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Tri-Party Agreement

Change Notice for Modifying Approved Documents/ Workplans
In Accordance with the Tri-Party Agreement Action Plan,
Section 9.0, *Documentation and Records*

Change Number	Document Submitted Under Tri-Party Agreement Milestone	Date:
TPA-CN- **164**	N/A	**May 16, 2007**

Document Number and Title:
DOE/RL-99-89 Rev 1, Remedial Design Report and Remedial Action Work Plan for the K Basins Interim Remedial Action; Letter DOE-RL to EPA, 04-AMCP-0342, July 7, 2004 (K East Basin Sludge Containerization Remedial Design); and DOE-RL letter to EPA, 04-AMCP-0398, August 5, 2004 (Transfer of Sludge from K-East to K-West Basin and Containerization of Sludge in K-West Basin Remedial Design)

Date Document Last Issued:
December 6, 2001

Originator: D.J. Watson/R. Gentry

Phone: 509/376-3250

Description of Change: Describes changes in the remedial design pertaining to alternative means of containerizing sludge and the transfer of sludge from K-East Basin to K-West Basin. See attached pages for a more detailed description of the change.

David A Brockman and Larry E. Gadbois Larry Gadbois agree that the proposed change modifies
Lead Agency (RL) **Lead Regulatory Agency (EPA)**

an approved remedial design document and for which a revision to the remedial design document is not necessary but can be documented through the use of this change notice in accordance with the Tri-Party Agreement Action Plan, Section 9.3, *Document Revisions.*

The purpose of this Change Notice is to describe a change in the remedial design of the process to containerize sludge and its transfer from the K-East Basin to the K-West Basin.

Justification and Impacts of Change:

Provide increased flexibility and capability to collect and remove sludge from the K-East Basin and its transfer to the K-West Basin to be used to replace or supplement the existing Hose-in-Hose system for making sludge transfers.

Approvals:

David A Brockman RL Unit Manager*	5/17/07 Date	X Approved	__ Disapproved	
Larry Gadbois Lead Regulatory Unit Manager*	5-17-07 Date	X Approved	__ Disapproved	

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MAY 22 2007
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*Send approved form to FH TPAI, H8-12, and the Administrative Record, H6-08

5/17/07

5/16/2007

Change Notice TPA-CN- 164
K-Basin Interim Remedial Action
Alternative Sludge Containerization and Transfer

This Change Notice identifies an alternative remedial design for containerization of sludge in both the K East and K West Basins and an alternative remedial design for the transfer of sludge from K-East to K-West Basin. The existing Fuel Transfer System (FTS) may be used to replace or supplement the existing Hose-in-Hose (HIH) system for making sludge transfers from K-East to K-West Basin.

The original remedial design for the containerization of sludge in the K-East Basin was submitted to EPA for approval on July 7, 2004 (04-AMCP-0342)

The original remedial design for the transfer of sludge from K-East to K-West and containerization of sludge in the K-West Basin was submitted to EPA for approval on August 5, 2004 (04-AMCP-0398).

These changes are considered non-significant or minor and do not affect the overall intent of the previously approved remedial design; therefore this change notice is being prepared in lieu of revising the remedial design report. Changes in the remedial design described herein are:

1. Addition of a new process to collect sludge onto filters and the storage of those filters and associated strainers in transfer and storage containers in K-East Basin.
2. The removal of the transfer and storage containers from K-East to K-West Basin using the existing Fuel Transfer System
3. The storage of transfer and storage containers in K-West Basin.

1.0 New Sludge Collection Process

K-East Basin floor and pit sludge will continue to be pumped into the existing sludge containers. However, an alternative process involving collecting and containerizing that sludge in K-East Basin, as well as its transfer to the K-West Basin is presented below.

The use of a filter and pump, as a means of collecting sludge onto filter bags or other similar metal filters is proposed. Sludge would be pumped from the existing sludge containers, through existing strainer baskets and then through a filter skid. The equipment used to pump and filter the sludge would be located under water in the K-East Basin. Each of the two filter housing

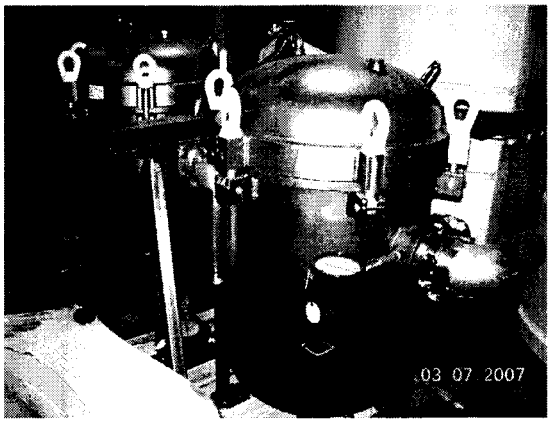


Figure 1 Filter Skid

on the skid contains four removable filters on which sludge is expected to collect.

