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Finding 1	**Air Samples May Not Represent Concentrations Breathed by Workers**	It appears that the white paper uses the terms BZ, room air, and work area air samples interchangeably. However, as indicated in the quoted LBNL documents above, room air or work area air samples may not represent the radionuclide concentrations in the BZ of workers. This is a problem that has been recognized at other DOE sites and applies to LBNL also. The use of room air or work area air samples could lead to a sufficient underestimate of the worker's intakes when the worker is located close to the source and the air sampler is located elsewhere.	<u>October 2018 Update (submitted to the WG chair via email 10/24/18 and updated BRS entry)</u> The terms "room air samples" and "BZ air samples" were used interchangeably in the LBNL DR Methodology. NIOSH understands this interchanging of terms could lead to confusion and lack of clarity. While the air samples were referred to as "work area" and "room air" in the LBNL DR Methodology white paper and various LBNL air sampling references, NIOSH attests all air samples used in the LBNL DR Methodology are representative of the breathing zone and provides additional justification below. Per OCAS-IG-002: *The general approach to using workplace monitoring data is to determine as closely as possible the airborne radioactivity concentration in the individual's breathing zone. … The best data for determining airborne concentrations are from job specific air samples. Since the individual's breathing zone is the location of interest, lapel type breathing zone air samples are preferred.* (OCAS 2002, p. 20) As quoted above from OCAS-IG-002, breathing zone samples are air samples of the potential airborne radioactivity concentration in the worker's breathing zone. As a note, IG-002 doesn't state or imply that the only BZ sampling is lapel sampling. According to NRC Regulatory Guide 8.25 and NUREG 1400, the criterion for a portable sampler to be representative of the breathing zone it is: *Located within 1 foot of the worker's head and the sampler is sensitive enough to obtain a lower limit of detection less than 4 DAC-hr for samples collected over 40-hour period* (NRC 1993 p. 1.8, NRC 1992).

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			It continues saying that *Breathing zone samplers should intercept radioactive material before it reaches or soon after it passes the individual worker. Therefore, if fixed-location air samplers are placed strategically in a work area, they too can be used to collect representative samples of the air that workers inhale* (NRC 1993, p. 1.8). Strategic placement would be based on knowledge of the typical work area air concentrations and air flow studies (NRC 1993). The American National Standard Institute/Health Physics Society Standard (ANSI/HPS N13.56-2012) on "Sampling and Monitoring Releases of Airborne Radioactivity in the Workplace," has a similar definition of breathing zone: *A general description of the volume of air directly around the worker's upper body and head, which may be drawn into the lungs during the course of breathing. An air sample representative of the breathing zone is usually considered to be representative if drawn from within about 30cm of the worker's head* (HPS 2012, p. 2). A breathing zone air sampler (BZA), according to ANSI/HPS N13.56-2012, "may also refer to a fixed air sampler at a work location, such as a glovebox where the sample head is located within about 30 cm of the worker's head" (HPS 2012 p. 2). There was LBNL guidance on the placement of air samplers as early as 1951. This guidance, cited in the LBNL DR Methodology, was to keep the air sampler close to the scene of radioactive operations, such as gloveboxes and hoods (LBL 1951). This results in samplers

