider with a result of 27,085 mrem for the whole-body dosimeter, and 28,039 mrem on the extremity dosimeter. The licensee was immediately aware of these values via communication (letter dated August 19, 2020) from the dosimetry vendor. The dosimetry vendor re-processed the dosimeters, with the second reading agreeing with the initial results.

The licensee performed reactive activities in a timely but inadequate manner. The licensee's investigation lacked a basic questioning attitude, and did not demonstrate, speculate, or conclude a non-radiological root cause to the reported exposure. The licensee documented the employee's explanation for the exposure, which included comparatively minor potential radiation exposures – exposures that could potentially add up to hundreds of millirem, rather than thousands. Therefore, the licensee failed to demonstrate that the exposure was not legitimate or otherwise not reflective of the individual's actual radiation exposure.

Despite this, the licensee proceeded to perform a recalculation of the individual's occupational exposure, which was completed on September 4, 2020, and sent the recalculated values to the dosimetry vendor for correction of the official occupational exposure record. The recalculation initially concluded with 881 mrem whole body, and 3,523 mrem to the individual's extremity. The inspector noted that the licensee's initial approach was inconsistent with the licensee's communication of corrective actions from the NRC's previous routine inspection (captured in a letter dated January 31, 2020, Accession No. ML20050C367), which included a description for the general process of correcting exposures, methods for calculating or estimating exposures to individuals, including in the event of an "overexposure" (an occupational exposure exceeding the NRC's regulatory limits in 10 CFR 20.1201). The inspector's review concluded that the recalculation lacked any context, background, explanations for the provided values, nor did it identify the source(s) of information or provide basic assumptions. The licensee set about performing a new recalculation during the inspection as the inspector requested additional explanation for the original calculation.

The individual in question participated in comparatively limited licensed activities during the monitoring period. These activities were limited to the performance of a pair of tracer jobs on 'sister' wells, both in North Dakota, on July 21-23, 2020, and July 28-29, 2020, involving cumulatively 1.78 curies of Ir-192 and 1.4 curies Sc-46. In order to achieve the readings on the dosimeter over this 5-day period, if exposed only during this period, would require an average radiation exposure rate of approximately 225 mR/hr.

After significant delays in making contact with the former Sidney, Montana employee, the inspector interviewed the individual on December 9, 2022. The individual recounted the events of the licensed activities described above from July 2020, and provided their explanation and ideas regarding the potential causes of the elevated dosimeter results. No significant or material information was revealed during this interview. As a result, no explanation yet existed from either the subject individual or ProTechnics that reasonably explained the cause of the dosimeter results.

As a result of all the above, an apparent violation of the radiation protection program under 10 CFR 20.1101(a) was identified, and a draft violation appears below.

Apparent Violation No. 5: 10 CFR 20.1101(a)

Title 10 CFR 20.1101(a) requires, in part, that each licensee shall develop, document, and implement a radiation protection program commensurate with the scope and extent of licensed activities and sufficient to ensure compliance with the provisions of this 10 CFR Part 20.

Contrary to the above, in August and September 2020, the licensee failed to develop, document, and implement a radiation protection program commensurate with the scope and extent of licensed activities and sufficient to ensure compliance with the provisions of 10 CFR Part 20. Specifically, the licensee failed to develop, document, and implement an adequate program, to ensure that it could demonstrate compliance with 10 CFR 20.1201(a) for an employee's dosimeter that recorded a total effective dose equivalent of 27.085 rems for the month of July 2020, and failed to demonstrate that this reading was not an accurate measure of actual exposure.