The various sludge pumping components will rest on the basin floor and be connected by means of hoses and cam-lock fittings to one of several available ports on the existing K-East sludge containers. The pump will discharge into a strainer basket to collect course sludge if any exists. The strainer basket discharge is directed into an existing two stage filter skid as shown in Figure 1.

Each filter stage accommodates four filters. Nominally, 1250 micron filters will be installed in the first stage and the second stage will contain 400 micron filters, though filters from 3/16" down to sub-micron are also available for use. The filters are made of nylon, stainless steel or other similar material and have nominal dimensions of 7 inches in diameter and 30 inches in length. As the filters collect material, particles smaller than the filter rating are also captured. The second stage filter will discharge the fines and water back into the same accumulation container the sludge was drawn from. Drawing from and discharging to the same container will result in a zero net vertical velocity, minimizing dispersal of the container's accumulated sludge into the basin.

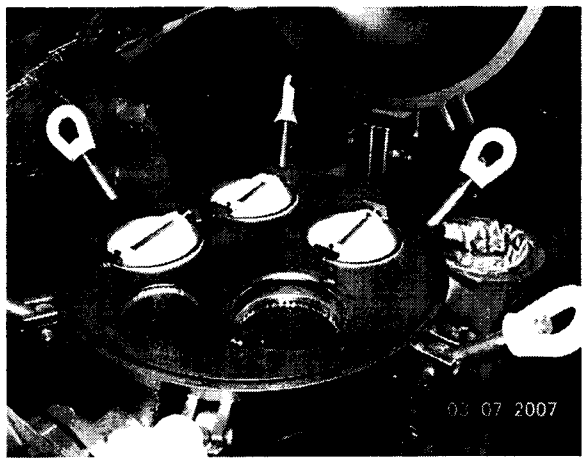


Figure 2: Open Filter Housing 3 of 4 filters installed

Pressure indication gauges are provided locally on the inlet and outlet of each filter vessel. A differential pressure greater than 30 psig across either stage indicates the filters have filled. The filled filters are removed by opening the filter housing head as shown in Figure 2.

The head is held closed by hinged studs with eye nuts that capture slotted tangs around the head perimeter. The head is hinged to one side of the housing. Releasing the eye nuts from the tangs allows the spring loaded hinge to lift the head from the housing. The filter vessel is qualified as an ASME pressure vessel (U-stamped) with a maximum allowable work pressure of 150 psig.

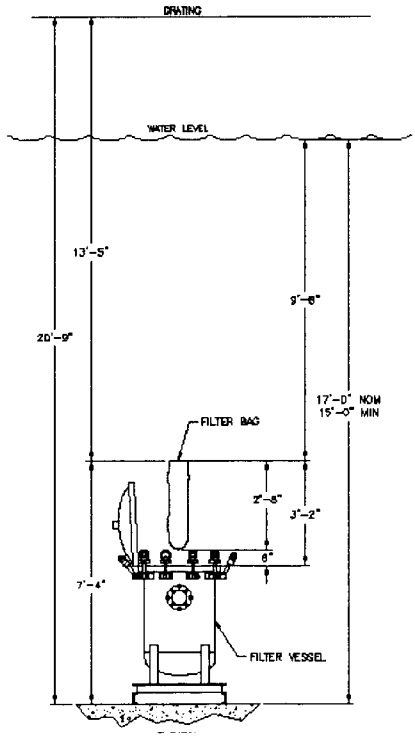


Figure 3: Conceptual of Filter Loading/unloading

2.0 New Sludge Container Type

The sludge collected onto filters and the filters themselves used in the filter skid described above and sludge collected onto the strainers and strainers themselves will be transferred to transfer and storage containers that will fit inside the existing shielded transfer container (STC). This operation occurs entirely under water. The sludge material transferred may include the filters themselves if manual transfer (pouring) into the transfer and storage containers causes a hindrance to operations such as clouding of the pool. Sludge from the strainers will be manually transferred into the transfer and storage containers .

