CASE NO. 2-2011-016

United States
Nuclear Regulatory Commission

Report of Investigation

LOUISIANA ENERGY SERVICES (LES)

FALSIFICATION OF RADIOGRAPHIC EXAMINATION REPORTS INVOLVING WELD INSPECTIONS

Office of Investigations

Reported by: OI:RII

A-1

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Title: LOUISIANA ENERGY SERVICES (LES)

FALSIFICATION OF RADIOGRAPHIC EXAMINATION REPORTS INVOLVING WELD INSPECTIONS (N)

Licensee:

Louisiana Energy Services
URENCO USA
275 Hwy 176
Eunice, NM 88231

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(b)(7)(C)

Office of Investigations
Field Office, Region II

Reviewed and Approved by:

Robert P. Rzepka, Director
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SYNOPSIS

This investigation was initiated by the U.S. Nuclear Regulatory Commission (NRC), Office of Investigations (OI), Region II (RII), on December 8, 2010 to determine whether a radiographer performing contract work for Louisiana Energy Services (LES), Eunice, New Mexico, willfully provided incomplete and inaccurate information pertaining to radiographic examination reports.

Based on the evidence developed, this investigation did not substantiate the allegation that a radiographer performing contract work at LES willfully provided incomplete and inaccurate information pertaining to radiographic examination reports.

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TABLE OF CONTENTS

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LIST OF INTERVIEWEES

Exhibit(s)

7C

(b)(7)(C) Engineered Products Division (EPD), Carlsbad, New Mexico.....19

(b)(7)(C) Desert Industrial X-Ray L. P. (Desert), Carlsbad, New Mexico 21

(b)(7)(C) Pennsylvania.....15

(b)(7)(C) EPD.....18

(b)(7)(C) New Mexico.....12

(b)(7)(C) LES.....13

(b)(7)(C)

(b)(7)(C) LES.....10

(b)(7)(C) S.....9

(b)(7)(C) Desert 20

(b)(7)(C) 16

(b)(7)(C)

LES.....4

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DOCUMENTARY EVIDENCE

During the course of this investigation, various documents were obtained from witnesses and the licensee and were used to bring clarity to the allegations that a radiographer willfully provided incomplete and inaccurate information pertaining to radiographic examination reports.

Condition Report (CR) (b)(7)(C) (Exhibit 8)

This report was initiated by (b)(7)(C) LES, and advised that on (b)(7)(C) a (b)(7)(C) had determined that 14 radiographic (RT) x-ray films were taken on seven (b)(7)(C) welds from (b)(7)(C) and were found to be compliant with requirements of American Welding Society (AWS) D1.1. Subsequently, based on failures of (b)(7)(C) in other (b)(7)(C) during the October 2011 timeframe, the (b)(7)(C) previously found acceptable in (b)(7)(C) were reexamined and determined to be rejectable per AWS D1.1.

URS Washington Division, Engineered Products Division (EPD), Carlsbad, New Mexico, Radiographic Examination Report (b)(7)(C) (Exhibit 5)

This document is known as the reader sheet that was attached to the 14 RT x-ray films submitted to LES by (b)(7)(C) Desert Industrial X-Ray, L.P. (Desert), Carlsbad, New Mexico. The 14 RT x-ray films were identified by a serial number, view, and marked as acceptable under AWS D1.1 (b)(7)(C) was working as a contractor to EPD and was listed as the (b)(7)(C) and (b)(7)(C)

Desert Industrial X-Ray, L.P., Carlsbad, New Mexico, Report of N.D.E. Inspection of Welds (b)(7)(C) (Exhibit 6)

This document signed by (b)(7)(C) listed the weld number, degree angle of x-ray, and indicated it was within code for the 14 welds x-rayed. The document lists (b)(7)(C) (b)(7)(C) for Desert, as (b)(7)(C) during the examination of welds.

LES Surveillance Report (b)(7)(C) (Exhibit 7)

This report was prepared by (b)(7)(C) LES, and reflects the results of his examination of (b)(7)(C) documentation (Exhibits 5 and 6) submitted to LES and used by (b)(7)(C) in declaring that the welds were found to be in compliance with Structural Welding Code Steel, AWS D1.1. The document was signed by (b)(7)(C) During the course of the investigation it was learned that the date on

Exhibit 7, (b)(7)(C) was a more accurate date of the LES Report # (b)(7)(C)

LES Detailed Apparent Cause Evaluation (ACE) of CR (b)(7)(C) undated (Exhibit 11)

The ACE was prepared as a result of CR (b)(7)(C) and concluded that 14 RT x-ray films of seven (b)(7)(C) welds from (b)(7)(C) were evaluated as satisfactory by a certified welding inspector (b)(7)(C) working for EPD. In order to validate the adequacy of the evaluation, LES contracted (b)(7)(C) (b)(7)(C) to re-evaluate the 14 RT x-ray films, and he concluded that all 7 welds were unsatisfactory and rejectable. Due to the differences in conclusions of both (b)(7)(C) (b)(7)(C) it was unclear whether the welds were acceptable or not. The ACE concluded that (b)(7)(C) applied incorrect judgment in evaluating the radiographs in that the techniques applied by (b)(7)(C) did not comply with EPD procedures or the AWS D1.1 requirement for acceptability of the radiographs that were being interpreted.