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			placed at the work location, which is presumed to be closer to the source than the worker (i.e., intercept the radioactive material before it reaches the worker). This sampler placement will likely lead to higher activities being sampled because there is less dilution than in the breathing zone which is further from the work than the sampler. Air samplers placed on the glovebox or at the hood face, directly meet the present day ANSI/HPS standard definition of a breathing zone sample (HPS 2012). Figure HP 891 of (LRL 1968) shows an LBNL BZ air sampler head placed on a glovebox. In addition, LBNL BZ air samples were sensitive enough to obtain a lower limit of detection of less than 4 DAC-hr for samples collected over a 40-hour period (NRC 1992 criterion), illustrated in the following description. The LBNL computer printouts of monthly BZ air sample results used in the LBNL DR Methodology reported minimum positive air concentrations of 0.001 pCi/m^3 alpha and 0.01 pCi/m^3 beta/gamma activity. The limiting MPCs used by LBNL were 0.2 pCi/m^3 alpha and 100 pCi/m^3 beta/gamma, and are referenced in Attachment B of the whitepaper. Dividing the minimum reported alpha and beta/gamma air concentrations by their limiting MPCs, multiplying by 40 hours, and multiplying by a factor of 4.2 (upper bound adjustment for weekly and daily sampling performed by LBNL) results in a sensitivity of approximately 0.9 MPC-hr alpha, and approximately 0.02 MPC-hr beta/gamma activity. To be clear, the LBNL limiting MPC is the assumed "DAC" for this scenario and the calculated MPC-hr for the minimum positive air concentrations are all less than 4. It was also LBNL policy that when radioactive operations were moved to another place in the room, the air samplers (i.e., Filter Queens) were to be moved accordingly (LBL 1951). Therefore, LBNL air sample placement policy is in line with BZ air sample definitions in current day standards (NRC 1992, 1993 and HPS ANSI 13.56-2012). In addition, early LBNL policy required use of gloveboxes for the handling of dispersible radioactive material. Work enclosures, including gloveboxes, constituted the basic component for handling large or small quantities of the various types of radioactive

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			materials at LBNL (Garden 1960). Environmental Health and Safety Department procedures indicated that ventilated gloveboxes were to be used for all radioactive operations that could generate aerosols, or the possible spread of contamination (LBNL 1981). Given the LBNL guidance on placement of air samplers close to the scene of radioactive operations such as at gloveboxes and hoods, and the policy of using gloveboxes and enclosures for the handling of dispersible radioactive material, the air samples used in the LBNL DR Methodology are considered to be representative of (or higher than) the breathing zone of the worker. **Clarification of terms used to describe the air sampling data will be updated in the white paper, including the additional explanation about why NIOSH attests the air samples are representative of the breathing zone.** An additional review was made by NIOSH. All air samples used in the LBNL DR Methodology came from the monthly summary reports that listed BZ sampling locations with air concentration results greater than or equal to 1% of the MPC and computer printouts of BZ air sampling (i.e., Filter Queen) results. All of these samples were used to determine the 95th-percentile annual average air concentrations reported in the LBNL DR Methodology. In addition, NIOSH reiterates specific reasons why the current approach ensures that the unmonitored intakes assigned from this analysis are favorable to the claimant, which include: 1. Assessing the air concentration at the 95th percentile; 2. The monthly summary reports used only listed BZ locations whose air concentrations were greater than or equal to 1% of the MPC/DAC. All results that were less than 1% of the MPC/DAC (censored) were imputed with (assumed to be) 1% of the MPC/DAC. In addition, blank, zero, or negative results in the computer printout data were imputed with the minimum positive reported air concentrations of 0.001 pCi/m^3 alpha and 0.01

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			pCi/m^3 beta/gamma. Approximately 97 percent of the LBNL BZ air sample data was imputed. In other words, most of the BZ air data was below the 1% MPC/DAC, or were either blank, zero or negative results. Given the amount of imputed data, the distribution parameters are driven by the imputed values, which leads to a higher 95th percentile air concentration than if the values were not imputed in this way and all actual values were used. This is seen in the 95th percentile annual average BZ beta/gamma air concentrations. Most of the results for the years listed were at the censoring level of 1% of the MPC/DAC which is 4.2 pCi/m^3; 3. LBNL performed continuous 24-hour BZ air sampling, typically on a daily or weekly basis. Assuming all air samples were collected weekly, and adjusting all air concentrations up by a factor of 4.2 for a 40 hour work week biases the air concentrations high; 4. Using the most favorable radionuclide resulted in the highest dose; 5. Assuming the exposure was for the entire employment period, when most operational campaigns lasted on the order of weeks; 6. Assuming the exposure occurred from the most favorable alpha and beta radionuclide at the same time, when it is unlikely that any individual worked with both concurrently. <u>April 5, 2019 WG Meeting</u> At the 4/5/19 LBNL WG meeting, NIOSH provided the following path forward for Finding 1: NIOSH will revise the WP, as suggested in previous responses, as well as incorporating additional justification and information regarding the placement of air samplers to better justify the representativeness of the air sampling results used in this methodology. <u>October 2019 Update</u> NIOSH is in the process of completing interviews to support, as well as refine, a data capture request, in response to this finding. At this time NIOSH has completed 2 interviews (SRDB Ref. ID 178601 and 178602).