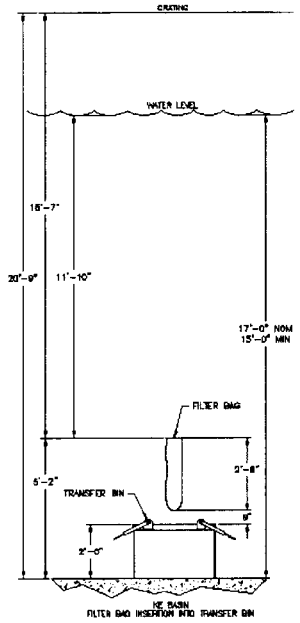
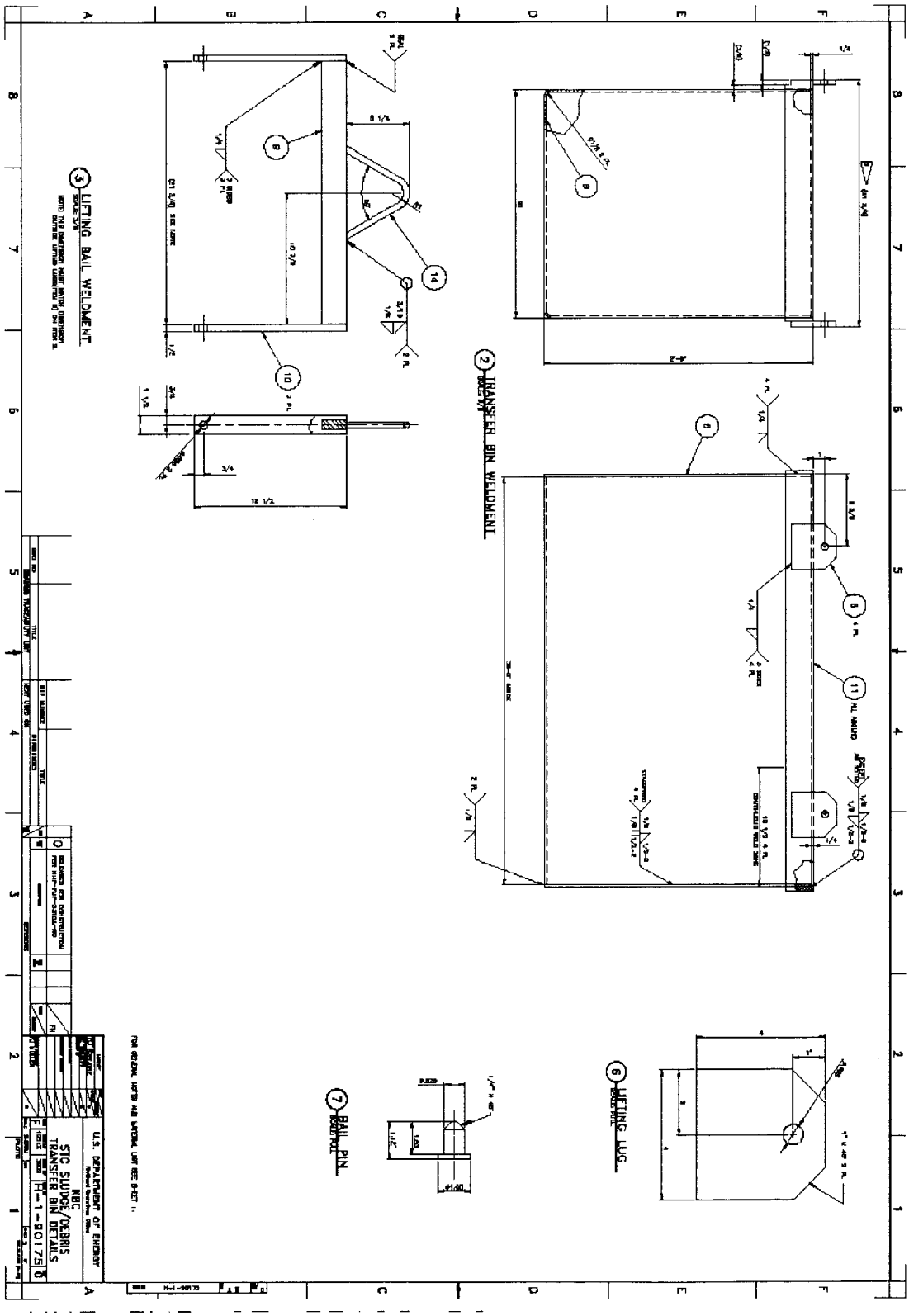


Figure 4: Loading Filters into interim containers

A conceptual sketch of the transfer and storage containers is provided in Figure 5. This bounds the general size of the containers. Design details for operability and safety may be incorporated as design progresses. As currently designed, two of these transfer and storage containers can be accommodated in the STC volume for transport to K-West Basin utilizing the FTS. Though different containers may be deployed in the future, their overall volume can never exceed the internal volume of the STC.