LES Surveillance Report #: (b)(7)(C) (Exhibit 14)

This report was signed by (b)(7)(C) pertaining to a total of 7 (b)(7)(C) weld radiographs. (b)(7)(C) reviewed the radiographs and performed evaluations according to AWS D1.1-2000, Clause 6.12.2.1 and Figure 6.4. In summary, the (b)(7)(C) report revealed that all seven welds (14 RT films) did not meet acceptable criteria. The report identified the unacceptable radiographs by identification numbers as follows:

(b)(7)(C)	view 0 degrees and view 90 degrees
	view 0 degrees and view 90 degrees
	view 0 degrees and view 90 degrees
	view 0 degrees and view 90 degrees
	view 0 degrees and view 90 degrees
	view 0 degrees and view 90 degrees
	view 0 degrees and view 90 degrees

This document (Exhibit 14) was prepared by (b)(7)(C) (b)(7)(C) subject to his personal review of the 14 RT x-ray films taken by (b)(7)(C)

Industrial Testing Laboratory Services Report, October 20, 2010 (Exhibit 17)

Due to the difference of opinions between (b)(7)(C) and (b)(7)(C) LES requested independent tests be performed by (b)(7)(C) (b)(7)(C) (b)(7)(C) (b)(7)(C) conducted their reviews of the 14 RT x-ray films taken by (b)(7)(C) (b)(7)(C) concluded that the indications observed on radiography film for all specimens were internal discontinuities related to incomplete fusion and /or inadequate penetration, and did not meet the requirements of AWS D1.1. They were rejected by both (b)(7)(C)

Industrial Certifications held by (b)(7)(C) Various dates (Exhibit 22)

During his interview, (b)(7)(C) provided various certifications that he has obtained as follows:

(b)(7)(C)

Resume and training certificates held by (b)(7)(C) Various dates (Exhibit 23)

During his interview, (b)(7)(C) provided numerous training certificates, visual acuity record and extensive resume.

URS/EPD Purchase order (b)(7)(C) Exhibit 24)

This document reflects the purchase order agreement between Desert and URS/EPD allowing (b)(7)(C) to perform radiography work on the seven (b)(7)(C) welds from LES.

Written correspondence prepared by (b)(7)(C) explaining his rationale on the (b)(7)(C) x-ray interpretations, undated (Exhibit 25)

(b)(7)(C) avowedly claimed that he made a human mistake, as he detected the indications on the welds, but characterized them as non-relevant.

Letter from URENCO/LES showing OI:RII taking possession of the 14 RT films for investigative purposes, dated January 20, 2011 (Exhibit 26)

This letter was used by (b)(7)(C) LES, to show the transfer of the original 14 RT films from LES to OI:RII for use during the investigation and return of 14 RT x-ray films back to LES. These 14 RT x-ray films were utilized by OI:RII and were shown to (b)(7)(C) during his interview in order for him to explicate his interpretation of the RT x-ray film to OI:RII and (b)(7)(C)

AGENTS NOTE: The original 14 radiography x-ray films were returned to LES once it was determined by OI:RII with the concurrence of (b)(7)(C) and RII Staff that they were no longer needed. However, LES was able to take the 14 radiography x-ray films and produce a photograph of the welds that was placed on a compact disk (CD). The thirty-three photographs have been copied and are contained in Exhibit 26. The original CD will be maintained in the OI:RII case file for future use as may be deemed appropriate.

DETAILS OF INVESTIGATION

Applicable Regulations (2010 Edition)

10 CFR 70.9 (Completeness and Accuracy of Information) (2010 edition)
10 CFR 70.10 (Deliberate Misconduct) (2010 edition)

Purpose of Investigation

This investigation was initiated by the U.S. Nuclear Regulatory Commission (NRC), Office of Investigations (OI), Region II (RII), on December 08, 2010, to determine whether (b)(7)(C) performing contract work for Louisiana Energy Services (LES), Eunice, New Mexico, provided incomplete and inaccurate information pertaining to radiographic examination reports (Exhibit 1).

Background

The NRC:RII Construction Inspection Branch 3 (CIB), reported a concern that the Non Destructive Examination (NDE) (radiography or RT) of welds associated with the (b)(7)(C) on the upper steelworks for (b)(7)(C) at Louisiana LES, were reviewed and accepted as meeting code requirements (ANSI N690 and AWS D1.1) inappropriately. According to CIB 3 staff, on (b)(7)(C) these welds were inspected and accepted by (b)(7)(C) (b)(7)(C) Desert Industrial X-ray. Inc. (Desert), Eunice, New Mexico, working as a contractor to Engineered Projects Division (EPD), who was under contract with LES. EPD is located in Carlsbad, New Mexico. Subsequently, a (b)(7)(C) (b)(7)(C) assigned to LES Quality Assurance (QA) performed a surveillance of the NDE results and concluded the results met code requirements. NRC authorization to commence operation of (b)(7)(C) was partly based on the acceptability of these welds for QL-1 application.

LES identified to the NRC that during a site inspection the week of (b)(7)(C) that the NDE (radiography) of welds associated with the (b)(7)(C) installed and being installed on (b)(7)(C) did not meet code requirements. Due to a large number of welds being sampled failing to meet code requirements, all welds had to be inspected on the applicable (b)(7)(C) The NRC inspectors asked LES if they planned to re-inspect the welds that were previously accepted on (b)(7)(C) in light of the recent failures. Initially, the licensee did not commit to reinspect the previously qualified welds. However, as a follow up, LES did re-evaluate the radiography film for welds previously accepted.

A (b)(7)(C) reviewed the radiography film on (b)(7)(C) and concluded that all of the welds were rejectable per AWS D1.1. The (b)(7)(C) reviewed the same welds and found them to be rejectable as well and stated that the defects were readily identifiable.

CIB3 conducted a review of associated documentation including a report provided by an independent third party lab named (b)(7)(C) The following observations, each of which would be cause for rejection per American Welding Society (AWS) D1.1, were noted during the review:

1. 5 of 14 (36 percent) films do not have the wire Image Quality Indicator (IQI) at top center of weld.