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Finding 2	**Technical Issues and Uncertainties with Gross Counting Data Conversion to Concentration/ Intake for Use in Dose Reconstruction**	Applying an air sample activity or bioassay sample activity, in units of recorded dpm or picocuries from gross counting, to different radionuclides for determining air concentrations or intakes, as proposed in the white paper, could lead to an underestimate of the intake because detector efficiency is dependent on the energy of the emitted radiation, and hence, the radionuclide, leading to large uncertainties. The backscatter, sample self-absorption, air and window absorption, and detector intrinsic efficiency will vary depending on the radionuclide present, even if all the physical counting parameters remain constant.	<u>October 2018 Update (submitted to the WG chair via email 10/24/18 and updated BRS entry)</u> SC&A cited potential underestimates when converting from gross counting methods to activity since these counting methods were calibrated for a specific radionuclide. Typically, an Am-241 standard was used for alpha air sample and alpha bioassay counter efficiency calibration, and a Sr-90/Y-90 standard was used for beta/gamma air sample and beta bioassay counter efficiency calibration at LBNL. Both the BZ air sampling intake rates and those based on bioassay for individual radionuclides can be adjusted for efficiency changes with energy. NIOSH will first determine if information can be found regarding the specific detectors in use at LBNL and any site specific data for efficiency calibration by energy. This will require additional effort in compiling available detector system information and efficiency data, and possible additional data captures. If site-specific information cannot be found, general detector assumptions will be made and an efficiency calibration by energy factor will be calculated and applied to the measurements, if deemed significant. <u>April 5, 2019 WG Meeting</u> At the 4/5/19 LBNL WG meeting, NIOSH provided the following path forward for Finding 2: NIOSH will research site-specific detector system and efficiency calibration information. If site-specific information is not available, NIOSH will assume typical equipment during the time period. NIOSH will determine if accounting for efficiency will make a significant difference in the assigned doses. As our research is finalized and the approach is developed, NIOSH will provide additional responses to the WG. <u>October 2019 Update</u>

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			NIOSH is in the process of completing interviews to support, as well as refine, a data capture request, in response to this finding. At this time NIOSH has completed 2 interviews (SRDB Ref. ID 178601 and 178602).
Obs. 1	**Potentially Missed Radionuclides**	It has not been demonstrated that the radionuclides listed in the white paper are all-inclusive of the potential radionuclides intakes at LBNL that are needed for adequate dose reconstruction for 1962 forward.	<u>October 2018 Update (submitted to the WG chair via email 10/24/18 and updated BRS entry)</u> SC&A cited iodine radionuclides as not being included [i.e., iodine-123 (I-123), I-125, I-129, and I-131]. Iodine was measured separately using charcoal air samples and likely would not be detected by the Filter Queen air samples. Monovalent X-ray emitters were determined in the raw urine sample. This was a separate count performed after counting the raw urine sample for gamma emitters, and would be based on the bioassay list selection. The principle radionuclide of interest in this assay is I-125 (LBL 1989). I-123 (half-life = 13.27 hours) and I-131 (half-life = 8 days) were listed as being measured by whole body counts in the LBNL Site Profile (ORAUT 2010). I-129 is an X-ray emitter and would likely be detected by either the X-ray emitters' bioassay method, or whole body counts. As a result, the radioiodines were not included in this LBNL DR Methodology, which utilized alpha, beta, and gamma gross bioassay methods, and alpha and beta/gamma air BZ sample results. SC&A scanned the LBNL site profile and found other radionuclides listed that are not included in the white paper [e.g., erbium-165 (Er-165), Er-169, fermium-237, rhodium-102, and scandium-93]. Erbium-165 (half-life = 10.36 hours) is below the short half-life cutoff provided in the LBNL DR Methodology. There are no radionuclides named Sc-93 and Fm-237. These are likely typographical errors, and will be corrected during revision of the site profile. Erbium-169 and Rh-102, along with any additional radionuclides identified from the Site Profile, will be added to the final LBNL DR Methodology implementation. <u>April 5, 2019 WG Meeting</u>

