

Summary of Changes Made to Pinellas Plant Site Profile in 2011

All of the technical basis documents (TBDs) making up the Pinellas Plant Site Profile were revised in 2011. The main reason for revising those TBDs was to resolve issues with the Pinellas Plant Site Profile that were documented in SCA-TR-TASK1-0015. However, a significant number of additional changes were made to those TBDs to incorporate new information about the site and its practices and to address issues that were identified by NIOSH and/or ORAUT. The following is a summary of the changes that were made to each of the TBDs in the site profile.

General Changes Affecting All or Several TBDs:

- 1) Since these TBDs were originally written, it has been discovered that a number of key references that were being used were actually documents on General Electric X-Ray Division Site (a.k.a. the GEXM site). The GEXM site was the pilot plant for the Pinellas Plant and the two sites had a lot in common as described in the revised Site Description TBD. The references to the GEXM documents have been either eliminated, replaced with Pinellas Plant document references, or, in a few instances, had additional text added to a TBD to justify their use for the Pinellas Plant.

Introduction TBD:

- 1) **Issue 1 Resolution:** The table titled “Summary of data capture searches for the Pinellas Plant” was updated to address Issue 1 in SC&A’s issues matrix. Additions/updates were also made to this table to include some more recent data capture efforts.
- 2) This brief TBD was also completely rewritten to update and correct some of the information in it to accurately reflect information in the other recently revised TBDs. The summary information being presented for each of the other TBDs in the site profile are now in their own subsections, which makes the information for a specific TBD easier to find.

Site Description TBD:

- 1) **Issue 6 Resolution:** Section 2.3.4 titled “Decontamination and Decommissioning Era (October 1994–1997)” was added to this TBD to address Issue 6 in SC&A’s issues matrix.

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- 2) **Secondary Issue 2 Resolution:** A significant amount of additional information was added to this TBD to better describe the operations involving Ni-63, C-14, depleted uranium, and metal tritides to address Secondary Issue 2 in SC&A's issues matrix. The bulk of this information was added to Section 2.4.1 which is titled "Radioactive Materials", but some information was added throughout this TBD. In addition, a significant amount of information regarding metal tritides was added to the Occupational Internal Dose TBD to address this issue.
- 3) A number of other significant changes were made to the Site Description TBD to better organize the information being presented, incorporate a significant new amount of process and facility information, and eliminate some redundant information.

Occupational Medical Dose TBD:

- 1) **Issue 10 Resolution:** The Equipment and Techniques Section of this TBD was revised to address Issue 10 in SC&A's issues matrix. The table listing the types of medical X-ray equipment that were used (now Table 3-1) was updated based on new information that was found. All of the pre-1972 X-ray doses are still based on the information in the *Technical Information Bulletin: Dose Reconstruction from Occupationally Related Medical X-Ray Procedures* (OTIB-0006). However, a number of the PFG X-ray dose values were changed due to a revision of OTIB-0006. Because the types of medical X-ray equipment that were used for the periods of 1972–1987 and 1988–1997 are now different, the X-ray dose values for those periods have been revised.
- 2) **Issues 9 and 11 Resolutions:** The Examination Frequencies Section of this TBD was revised to address Issues 9 and 11 in SC&A's issues matrix. This section now indicates that the lumbar spine and abdomen/KUB (kidneys, ureters, bladder) X-rays are considered to be occupational screening X-rays when they were performed in conjunction with a chest X-ray. The section also contains a stipulation to not assess the X-ray doses for any X-rays when the energy employee's records clearly indicate that the X-rays were performed for individual diagnostic reasons or for work-related injuries. In addition, the section now indicates to assign occupational medical doses based on the X-ray records when provided, which they typically are, and to assign the occupational medical doses based on the recommendations in OTIB-0006 when no records are provided.
- 3) **Secondary Issue 1 Resolution:** The Uncertainty Section of this TBD was revised to address Secondary Issue 1 in SC&A's issues matrix. A list of the various uncertainty values for each source of uncertainty is now provided in this section, along with the

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total propagated uncertainty that was estimated for the Pinellas Plant X-ray procedures.

- 4) An error in the applicable period for PFG X-rays was corrected to reflect the recommendations in OCAS-PER-004. The applicable period is now 1957–1959 versus 1957–1960.
- 5) Because only anterior-posterior (AP) exposures are performed for abdomen/KUB X-rays, the abdomen/KUB X-ray dose values for lateral (LAT) exposures were eliminated from the TBD.
- 6) Tables containing skin dose values for various skin locations on the body were added to Attachment A of this TBD.
- 7) A number of other significant changes were made to the Occupational Medical Dose TBD to better organize the information being presented, eliminate some information that served no purpose, and to make some of the terminology being used throughout the TBD consistent with other NIOSH/ORAUT documents.