2. 7 of 14 (50 percent) films are of unacceptable density.

3. 12 of 14 (86 percent) films (or 6 of 7 welds) do not have controlled density to obtain 100% coverage of weld area.

4. 2 of 7 (30 percent welds had rejectable defect(s), and 3 of 4 films for both these welds are of unacceptable density.

5. 7 of 7 (100 percent) welds with 3/32 inch or greater size discontinuities had closer than minimum clearance allowance between edges of discontinuities.

The CIB 3 staff concluded that the fact that such a large percentage of the films were either of inadequate quality or contained unacceptable indications, this strongly suggests the films were not appropriately inspected, including the possibility that they were not inspected at all, by the responsible (b)(7)(C) at LES's contractor, Engineered Products Division (EPD).

The presence of an NRC Inspector (b)(7)(C) on site in the weeks following discovery of the flawed (b)(7)(C) adds additional perspective which supports the above contention. While the inspector has received RT film interpretation training, she is not an (b)(7)(C) (b)(7)(C) and she was able to clearly see a number of flaws in the films. Additionally, during conversations with licensee staff it appeared LES has undocumented concerns with the adequacy of the RT review at EPD.

On December 7, 2010, an NRC RII Allegations Review Board (ARB) was convened whereby the convening members requested the OI:RII open an investigation to determine whether (b)(7)(C) provided incomplete and accurate information pertaining to radiographic examination reports. Per a draft notice of violation (NOV), the CIB3 staff alleged that EPD submitted to the licensee inaccurate information associated with NDE results of welds that was used by the licensee to submit information to the NRC documenting the acceptance of (b)(7)(C) (b)(7)(C) as a Quality Level 1 (QL-1) system. The information submitted included documentation that welds associated with the upper steelworks section of (b)(7)(C) were subjected to the required NDE and verified to meet the applicable code requirements. Re-evaluation of the NDE results for these welds determined that the welds did not, in fact, meet code requirements. The NRC's authorization to commence operation of (b)(7)(C) was partly based on the review and acceptance of this information (Exhibit 2).

Coordination with NRC Staff

During this investigation, (b)(7)(C) Inspector, Branch 3, Division of Construction Inspection (DCI), RII, was briefed on the progress of the investigation and provided technical assistance during various OI:RII witness interviews. Subsequently, (b)(7)(C) provided a detailed technical summary evaluation of his findings on the (b)(7)(C) issue pertaining to this investigation (Exhibit 3).

Agent's Analysis

This investigation was initiated to determine whether (b)(7)(C) performing contract work for EPD provided incomplete and inaccurate information pertaining to radiographic examination reports submitted to LES in violation of completeness and accuracy of information and deliberate misconduct requirements.

During his interview with OI:RII, (b)(7)(C) (b)(7)(C) explained the he was the (b)(7)(C) for LES on the (b)(7)(C) project. During the dedication of (b)(7)(C), engineering concluded that radiography should be performed on (b)(7)(C) welds that support (b)(7)(C) (b)(7)(C) advised that URS/EPD located in Carlsbad, New Mexico, was on the LES approved suppliers list; therefore, the decision was made to take the welds to EPD in February 2010. EPD then contracted the work to (b)(7)(C) Once (b)(7)(C) completed the radiography on the (b)(7)(C) welds, (b)(7)(C) (b)(7)(C) was dispatched to travel to EPD and pick up the (b)(7)(C) along with the URS/EPD reader sheet (b)(7)(C) and Desert report of NDE inspection of welds (b)(7)(C) (Exhibits 5 and 6). (b)(7)(C) advised that all welds on the reader sheet and Desert report indicated the welds were all acceptable (Exhibit 4, pp. 5-9).

According to (b)(7)(C) once (b)(7)(C) returned the welds and documentation to LES, (b)(7)(C) needed to prepare an internal LES document known as a surveillance report in order to get them into document control system at LES. Accordingly, (b)(7)(C) authored LES Surveillance Report (b)(7)(C) Exhibit 7) which concluded that based on his (b)(7)(C) review of the URS/EPD reader sheet and Desert report of radiography, all welds were acceptable per AWS D1.1. (b)(7)(C) advised that he then signed the report and dated it (b)(7)(C). (b)(7)(C) acknowledged that he had reviewed both the URS/LES reader sheet and Desert report before signing the surveillance report, but was not required to review the actual RT x-ray film, because he was not trained or qualified as a (b)(7)(C) to interpret radiography. (b)(7)(C) elated that given the fact that (b)(7)(C) was on the (b)(7)(C) LES suppliers list and a (b)(7)(C) there was no reason to question either (b)(7)(C) integrity or his interpretation of RT x-ray films at that time (Exhibit 4, pp. 9-13).

(b)(7)(C) stated that during the (b)(7)(C) timeframe, there were a number of issues in (b)(7)(C) and additional radiography was performed. The results of the radiography revealed a very high failure rate, a nearly 100 percent failure rate on radiography being performed by (b)(7)(C) Therefore, (b)(7)(C) recalled that he decided to retrieve the

original RT x-ray films from (b)(7)(C) reflecting radiography performed by (b)(7)(C) and get a second opinion. (b)(7)(C) contacted (b)(7)(C) (b)(7)(C) who was contracted to LES. (b)(7)(C) recalled reviewing the 14 pieces of RT x-ray films for the seven (b)(7)(C) welds with (b)(7)(C) using a light box, whereby (b)(7)(C) rejected the film per the AWS D1.1 calling it a lack of fusion. On (b)(7)(C) (b)(7)(C) responded to (b)(7)(C) evaluation by initiating an LES Condition Report (CR) (b)(7)(C) (Exhibit 8). However, (b)(7)(C) advised that he did not suspect that any improprieties were committed on the part of (b)(7)(C) or any EPD/LES employees (Exhibit 4, pp.13-21).