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			At the 4/5/19 LBNL WG meeting, NIOSH reiterated the following path forward: (1) NIOSH will update the white paper to include the 2 radionuclides not previously included (Er-169 and Rh-102). (2) Correct typos in the Site Profile in the next revision (Sc-93 and Fm-237) <u>October 2019 Update</u> NIOSH is in the process of determining if Sc-93 and Fm-237 are typos. Sc-93 is listed in the LBNL Site Profile (ORAUT-TKBS-0049) and is found in numerous Site Environmental Reports (SRDB Ref. IDs 112486, 113034, 113274 and 141110 for example), so it is most likely that this typo was carried over from those reports to the Site Profile. During the 2 interviews performed in support of other issue responses, NIOSH has asked for additional references or contacts that worked on the environmental reports where these nuclides were listed. NIOSH will update the WG with any additional information as it becomes available. Fm-237 is not listed in the LBNL Site Profile (ORAUT-TKBS-0049). NIOSH believes this was a typo in the SC&A WP Methodology Review (SCA-TR-2018-SP003). To thoroughly investigate this, NIOSH looked in the Site Environmental Reports listed above for Fm-237, and it was not listed. However, Fm-257 is listed in both the Site Profile and the Site Environmental Reports but was inadvertently left out of the WP Methodology. Fm-257 will be added to the final LBNL DR Methodology implementation.
Obs. 2	**Bioassays in Claimant DOE Files May Not Be Indicative of Exposure**	Given the observed limitations in ascribing internal monitoring data to an individual claimant, the presence of internal monitoring results in individual claim files may not be an	<u>October 2018 Update (submitted to the WG chair via email 10/24/18 and updated BRS entry)</u> SC&A reviewed bioassay records provided by DOE for a number of LBNL claimants and bioassay records obtained from site data capture in the SRDB (Site Research Database). (Note: The LBNL site radiation safety program typically reviews dosimetry records and sends

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	Potential	appropriate criterion for determining whether occupational intakes should be applied in lieu of ambient environmental intakes. An alternate approach of assigning occupational intakes, unless clear evidence exists of "little to no exposure potential," would be more claimant favorable and consistent with dose reconstruction procedures for other sites.	them via the DOE regional office, based on the NIOSH records request. This is referred to as the DOE submission.) They cited missing bioassay data in the DOE records provided to NIOSH via two methods of review: (1) introductory letters attached to the DOE-provided dosimetry records indicating that a number of bioassay samples were taken for the EE, but no bioassay records were provided, or OCAS-INT-004 form indicating the EE was not monitored; and (2) records found in the SRDB documents indicating internal monitoring. If the letter/form or SRDB document indicated bioassay records and they weren't included in the DOE response file, the claim was flagged for a discrepancy. If the OCAS-INT-004 form indicated no bioassay records existed and SRDB document indicated bioassay records, the claim was flagged for a discrepancy. As a part of the dose reconstruction process, the EE's DOL initial case file is reviewed (e.g., for monitoring data, X-rays, investigation reports). SRDB searches (e.g., for EE name, employee number) are also performed for additional information or data pertinent to the dose reconstruction. This process of linking this SRDB information for LBNL claims began consistently in 2013. Any data and or additional information is included in the total claim file and considered in the dose reconstruction, regardless of the information provided by DOE. Background on LBNL claims records: In 2010, it was determined that occupational X-ray information was not being sent to NIOSH, because they were stored in the LBNL medical records. Medical records are provided by a site as part of the DAR (Department of Labor's request for all worker's records). These worker records include medical, industrial hygiene, human resources, dosimetry, etc. However, LBNL medical records were not being received prior to this time. At that time, NIOSH began receiving the EE's LBNL medical file in the DOL initial case file, which provided NIOSH with the X-ray information. Around 2011, NIOSH pursued re-requesting all pre-2010 claims for reviewing and re-sending of DOE records including the medical file, but given the workload by the LBNL site staff this was denied. NIOSH did not further pursue the LBNL record re-request, since the LBNL Site Profile would