The licensee's failure to develop, document, and implement a radiation protection program sufficient to ensure compliance with 10 CFR Part 20, specifically with regards to a significant exposure recorded on two dosimeters, was identified as an apparent violation of 10 CFR 20.1101(a). (030-30429/2022-002-05)

In addition, during the review of the licensee's general dosimetry records, the inspector identified a single monitoring period gap, specifically October 2021, whereupon the licensee did not have any responsive occupational exposure records for its Lafayette, Louisiana facility and the associated individuals. While this facility was in an Agreement State, the individuals were heavily involved in NRC-licensed activities in the Gulf of Mexico. Following the inspector's identification, the licensee reviewed its records and reached out to the dosimetry vendor and concluded that all of the occupational dosimeters for this office for the month of October 2021 had been misplaced or lost. The licensee failed to identify the missing dosimeters and therefore failed to take appropriate compensatory action to assess the missing occupational exposure for the affected individuals. As a result, an apparent violation of 10 CFR 20.1502(a) was identified, and a draft violation appears below.

Apparent Violation No. 6: 10 CFR 20.1502(a)

Title 10 CFR 20.1502(a) requires, in part, that each licensee shall monitor exposures to radiation and radioactive material at levels sufficient to demonstrate compliance with the occupational dose limits of 10 CFR Part 20. As a minimum, each licensee shall monitor occupational exposure to radiation from licensed and unlicensed radiation sources under the control of the licensee in accordance with the requirements in 10 CFR 39.65 "Personnel Monitoring."

Contrary to the above, for October 2021, the licensee failed to monitor exposures to radiation and radioactive material at levels sufficient to demonstrate compliance with the occupational dose limits of 10 CFR Part 20. Specifically, the licensee failed to identify or investigate the loss of all occupational dosimeters for October 2021 for its Lafayette, Louisiana field office, from which the majority of its NRC-licensed Gulf of Mexico activities are performed, which resulted in the loss of the applicable licensee staff's occupational exposure information. By failing to identify this loss, the licensee failed to perform a calculation or assessment in lieu of the exposures that the occupational dosimeters would have provided.

The licensee's failure to monitor a group of occupationally exposed workers as a result of the loss of their dosimeters was identified as an apparent violation of 10 CFR 20.1502(a). (030-30429/2022-002-06)

2.4. Conclusions

Six apparent violations were identified through an announced routine inspection of ProTechnics and its performance of well logging and tracer activities within NRC jurisdiction. These apparent violations involve three general categories: sealed source well logging abandonments, unique NRC license conditions, and occupational monitoring.

Specifically, these six apparent violations involved: (1) notify and seek NRC approval for the performance of an abandonment of a well logging source; (2) request an extension for a source authorized for temporary storage within a well; (3) perform a timely abandonment for a source authorized for temporary storage within a well; (4) demonstrate compliance with 10 CFR Part 20 limits on the disposal of effluents within the Gulf of Mexico; (5) develop, document, and implement a radiation protection program sufficient to ensure compliance with 10 CFR Part 20, specifically with regards to a significant exposure recorded on two dosimeters; and (6) monitor a group of occupationally-exposed workers as a result of the loss of their dosimeters.

3. **Corrective Actions**

Following initial identification by the inspector of the concern regarding the disposal of radioactive material into the Gulf of Mexico, ProTechnics reached out to the NRC with a letter dated November 2, 2022, to describe their radioactive material disposals and request alternative approval by the NRC. The NRC's review of this request is, as of the date of this letter, under internal review within the NRC's Office of Nuclear Materials Safety and Safeguards. The licensee personnel directed a significant fraction of its time and resources addressing this item with the NRC's Office of Nuclear Materials Safety and Safeguards.

ProTechnics took steps to address the concerns related to the occupational dosimetry issues described above in Section 2.3. ProTechnics revised the Sidney, Montana employee's occupational exposure reconstruction and provided a copy of the reconstruction and supporting documents to the inspector between July 11 and 15, 2022. This revised reconstruction included labeling and other explanations that were not present on the original reconstruction's record. However, the inspector noted that the reconstruction provided in July 2022 continued to lack descriptive context, background, or provide basic assumptions.

No information has been communicated as of April 27, 2023, regarding the corrective actions, planned or completed, for the other apparent violations identified in Section 2.2.1 regarding irretrievable well logging sources, their temporary storage status, and their final abandonment.