(b)(7)(C) was interviewed by OI:RII, and confirmed that he picked up the seven (b)(7)(C) welds from EPD, and reviewed both the EPD reader sheet and Desert report (Exhibits 5 and 6) from (b)(7)(C) and subsequently authored the LES Surveillance Report (b)(7)(C) (Exhibit 7), reflecting that the RT x-ray films were acceptable. However, (b)(7)(C) advised that he was not present during the actual radiography work performed by (b)(7)(C) and neither did he witness (b)(7)(C) 's interpretation of the RT film, nor was he (b)(7)(C) qualified to interpret radiography film. Further, (b)(7)(C) related the document he prepared had the wrong date of (b)(7)(C) when the correct date of the surveillance report should have been (b)(7)(C) Additionally, (b)(7)(C) stated that the wording in the surveillance report was not correct as LES did not have a useable film viewer or light source (Exhibit 9, pp. 10-21).

During the interview of (b)(7)(C) (b)(7)(C) by OI:RII and (b)(7)(C) he confirmed the process as provided during the testimony of (b)(7)(C) pertaining to RT of the (b)(7)(C) for (b)(7)(C) by (b)(7)(C) advised that the origin of the (b)(7)(C) began in Birmingham, England, with a company named Form Fabricators, whom were responsible for the original fabrication of the (b)(7)(C) in question. (b)(7)(C) related that NRC inspectors found some discrepancies among (b)(7)(C) and after the Condition Report (CR) (b)(7)(C) (Exhibit 8) was written, LES decided to conduct detailed Apparent Cause Evaluation (ACE). The ACE was conducted in order to determine why the RT x-ray films taken in (b)(7)(C) depicted welds in compliance with AWS D1.1; however, in (b)(7)(C) the RT x-ray films depicted welds not in compliance with AWS D1.1 (Exhibit 11). According to (b)(7)(C) the ACE concluded that due to the differences in conclusions of both (b)(7)(C) and (b)(7)(C) LES, it was unclear whether the welds were acceptable or not. The ACE concluded that (b)(7)(C) applied incorrect judgment in evaluating the radiographs in that the techniques applied by (b)(7)(C) did not comply with AWS D1.1 requirements for acceptability of the radiographs that were being interpreted (Exhibit 10, pp. 8-28).

(b)(7)(C) related that initially, he traveled to (b)(7)(C) with (b)(7)(C) and reviewed the RT x-ray films from (b)(7)(C) and they were found to be rejectable under AWS D1.1. Once this determination was made, (b)(7)(C) advised that he had (b)(7)(C) re-examine the RT x-ray films from (b)(7)(C) [passed by (b)(7)(C) in (b)(7)(C) , and (b)(7)(C) concluded

that these 14 pieces of film from the (b)(7)(C) were all rejectable (b)(7)(C) recalled that he then called in (b)(7)(C) who examined the RT x-ray films and he came to the same rejectable conclusion as (b)(7)(C) (b)(7)(C) and (b)(7)(C) hen traveled back to the URS/EPD site in Carlsbad, New Mexico and met with (b)(7)(C) to discuss the difference in opinions of the RT x-ray films. (b)(7)(C) dvised that both (b)(7)(C) and (b)(7)(C) maintained their difference of opinions in their personal interpretations. However, (b)(7)(C) related that to his (b)(7)(C) benefit, it was (b)(7)(C) who had rejected the RT x-ray films from (b)(7)(C) and brought it to the attention of EPD and LES (Exhibit 10, pp. 29-41).

(b)(7)(C) proclaimed that in order to settle the difference of opinions between (b)(7)(C) and (b)(7)(C) it was decided to acquire an independent third party opinion from a (b)(7)(C) (b)(7)(C) and that was how (b)(7)(C) Pittsburg, Pennsylvania, was selected allowing (b)(7)(C) (b)(7)(C) both employees of (b)(7)(C) to provide their professional opinions. Accordingly, (b)(7)(C) related he carried the samples from other (b)(7)(C) [NFI] as well as (b)(7)(C) and the 14 RI x-ray films in question to (b)(7)(C) for his review and testing of the 14 RT x-ray films. (b)(7)(C) advised that (b)(7)(C) concluded that the defects were clearly visible and clearly rejectable. (b)(7)(C) stated that LES made a decision to pull and replace all (b)(7)(C) for (b)(7)(C) and it was decided to go with a different type of (b)(7)(C) one without the welds in the middle (Exhibit 10, pp. 42-58).

(b)(7)(C) (b)(7)(C) was interviewed by OI:RII and (b)(7)(C) and confirmed that he was a (b)(7)(C) employed by (b)(7)(C) was tasked to review the same 14 RT x-ray films from the (b)(7)(C) radiography work performed by (b)(7)(C) on (b)(7)(C) via a light source in the presence of OI:RII and (b)(7)(C) (b)(7)(C) once again concluded that the flaws on the radiographs were fusion type elongated discontinuities and were rejected by him (b)(7)(C) (Exhibit 12, pp. 7-13). (b)(7)(C) recalled that during a similar review in the presence of (b)(7)(C) and (b)(7)(C) at the EPD office, there existed a distinct difference of opinion on the call made on the 14 RT x-ray films, with (b)(7)(C) defending his interpretation as acceptable (Exhibit 12, pp. 20-26). (b)(7)(C) advised he was surprised that so many welds with obvious flaw discontinuity indications were deemed acceptable by (b)(7)(C) and he (b)(7)(C) then began to explain his technical review of the weld toe. (b)(7)(C) confirmed that the RT x-ray films that (b)(7)(C) had rejected during the (b)(7)(C) timeframe, when compared to the 14 RT x-ray films in (b)(7)(C) were pretty much the same issues with lack of fusion and elongated discontinuities (Exhibit 12, pp. 31-34).