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			be revised for the LBNL DR Methodology, and a PER issued. A records re-request would be part of the PER process. Recently, it was determined that the LBNL dosimetry records provided in the DOE response file may not have included all the bioassay records for an EE, based on a review of the medical records in the DOL file. This is because a copy of the bioassay records are also saved in the EE's LBNL medical file, according to bioassay laboratory record keeping procedures (LBL 1989). All LBNL claims received since 2010 have contained the bioassay records in the EE's LBNL medical file located in the DOL initial case file. It should be noted that SC&A cited all but one claim that was received prior to this 2010 timeframe that did not have the EE's LBNL medical records in the DOL Initial case file. One claim SC&A cited was received after 2010, and contained the bioassay record in the medical file. Therefore, in response to this observation and observation #3, NIOSH determined the current status of records receival from DOE, by reviewing all NOCTS claims post-2010 for discrepancies between the DOL initial case file and the DOE response file. Only 2 of the 105 claims NIOSH reviewed had discrepancies, where the DOL initial case file had additional bioassay results that the DOE response file did not provide. For these two claims, NIOSH has re-requested the data review and response from DOE and pointed out the discrepancies. NIOSH will request that LBNL/DOE begin sending the entire medical file as part of their response, since the x-ray information and bioassay results are included in this file. As for pre-2010 claims, NIOSH has begun the process of requesting that DOE/LBNL re-review and re-send records for all non-compensatory, non-SEC claims, using the new process of sending the entire medical file. With this records request process, including the entire LBNL medical file, in conjunction with

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			the typical DR SRDB review, DOL initial case file review, and CATI review, NIOSH is confident in its ability to ascribe exposure potential for the LBNL employees given the LBNL policy of monitoring workers who worked with or in areas that contained unsealed radioactive sources. If from this review it is determined the worker has a potential for radiation exposure, then dose will be assigned according to the methodology in this white paper. As pointed out by SC&A, clarification is needed in the white paper for the 'partially' monitored worker where an alternate approach of assigning occupational intakes in lieu of environmental intakes would be more claimant favorable, unless clear evidence exists of little to no exposure potential. NIOSH will provide further clarification in the whitepaper on assigning occupational intakes based on the air sampling approach versus environmental intakes for an unmonitored worker. <u>April 5, 2019 WG Meeting</u> At the 4/5/19 LBNL WG meeting, NIOSH provided the following update for Observation 2: NIOSH made a mass re-request of data from LBNL for all claims that were submitted to NIOSH prior to 2010 and were not compensated under the SEC or through the dose reconstruction process (DR POC<50%). This equaled 166 claims. Of these 166 claims NIOSH has received responses with updated data files for 25 of them. An additional 52 of the claims didn't have a medical file and NOCTS was updated with this information. NIOSH is working with LBNL to determine the best way to transmit the data for the remaining 89. With this medical file and the dosimetry data provided by LBNL, as well as the CATI information available for a claim, NIOSH is able to determine the exposure potential for LBNL employees. NIOSH has agreed to clarify within the white paper the determination of the unmonitored

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			worker including: (1) partially monitored worker scenario that was discussed (2) determining an unmonitored worker with potential for radiation exposure (e.g., radiation worker) vs. unmonitored worker without potential for exposure (e.g., administrative staff). Per the transcript (attached, p. 86-87), SC&A suggested and the WG agreed with reviewing the data provided in the mass re-request to determine if this cleared up the issues of missing data that were previously found. <u>October 2019 Update</u> As discussed in previous matrix/BRS entries, on December 4, 2018, NIOSH made a mass re-request of "the complete medical records file" for LBNL claims that had been received prior to 2010. By September 12, 2019, NIOSH received responses to all requests, had screened responses for new information, and reviewed the new information to determine priority for dose reconstruction revisions, as well as determined if the new information changed the determination of exposure potential for the EEs. This LBNL mass supplemental request was made for 168 claims (updated number). Of these 168 claims, 53 claims had no record of a medical file and needed no further review. Additionally, there was 1 claim that had been submitted with a probability of causation (PoC) over 50%, which needed no further screening. For the remaining 114 claims, 109 claims had no new bioassay information, 3 claims had new bioassay information compared to what LBNL had previously provided but this information was available to NIOSH from other documents (DOL files, data captures, etc.), and 2 claims had totally new bioassay information. Therefore, only 2 of the 168 (~1.2%)