Occupational Environmental Dose TBD:

- 1) **Secondary Issue 3 Resolution:** The onsite tritium air monitoring results are now provided in 4.3.5 of the TBD and a comparison of the air concentrations based on atmospheric dispersion calculations and actual air monitoring results is now provided in Section A-6 to address Secondary Issue 3 in SC&A's issues matrix.
- 2) Because the original detailed calculations were no longer available for resolving Secondary Issue 3, the dispersion calculations and environmental intake calculations were completely redone. As a result of that, Attachment A was completely revised, along with the applicable sections in the main body of the TBD. For the years of 1957–1980, the new environmental intakes were comparable to the previous environmental intakes. However, starting in 1981 (i.e., after the height of the main stack was reduced) the new environmental intakes were generally higher than the previous environmental intakes.
- 3) Section 4.4.2 of this TBD now recommends that the more claimant-favorable unmonitored external dose assignment from the Occupational External Dose TBD be used in lieu of the estimated on-site ambient doses to estimate the doses for unmonitored workers at the site.
- 4) Bounding potential onsite environmental internal doses were assessed for Section 4.4.1 of this TBD and were determined to be negligible (i.e., < 0.001 rem) for all

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internal organs. As a result, it was determined that the environmental internal doses will never need to be included in the IREP input sheet.

- 5) Because there is no indication that plutonium was ever released to the environment, the environmental air monitoring results for plutonium were removed from this TBD. Environmental air monitoring for plutonium was only performed at the Pinellas Plant as a precautionary step due to the presence of the encapsulated plutonium sources at the site. Because none of the encapsulated plutonium sources ever leaked at the site, it is unlikely that plutonium was ever released to the environment.
- 6) A number of other significant changes were made to the Occupational Environmental Dose TBD to better organize the information being presented, incorporate new information, and correct some inaccurate information.

Occupational Internal Dose TBD:

- 1) **Issue 2 Resolution:** An approach for assessing potential exposures to insoluble forms of tritium (e.g. metal tritides, organically bound tritium, etc...) at the Pinellas Plant was developed and is now provided in Section 5.7.1.2 to address Issue 2 in SC&A's issues matrix.
- 2) **Issue 3 Resolution:** The MDC and uncertainty information that was previously in this TBD has been replaced to address Secondary Issue 3 in SC&A's issues matrix. Section 5.4.1.2 provides instructions and justification for using the MDC information in the TBD for the LANL site. The uncertainties associated with the plutonium bioassay results are usually reported with those results. Section 5.4.2.2 of this TBD shows how those uncertainty values were calculated.
- 3) **Issue 7 Resolution:** Section 5.7.2 was added to this TBD to address unmonitored exposures to tritium, and Sections 5.2.4 and 5.2.5 now address potential unmonitored exposures to Ni-63 and C-14.
- 4) **Secondary Issue 5 Resolution:** The Pinellas Plant's basis for rejecting "positive" plutonium bioassay results has been replaced with a new approach for determining whether or not a Pinellas Plant plutonium bioassay result is positive. The new approach is in Section 5.7.3 of this TBD.
- 5) **Secondary Issue 6 Resolution:** The plutonium solubility statements in question were eliminated to address Secondary Issue 6 in SC&A's issues matrix. By eliminating those statements, the *Technical Information Bulletin: Internal Dose Reconstruction* (OTIB-0060) will require the dose reconstructors to use the most claimant-favorable lung absorption type when assessing potential plutonium intakes for Pinellas Plant workers.

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- 6) The table listing the MDCs and reporting levels for tritium urinalysis was revised based on new information that was found. In general, the MDCs prior to 1975 were increased.
- 7) A number of other significant changes were made to the Occupational Internal Dose TBD to better organize the information being presented, incorporate new information, and correct some inaccurate information.

Occupational External Dose TBD:

- 1) **Issue 4 Resolution:** Information was added to Section 6.1.5 to address Issue 4 in SC&A's issues matrix.
- 2) **Issue 5 Resolution:** Changes were made to the Dosimetry Technology and Missed Dose Sections to address Issue 5 in SC&A's issues matrix.
- 3) **Secondary Issue 7 Resolution:** An Unmonitored Dose Section and Attachment B were added to this TBD to address Secondary Issue 7 in SC&A's issues matrix. Attachment B provides the basis for the unmonitored dose assignment, which includes a comparison of the unmonitored dose assignment to the maximum likelihood doses for unmonitored workers.
- 4) **Secondary Issue 8 Resolution:** The Missed Dose Section was revised to address Secondary Issue 8 in SC&A's issues matrix.
- 5) The approach that was previously used to calculate Pinellas Plant neutron doses was replaced with an approach that is consistent with the approaches used for other sites. For the neutron generator areas, the new approach will yield higher neutron doses for the years of 1957–1969 and lower neutron doses for the years of 1969–1997.
- 6) For the RTG areas, the measured photon doses for the years of 1979–1981 are now higher because of a new dosimeter correction factor of 1.43 that gets applied for signal fading. The missed photon doses for the years of 1979-1987 will be higher because of that dosimeter correction factor and a higher LOD value.
- 7) The RTG areas now have a more claimant-favorable neutron energy distribution of 50% 0.1-2 MeV and 50% 2-20 MeV neutrons. In addition, the dosimeter limit of detection (LOD) values that were applicable to the RTG area dosimeters were revised based on new information.
- 8) The external electron doses from an accidental exposure to Kr-85 were increased by a factor of 3.5 for the years of 1963–1985.

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- 9) A number of other significant changes were made to the Occupational Internal Dose TBD to better organize the information being presented, incorporate new information, and correct some inaccurate information.

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