(b)(7)(C) (b)(7)(C) was interviewed by OI:RII and (b)(7)(C) and related that he was a (b)(7)(C) employed by (b)(7)(C) and tasked by (b)(7)(C) to review radiography film. (b)(7)(C) advised that he reviewed 14 RT x-ray films in (b)(7)(C) in a dark room at EPD and was asked his opinion of the 14 RT x-ray films. (b)(7)(C) was provided with the 14 RT x-ray films by (b)(7)(C) and read them into the record confirming that this was the same film he looked at in (b)(7)(C) that had previously been declared as acceptable by (b)(7)(C) (b)(7)(C) advised the RT x-ray films were rejectable due to the dark linear indications, and

there was no need to measure as the indications were almost full length. (b)(7)(C) stated that he reviewed the 14 RT x-ray films for film type defects and scratches, and it appeared that there were no problems associated with the actual film (Exhibit 13, pp. 7-13)

Aforementioned in their testimony, both (b)(7)(C) and (b)(7)(C) reviewed LES Surveillance Report (b)(7)(C) (Exhibit 14) pertaining to the seven welds and actually reviewed the 14 RT x-ray films with a conclusion that all seven welds did not meet acceptable criteria of AWS D1.1. (b)(7)(C) advised that he was the (b)(7)(C) the document (Exhibit 14) LES Surveillance report (b)(7)(C) (Exhibit 12, p. 23). A review of Exhibit 14 by OI:RII reflects that (b)(7)(C) his name to the document as the (b)(7)(C)

(b)(7)(C) testimony provided to OI:RII and (b)(7)(C) revealed he was first contacted by (b)(7)(C) and asked if would be willing to both referee various radiological examinations of welds, as well as perform metallurgical evaluations of sample welds. (b)(7)(C) advised that he was asked to render his professional opinion on the welds without knowledge of what was going on pertaining to the difference of opinion [between (b)(7)(C) and (b)(7)(C) (b)(7)(C) advised that once (b)(7)(C) rendered his opinion and report on the RT x-ray films, he learned that two (b)(7)(C) were having difference of opinion with one arguing that discontinuities with the RT x-ray films were rejectable and the other one arguing the RT x-ray films were not rejectable. (b)(7)(C) advised that he was not a and not trained in RT film interpretation; however, advised that in reference to the (b)(7)(C) (b)(7)(C) (Exhibit 17), internal discontinuities are present and real. (b)(7)(C) opined that individuals can argue over how the RT film was interpreted, but once the welds were dissected and examined, the discontinuities were notably present (Exhibit 15, p. 7, p. 21 and p. 24).

(b)(7)(C) related during his interview with OI:RII and (b)(7)(C) that he was an (b)(7)(C) and went on to explain the levels of competencies of a Level I, Level II and Level III as follows: Level 1 is a beginner, Level II a journeyman and Level III an individual who has to meet certain prerequisites of education, training, and experience and board certified by the American Society of Non-Destructive testing . (b)(7)(C) advised that the radiography [of the welds in question] was performed in the laboratory by an (b)(7)(C) with his (b)(7)(C) oversight and the actual report was written by (b)(7)(C) with his (b)(7)(C) technical input (Exhibit 16, pp. 6-12).

(b)(7)(C) advised that he performed the radiography on the (b)(7)(C) and examined the RT x-ray films that were addressed in Exhibit 17. (b)(7)(C) indicated that during his examination of the (b)(7)(C) used an x-ray machine and the supplier [Desert] used a radioisotope [Iridium 192] explained how different film latitude occurs between those two type sources. (b)(7)(C) went on to explain the detailed process and the technical differences between the two sources. (b)(7)(C) stated that the acceptance criteria in AWS D1.1, makes reference to rounded indications or elongated indications. (b)(7)(C) advised that the elongated indications that he observed in the 14 RT x-ray films were indicative of lack of penetration and lack of fusion. (b)(7)(C) was shown the Desert report of NDE inspection of welds (b)(7)(C)

(Exhibit 6) reflecting radiography work performed and paperwork submitted by (b)(7)(C) and (b)(7)(C) confirmed, based on his examination, that there should have been welds identified as rejectable and he disagreed with (b)(7)(C) report (Exhibit 16, pp. 13- 20, pp. 28-48, and pp. 50-51).

(b)(7)(C) EPD, was interviewed by OI:RII and (b)(7)(C) and advising that EPD received a contract by LES to perform inspections on seven (b)(7)(C) in (b)(7)(C) (b)(7)(C) recalled they were given the option to perform either ultrasonic testing or radiography testing, and EPD chose to conduct radiography based on the configuration of the welds. According to (b)(7)(C) the EPD shop traveler of work instructions indicated the use of radiography on the welds, and since EPD has no radiographic isotope they contracted the work out to Desert and (b)(7)(C) Radiographer (b)(7)(C) and his (b)(7)(C) Desert. (b)(7)(C) explained that the seven (b)(7)(C) were brought to the EPD worksite in Carlsbad, New Mexico, and (b)(7)(C) performed the radiography on the welds. (b)(7)(C) advised that (b)(7)(C) performed the RT film interpretation and turned 14 RT x-ray films in with the data package (Exhibits 5 and 6) after declaring the welds acceptable; however, (b)(7)(C) indicated that the film contained a slight shadow and called it a radiographic shadow, but the RT x-ray films were still accepted. (b)(7)(C) advised that (b)(7)(C) looked at the RT film, but did not provide any interpretive calls (Exhibit 18, pp. 13-22).