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			claims had totally new information that was not previously available to NIOSH. These 5 claims that had new bioassay information received from LBNL were reviewed for impact. The PoC remained under 50% for these claims when the new information was assessed. Given this observation is specific to whether exposure potential could be determined based on the records provided by DOE. The exposure potential decision and thus application of the WP methodology was reviewed for the information previously available to NIOSH (when the DR was completed) and reviewed with the information provided in this mass records request. As stated above there were 5 claims with new bioassay information. Given the original basis of implementation for this new WP methodology on the existence of bioassay data, 2 (of the 5) claims would not have had the methodology applied with claim information available at the time of the last DR (i.e., no bioassay results were present before this request), 2 could have been affected (i.e., bioassay results present before request, additional results provided, which could have led to longer application of the bioassay approach of the methodology; determination of whether to apply the unmonitored approach for the rest of employment would be up to the dose reconstructor based on other claim information), and 1 claim would not have been affected at all (i.e., no additional samples provided, only additional detail for the already provided sample). Therefore, only 4 of all 168 claims (~2.4%) would have potentially been affected by the exposure potential determination based on bioassay sample existence. As proposed in previous matrix/BRS responses, NIOSH will clarify that the exposure potential decision, and therefore application of the doses calculated from this methodology, is based not only on the presence of internal bioassay monitoring for an EE, but also job title, CATI, and any other claim information. This discussion is especially important for the application of the unmonitored worker approach, which uses the air sampling data.

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Obs. 3	**Bioassays in Claimant DOE Files May Not Be Complete Compared to LBNL Documents**	SC&A's sample analysis of 36 LBNL claims found that 13 of the DOE files for the 36 claims did not contain all the bioassay records indicated in the SRDB documents.	<u>October 2018 Update (submitted to the WG chair via email 10/24/18 and updated BRS entry)</u> SC&A reviewed bioassay records provided by DOE for a number of LBNL claimants and bioassay records obtained from site data capture in the SRDB (Site Research Database). (Note: The LBNL site radiation safety program typically reviews dosimetry records and sends them via the DOE regional office, based on the NIOSH records request. This is referred to as the DOE submission.) They cited missing bioassay data in the DOE records provided to NIOSH via two methods of review: (1) introductory letters attached to the DOE-provided dosimetry records indicating that a number of bioassay samples were taken for the EE, but no bioassay records were provided, or OCAS-INT-004 form indicating the EE was not monitored; and (2) records found in the SRDB documents indicating internal monitoring. If the letter/form or SRDB document indicated bioassay records and they weren't included in the DOE response file, the claim was flagged for a discrepancy. If the OCAS-INT-004 form indicated no bioassay records existed and SRDB document indicated bioassay records, the claim was flagged for a discrepancy. As a part of the dose reconstruction process, the EE's DOL initial case file is reviewed (e.g., for monitoring data, X-rays, investigation reports). SRDB searches (e.g., for EE name, employee number) are also performed for additional information or data pertinent to the dose reconstruction. This process of linking this SRDB information for LBNL claims began consistently in 2013. Any data and or additional information is included in the total claim file and considered in the dose reconstruction, regardless of the information provided by DOE. Background on LBNL claims records: In 2010, it was determined that occupational X-ray information was not being sent to NIOSH, because they were stored in the LBNL medical records. Medical records are provided by a site as part of the DAR (Department of Labor's request for all worker's records). These worker records include medical, industrial hygiene,