4. Exit Meeting Summary

Following the NRC's in-office review, which concluded on April 27, 2023, the NRC conducted an exit briefing via teleconference on June 26, 2023, with Don Dumas, President, and other ProTechnics representatives, including David Trinker, current corporate Radiation Safety Officer, and Jeremiah Diaz, pending corporate Radiation Safety Officer. ProTechnics' representatives acknowledged the inspection findings presented during the call.

SUPPLEMENTAL INSPECTION INFORMATION

LIST OF PERSONS CONTACTED

Don Dumas, President
David Trinker, Director of Health, Safety, and Environment Quality, Corporate Radiation Safety Officer
Jeremiah Diaz, Pending Corporate Radiation Safety Officer
JayDee Johnson, Manager, Environmental and Safety Compliance
Ron Blush, Manager, U.S. Operations
Luke Handy, Manager, U.S. Operations
Kyane Hampton, Site Radiation Safety Officer
John Kalika, Site Radiation Safety Officer

INSPECTION PROCEDURES USED

87123 – Well Logging Programs

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

030-30429/2022-002-01	AV	Failure to notify and seek NRC approval for a well logging source that was abandoned within a well.
030-30429/2022-002-02	AV	Failure to request an extension for a well logging source authorized for temporary storage within a well.
030-30429/2022-002-03	AV	Failure to perform a timely abandonment for a well logging source authorized for temporary storage within a well.
030-30429/2022-002-04	AV	Failure to demonstrate compliance with 10 CFR Part 20 limits on the disposal of effluents within the Gulf of Mexico.
030-30429/2022-002-05	AV	Failure to develop, document, and implement a radiation protection program sufficient to ensure compliance with 10 CFR Part 20, specifically with regards to a significant exposure recorded on two dosimeters.
030-30429/2022-002-06	AV	Failure to monitor a group of occupationally exposed workers as a result of the loss of their dosimeters.

Closed

None

Discussed

030-30429/2020-001-01 VIO Failure to identify and take adequate action after a West Virginia employee's dosimeter, representing the December 2018 monitoring period, went missing and was unaccounted for.

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ADR	Alternative Dispute Resolution
API	American Petroleum Institute
AV	Apparent Violation
BSEE	Bureau of Safety and Environmental Enforcement
CY	Calendar Year
CFR	<i>Code of Federal Regulations</i>
EPA	Environmental Protection Agency
ICR	Institute on Conflict Resolution
LC	License Condition
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
OCS-G	Outer Continental Shelf – Gulf of Mexico
PEC	Predecisional Enforcement Conference



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

AUG 19 2003

Mr. Tom Hampton
President
Pro Technics
6316 Windfern, Room 310
Houston, TX 77040

Dear Mr. Hampton:

Thank you for meeting with me on August 15, 2003 and supplying information on your product and its use in offshore oil and gas operations.

Based on the information you have presented, it appears that the discharge of well treatment fluids which contain Iridium-192 and Scandium-46 as propping agents would be in compliance with the requirements of the Western Gulf of Mexico Outer Continental Shelf NPDES General Permit for the Offshore Oil and Gas Subcategory (GMG290000). Use of such radioactive elements in very low concentrations has been examined in the process of issuing National Effluent Limitations Guidelines and in our permit development. I understand that Iridium-192 and Scandium-46 are generally used in concentrations less than 0.1 ppm (2000 pCi/gm) and they are likely to be further diluted by other constituents involved in the process. The discharge of such well treatment fluids is presently allowed under the NPDES general permit with no additional monitoring requirements other than for oil and grease and free oil.

Again, it was good to meet with you and obtain more information on your industry. Should you have additional questions please feel free to contact me by telephone at (214) 665-7511 or by E-mail at: wilson.js@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Scott Wilson".

J. Scott Wilson
Acting Chief
NPDES Permits Section