(b)(7)(C) related that in (b)(7)(C), LES contacted EPD for similar type radiography to be performed on different (b)(7)(C) welds from a number of (b)(7)(C) [NFI]. Again, (b)(7)(C) contracted Desert and (b)(7)(C) to perform the radiography work on approximately (b)(7)(C) weld parts. Subsequent to the completion of the radiography work by (b)(7)(C) and as he (b)(7)(C) and (b)(7)(C) began looking at the RT x-ray films, (b)(7)(C) recalled that in (b)(7)(C) interpretation of the RT x-ray films he viewed discontinuities in the welds and the welds were rejected by (b)(7)(C) stated that EPD was notified and (b)(7)(C) came to EPD jobsite with other individuals (NFI) and confirmed (b)(7)(C) findings. (b)(7)(C) indicated that (b)(7)(C) began to question the (b)(7)(C) radiography process and the earlier (b)(7)(C) process, and that is when EPD pulled the (b)(7)(C) (b)(7)(14 RT x-ray films. (b)(7)(C) advised that both (b)(7)(C) later returned to EPD to question (b)(7)(C) on his acceptance criteria for the (b)(7)(C) radiography work (Exhibits 5 and 6). (b)(7)(C) recalled that the two (b)(7)(C) (b)(7)(C) discussed their interpretations of the 14 RT x-ray films at length before concluding that they were both right and offered different opinions. (b)(7)(C) advised that as a result of their difference of opinions, both EPD and (b)(7)(C) were removed from the LES approved suppliers list. (b)(7)(C) advised that after this action by LES, that is when (b)(7)(C) changed his opinion and admitted he could have made a human error in his interpretations of the (b)(7)(C) RT x-ray films. (b)(7)(C) was confident that (b)(7)(C) did not intentionally make a bad interpretation, and there was no pressure applied to (b)(7)(C) by EPD to make a erroneous call on the RT x-ray films (Exhibit 18, pp. 23-29, pp. 34-45).

(b)(7)(C) EPD, was interviewed by OI:RII and (b)(7)(C) and advised that he was not involved in the (b)(7)(C) issue; however, he recalled that (b)(7)(C) came to EPD in (b)(7)(C) on a Saturday morning to look at (b)(7)(C) RT films recently taken by (b)(7)(C) recalled they (b)(7)(C) were exclaiming how all the welds were bad due to lack of fusion and they were agreeing with (b)(7)(C) interpretation rejecting the welds (Exhibit 19, pp. 9-20).

(b)(7)(C) was interviewed by OI:RII and (b)(7)(C) and related he was employed by Desert at the time he and (b)(7)(C) conducted radiography on the (b)(7)(C) welds. (b)(7)(C) explained the setup and radiography process advising that he performed all the radiography work on the welds. (b)(7)(C) related that he examined the x-ray film for defects prior to conducting radiography, and afterwards he performed the development and processing of the 14 RT x-ray films. (b)(7)(C) stated he examined the RT x-ray films to make sure quality was acceptable, location markers were in place, density was fine, and pentrometer was properly located. However, (b)(7)(C) advised he would not have performed any interpretation of the 14 RT x-ray films, as he was not qualified as a (b)(7)(C) and that task would have been the responsibility of (b)(7)(C) (b)(7)(C) articulated that he placed the RT x-ray films on the film reader in the mobile darkroom for (b)(7)(C) to critique. (b)(7)(C) could not recall what (b)(7)(C) did with the 14 RT x-ray films once he (b)(7)(C) left the darkroom and did not know if (b)(7)(C) actually completed his interpretation of the14 RT x-ray films. (b)(7)(C) related that he has worked with (b)(7)(C) for two years, and considered him to be a highly intelligent, honest and loyal individual. (b)(7)(C) opined that (b)(7)(C) just made an honest mistake [in interpreting the RT x-ray films as acceptable] (Exhibit 20, pp.9-16, pp. 31-42, and p. 55).

During the testimony of (b)(7)(C) to OI:RII and (b)(7)(C) he advised that he was the (b)(7)(C) Desert and a (b)(7)(C) with over (b)(7)(C) (b)(7)(C) advised that he holds an (b)(7)(C) Additionally, (b)(7)(C) provided an extensive resume and related he was highly trained and holds certifications from (b)(7)(C) (Exhibits 22 and 23). (b)(7)(C) related he holds their (b)(7)(C) (b)(7)(C) in the area of (b)(7)(C) Exhibit 21, pp. 7-13).

(b)(7)(C) recalled that in (b)(7)(C) EPD received a request from LES to provide NTD services on some (b)(7)(C) type welds. (b)(7)(C) advised that as an employee of Desert, he was under a blanket purchase order to provided services as a (b)(7)(C) EPD, as they requested. (b)(7)(C) related that request came in the form of URS/EPD (b)(7)(C) (b)(7)(C) (Exhibit 24). (b)(7)(C) claimed that there were only four parts, but they contained seven welds. During (b)(7)(C) evaluation whether the weld parts could be inspected via AWS D1.1, he reviewed the two methods proposed as ultrasonic or

radiography. After observing the weld parts, (b)(7)(C) rejected ultrasonic testing stating the surfaces were not flat weld surfaces, there were contact issues, and the welds joined a threaded portion to an un-threaded portion. (b)(7)(C) then explained the process for AWS D1.1 wherein he chose radiography over ultrasonic, chose two views at 0 degrees and 90 degrees, shot a test shot to determine image of acceptability in the area of interest, and established required penetramete sensitivity. (b)(7)(C) related that he gave (b)(7)(C) verbal instructions on how to proceed with radiography. According to (b)(7)(C) (b)(7)(C) conducted the radiography of the welds and processed the films. (b)(7)(C) related that he interpreted the 14 RT x-ray films and read the film to qualify it for code and then completed the Desert reports (Exhibits 5 and 6), before passing everything off to EPD. (b)(7)(C) advised that (b)(7)(C) sleeved and marked the14 RT x-ray films and (b)(7)(C) took the RT films to EPD's film interpretation area where he read and interpreted the RT film. Subsequent to this action, (b)(7)(C) concluded that there were no relevant rejectable indications. (b)(7)(C) related that he has been interpreting film (b)(7)(C) and has reviewed thousands of pieces of film and felt competent to make this call (Exhibit 21, pp. 13- 31).