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			human resources, dosimetry, etc. However, LBNL medical records were not being received prior to this time. At that time, NIOSH began receiving the EE's LBNL medical file in the DOL initial case file, which provided NIOSH with the X-ray information. Around 2011, NIOSH pursued re-requesting all pre-2010 claims for reviewing and re-sending of DOE records including the medical file, but given the workload by the LBNL site staff this was denied. NIOSH did not further pursue the LBNL record re-request, since the LBNL Site Profile would be revised for the LBNL DR Methodology, and a PER issued. A records re-request would be part of the PER process. Recently, it was determined that the LBNL dosimetry records provided in the DOE response file may not have included all the bioassay records for an EE, based on a review of the medical records in the DOL file. This is because a copy of the bioassay records are also saved in the EE's LBNL medical file, according to bioassay laboratory record keeping procedures (LBL 1989). All LBNL claims received since 2010 have contained the bioassay records in the EE's LBNL medical file located in the DOL initial case file. It should be noted that SC&A cited all but one claim that was received prior to this 2010 timeframe that did not have the EE's LBNL medical records in the DOL Initial case file. One claim SC&A cited was received after 2010, and contained the bioassay record in the medical file. Therefore, in response to this observation and observation #3, NIOSH determined the current status of records receival from DOE, by reviewing all NOCTS claims post-2010 for discrepancies between the DOL initial case file and the DOE response file. Only 2 of the 105 claims NIOSH reviewed had discrepancies, where the DOL initial case file had additional bioassay results that the DOE response file did not provide. For these two claims, NIOSH has re-requested the data review and response from DOE and pointed out the discrepancies. NIOSH will request that LBNL/DOE begin sending the entire

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			medical file as part of their response, since the x-ray information and bioassay results are included in this file. As for pre-2010 claims, NIOSH has begun the process of requesting that DOE/LBNL re-review and re-send records for all non-compensatory, non-SEC claims, using the new process of sending the entire medical file. With this records request process, including the entire LBNL medical file, in conjunction with the typical DR SRDB review, DOL initial case file review, and CATI review, NIOSH is confident in its ability to ascribe exposure potential for the LBNL employees given the LBNL policy of monitoring workers who worked with or in areas that contained unsealed radioactive sources. If from this review it is determined the worker has a potential for radiation exposure, then dose will be assigned according to the methodology in this white paper. <u>April 5, 2019 WG Meeting</u> At the 4/5/19 LBNL WG meeting, NIOSH provided the following update for Observation 2: NIOSH made a mass re-request of data from LBNL for all claims that were submitted to NIOSH prior to 2010 and were not compensated under the SEC or through the dose reconstruction process (DR POC<50%). This equaled 166 claims. Of these 166 claims NIOSH has received responses with updated data files for 25 of them. An additional 52 of the claims didn't have a medical file and NOCTS was updated with this information. NIOSH is working with LBNL to determine the best way to transmit the data for the remaining 89. With the current records request process, in conjunction with the typical DR SRDB review, DOL initial case file review, and CATI review, NIOSH is confident in its ability to ascribe exposure potential for the LBNL employees given the LBNL policy of monitoring workers who worked with or in areas that contained unsealed radioactive sources. If from this review it is determined the worker has a potential for radiation exposure, then dose will be

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Item No.	Issue	Issue explanation	Revised/updated NIOSH response
			assigned according to the methodology in this white paper. Per the transcript (attached, p. 86-87), SC&A suggested and the WG agreed with reviewing the data provided in the mass re-request to determine if this cleared up the issues of missing data that were previously found. <u>October 2019 Update</u> As discussed in previous matrix/BRS entries, on December 4, 2018, NIOSH made a mass re-request of "the complete medical records file" for LBNL claims that had been received prior to 2010. By September 12, 2019, NIOSH received responses to all requests, had screened responses for new information, and reviewed the new information to determine priority for dose reconstruction revisions, as well as determined if the new information had been previously available via some other means. This LBNL mass supplemental request was made for 168 claims (updated number). Of these 168 claims, 53 claims had no record of a medical file and needed no further review. Additionally, there was 1 claim that had been submitted with a probability of causation (PoC) over 50%, which needed no further screening. For the remaining 114 claims, 109 claims had no new bioassay information, 3 claims had new bioassay information compared to what LBNL had previously provided but this information was available to NIOSH from other documents (DOL files, data captures, etc.), and 2 claims had totally new bioassay information. Therefore, only 2 of the 168 (~1.2%) claims had totally new information that was not previously available to NIOSH. The 5 claims that had new bioassay information received from LBNL were reviewed for impact. The PoC remained under 50% for these claims, when the new information was assessed.

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