(b)(7)(C) related that (b)(7)(C) who was a quality assurance representative with LES, was also present at the EPD site due to it being the first time inspection of the (b)(7)(C) welds. (b)(7)(C) showed (b)(7)(C) the setup, how they were going to shoot radiography and the calculations of coverage. Further (b)(7)(C) stated that (b)(7)(C) reviewed the 14 RT x-ray films using a light box at EPD and agreed with his acceptable conclusion on the welds (Exhibit 21, p. 32).

(b)(7)(C) advised that he has performed numerous radiography jobs for EPD at the LES facility on items both fabricated at the site and offsite, and that he has rejected numerous pieces of hardware for not being to code. (b)(7)(C) went on to state that with almos (b)(7)(C) of radiography experience, he could assure OI:RII that his ethics were not for sale (Exhibit 21, p. 35).

(b)(7)(C) advised in the second set of radiography conducted by EPD in (b)(7)(C) (b)(7)(C) Desert, and his assistant (NFI) performed the radiography of the (b)(7)(C) welds in question. (b)(7)(C) related that he looked at their (b)(7)(C) and assistants] first shot to determine that they were using the same technique and everything was still the same as the (b)(7)(C) radiography. Once (b)(7)(C) completed the radiography job, (b)(7)(C) indicated the RT x-ray films were brought to him for interpretation and he rejected the welds after his review of the RT x-rays, due to obvious and distinct indications of lack of fusion. (b)(7)(C) advised that the lack of fusion was pervasive throughout the parts and severe in his opinion. (b)(7)(C) completed similar paperwork as previously with the (b)(7)(C), but this paperwork reflected the (b)(7)(C) welds had been rejected. Once LES received that paperwork, (b)(7)(C) added that (b)(7)(C) called and requested that he (b)(7)(C) meet with him and (b)(7)(C) to discuss the findings. (b)(7)(C) related it was during that meeting that the (b)(7)(C) interpretation (Exhibits 5 and 6) had been called into question. (b)(7)(C) and (b)(7)(C) looked at the RT x-ray films side by side (b)(7)(C) compared to (b)(7)(C) (b)(7)(C) RT films] with (b)(7)(C) claiming the (b)(7)(C) RT film showed flaws and

(b)(7)(C) disputing his claim and stating that he believed there were not flaws in the welds. However, (b)(7)(C) related that he began to speculate that maybe he had made a wrong interpretation and he began to feel open to the possibility that he made the wrong call; but he still did not believe that he had made a wrong call and those 14 RT x-ray films (b)(7)(C) were actually flawed welds. Nevertheless, (b)(7)(C) advised that he held to his position that the (b)(7)(C) welds were good welds, and the (b)(7)(C) welds that he had rejected were bad as a result of the degradation of the welding process; therefore, (b)(7)(C) held to his position and viewed that (b)(7)(C) had also arrived at a reasonable conclusion, but it was just different from his (Exhibit 21, pp. 36-40, and pp. 40-42).

(b)(7)(C) explained he was told by (b)(7)(C) that due to the difference of opinions between him and (b)(7)(C) LES would be requesting the welds be sectioned to determine the quality and strength of the welds. However, (b)(7)(C) was not aware that
(b)(7)(C) LES had gone to [redacted] for that examination and he was of the opinion that any weld flaws identified during the sectioning process would be a surprise to him. Again, (b)(7)(C) proclaimed that any possibility that he made the wrong call on the (b)(7)(C) welds would be due in part because all of the (b)(7)(C) RT x-ray films were rejected by him, and not due to his re-examination of the (b)(7)(C) RT x-ray films and him changing his interpretation of the RT x-ray films. Once (b)(7)(C) learned that LES had removed EPD and him from the approved suppliers list he was asked by (b)(7)(C) EPD, to prepare some type of rational for his decisions. (b)(7)(C) acknowledged that he prepared that document titled Rationale for RT of (b)(7)(C) that was unsigned and undated (Exhibit 25) without any pressure from (b)(7)(C) or any other individual from EPD. In his summary of the document, (b)(7)(C) articulated that he made a human error, at least
(b)(7)(C) the evidence [redacted] examination] seemed to dictate that fact, but he continued to assert that he did not observe anything in the (b)(7)(C) RT x-ray films that he would characterize as a lack of fusion. (b)(7)(C) was adamant that he did not miss the indications and they were detected, but he chose to characterize them as non-relevant due to part geometry and not relevant indications from a weld flaw (Exhibit 21, pp. 43-53).

(b)(7)(C) proclaimed that he had previously in his career been proven wrong when he was too conservative and had rejected welds that after much interpretation had been proven to be a good weld, but this was the first time he had proven to miss valid weld flaws. (b)(7)(C) related that he had no reason to question his earlier interpretation of the (b)(7)(C) welds after he rejected the (b)(7)(C) welds, because he had no reason to believe that he had not performed a competent, professional and complete examination of the first 14 RT x-ray films. When questioned by OI:RII if he had intentionally tried to deceive or mislead LES or the NRC, and whether he had committed any wrongdoing on his part, (b)(7)(C) responded with a resounding, "Absolutely not, sir" (Exhibit 21, p. 96). (b)(7)(C) admitted that he made a mistake and that his previous position had been proven erroneous by non-destructive testing, but his mistake was not negligent (Exhibit 21, pp. 82-98).

On (b)(7)(C), (b)(7)(C) URENCO/LES, Eunice, New Mexico, sent the original 14 RT x-ray films via courier, (b)(7)(C) URENCO/LES, to Dallas Fort Worth (DFW) airport, Dallas, Texas, to meet with OI:RII and hand deliver the RT x-ray films

for use in the ongoing investigation. The same original RT films were returned to (b)(7)(C) on (b)(7)(C) who picked them up from OI:RIV office in Arlington, Texas. Subsequently, LES had the original 14 RT x-ray films photocopied (Exhibit 26) and placed on a disk.

In summary, film interpretation of RT x-ray film is subjective in nature and is based on ones technical experience, training and education in this area. As applied to (b)(7)(C) a highly trained and experienced (b)(7)(C) he evaluated the subject RT x-ray film in concurrence with AWS D1.1 procedures, and he still characterized one examination of welds as acceptable and yet six months later characterized a separate but similar examination of welds as rejectable. However, to his credit (b)(7)(C) original acceptable interpretation of the 14 RT x-ray films for the (b)(7)(C) welds in (b)(7)(C) was only called into dispute when he rejected similar (b)(7)(C) welds in (b)(7)(C) LES conducted private testing and definitively concluded that (b)(7)(C) interpretation of the (b)(7)(C) welds was flawed subsequent to sectioning of those welds. The LES process of having their in house (b)(7)(C) (b)(7)(C) evaluate the (b)(7)(C) welds against the (b)(7)(C) welds proved instrumental in bringing the (b)(7)(C) weld issue to a head and forcing the independent evaluation by (b)(7)(C) (b)(7)(C) acknowledged that he had seen the indications during his interpretation of the RT x-ray films but characterized them as non-relevant, while reluctantly admitting that he made a human judgment error. Since the (b)(7)(C) welds had been manufactured by Form Fabricators, Birmingham, England, and not by LES, and even had the welds been manufactured by LES, investigative efforts identified no motivation for (b)(7)(C) to elect to intentionally and erroneously accept the (b)(7)(C) bad welds when he would later reject the (b)(7)(C) welds. Although the testimony of (b)(7)(C) and (b)(7)(C) reflected different accounts regarding (b)(7)(C) being present at the LES site during (b)(7)(C) radiography in (b)(7)(C) there was no evidence to support that (b)(7)(C) committed any improprieties or received any gains by incorrectly interpreting the RT films in (b)(7)(C)

Conclusion

Based on the evidence developed, this investigation did not substantiate the allegation that (b)(7)(C) Desert Industrial x-ray L. P. (Desert) radiographer performing contract work for LES willfully provided incomplete and inaccurate information pertaining to radiographic examination reports.

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LIST OF EXHIBITS

Exhibit Nos.	Description
1	Investigation Status Record, OI Case 2-2011-016, dated December 8, 2010 (2 pp).
2	ARB Briefing Sheet and Allegation Report, dated December 7, 2010, (3 pp).
3	Results of Interview with (b)(7)(C) dated February 16, 2011 (4 pp).
4	Transcript of Interview with (b)(7)(C) dated March 24, 2011 (24 pp).
5	URS Washington Division, Engineered Products Division (EPD), Carlsbad, New Mexico; (b)(7)(C) (b)(7)(C)
6	Desert Industrial X-Ray, L.P., Carlsbad, New Mexico, (b)(7)(C) (b)(7)(C) (1 p).
7	LES Surveillance Report (b)(7)(C) from (b)(7)(C), dated (b)(7)(C) (2 pp).
8	LES Condition Report (CR) (b)(7)(C) (16 pp).
9	Transcript of Interview with (b)(7)(C) dated March 24, 2011 (30 pp).
10	Transcript of Interview with (b)(7)(C) dated January 12, 2011 (68 pp).
11	LES Detailed Apparent Cause Evaluation (ACE) of (b)(7)(C) undated (58 pp).
12	Transcript of Interview with (b)(7)(C) dated January 25, 2011 (24 pp).
13	Transcript of Interview with (b)(7)(C) dated January 12, 2011 (17 pp).
14	LES Surveillance Report # (b)(7)(C) from (b)(7)(C) dated (b)(7)(C) (2 pp).

15 Transcript of Interview with (b)(7)(C) dated January 11, 2011 (26 pp).

16 Transcript of Interview with (b)(7)(C) dated January 11, 2011 (66 pp).

17 (b)(7)(C) October 29, 2010 (59 pp).

18 Transcript of Interview with (b)(7)(C) dated January 27, 2011 (48 pp).

19 Transcript of Interview with (b)(7)(C) dated January 27, 2011 (23 pp).

20 Transcript of Interview with (b)(7)(C) dated January 27, 2011 (56 pp).

21 Transcript of Interview with (b)(7)(C) dated January 27, 2011 (104 pp).

22 Industrial Certifications held by (b)(7)(C) various dates (1 pp).

23 Resume and training certificates held by (b)(7)(C) various dates (25 pp).

24 URS/EPD Purchase order (b)(7)(C) (15 pp).

25 Written correspondence prepared by (b)(7)(C) explaining his rational on the (b)(7)(C) x-ray interpretations, undated (2 pp).

26 Letter from (b)(7)(C) /LES showing OI:RII taking possession of the 14 RT films for investigative purposes, dated January 20, 2011 (35 pp).