Figure 5: Transfer and Storage Container



3.0 Transfer of Containers from K-East to K-West Basin Using the Fuel Transfer System

The transfer and storage containers are designed to be transferred in the Shielded Transfer Container (STC) via the Fuel Transfer System (FTS) using the same general processes that were used to transfer spent nuclear fuel from the K-East Basin to the K-West Basin as previously approved.

The STC consists of a fabricated 7" thick metal body with a mechanical lid. The design is engineered to reduce radiation levels on the exterior of the cask, which is required to maintain occupational radiation levels as low as reasonably achievable (ALARA) when it is removed from the basin water. The overall dimensions of the STC are approximately 5'3" long by 4'6" wide and 3'8" in height.

The basic components of the STC are the STC body and lid. The STC lid is secured to the cask body mechanically. There are penetrations in the STC lid for venting any hydrogen gas that may be generated and for draining the STC. The vent will be equipped with a metal high-efficiency particulate air (HEPA) type filter. The STC closure lid will have a locking mechanism. Lifting trunnions or lugs are provided for engagement with the lifting system (also known as a straddle carrier).

General Operations of the Fuel Transfer System have been described in other documentation and is summarized here for completeness. In general the only difference between the proposed sludge transfer operations and the previously approved fuel transfer operations is the makeup of the payload. The previous payload consisted of a mixture of fuel and some sludge. The proposed payload will consist entirely of 100-KE sludge, filters and strainer material inside two interim containers. The Mark II/III fuel canisters, the canister separators that were used to move fuel in the STC will not be used so that the interim containers can fit into the cask.

The transfer and storage containers will be positioned into the (STC) underwater. Underwater operations involve the use of hoists and long handled tools to move the transfer and storage containers to the dummy elevator pit and place them into the STC. Basin water quality will be controlled by the existing treatment system.

Following this, the STC lid will be closed and locked under water. The STC will be raised out of the basin pool by way of an underwater lift system, known as the FTS platform, in the dummy elevator pit area. The STC exterior is flushed with demineralized water as it emerges from the basin water to minimize any external radioactive contamination. The STC will then transferred into the cask transfer annex (CTA) and be placed into a CTO, thereby isolating any surface contamination from the environment. The STC/CTO will then be transferred by a crane to a transfer trailer. The STC/CTO will be transferred to the K-West Basin for unloading. Once unloaded, the STC/CTO is

returned to the K-East Basin for the next loading repeating the process just described until all the sludge/debris transfer and storage containers are removed.

Unloading operations in the K-West Basin are similar to those described for K-East Basin, but in reverse order.

3.1 Shielded Transfer Cask Loadout System Details

The major components of the STC loadout process are as follows:

Cask Transfer Overpack (CTO) – The CTO consists of a fabricated metal body with a mechanical lid. The CTO is used to house the STC after it has been removed from the basin and to isolate any smearable contamination on the STC exterior from the environs during handling and transfer. The CTO is approximately 6'1" long by 5'4" wide and 4'2" in height. There are penetrations in the CTO lid for venting any hydrogen gas that may be generated. The vents will be equipped with a NucFil[1] filter or a metal HEPA-type filter.

Conveyance Vehicle – The conveyance (trailer) vehicle is a semi-trailer that can be attached to a standard tractor. The trailer provides the necessary supports and attachment points for securing the cask in the vertical orientation during transport to the K-West Basin for unloading and then back to the K-East Basin for loading.

The STC Lifting System – The STC lifting system is used to lift the STC out of the dummy elevator pit, transfer it by rail to the CTA and into the CTO.

CTA Crane – The CTA crane will transfer the STC/CTO to the transfer tractor trailer.

Cask Transfer Annex CTA – The loaded STC will be placed into the CTO inside the CTA. The CTA employs a series of doors to maintain contamination control during the operation involving the handling of the STC. When an empty STC/CTO is returned to the K East Basin for loading, the process is reversed.

3.2 Cask Transfer Annex Operations

As the STC leaves the K-East Basin, it will enter the Cask Transfer Annex (CTA) where it is placed into the CTO using the STC lifting system. The CTO lid is installed and secured. The CTA has an area to stage STC/CTOs while transfer conditions are confirmed. A maximum transfer time of 12 hours between K-East and K-West Basins is required under the facilities nuclear safety basis.

The exit from the enclosed portion of the CTA is through two sets of double doors. After leaving the enclosed portion of the CTA, the STC/CTO will be moved by the cask transfer crane to the transport truck area where it is loaded onto the Conveyance Vehicle using the CTA Crane.

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[1] NucFil is a registered trademark of Nuclear Filter Technology.

4.0 Storage of Transfer and Storage Containers in K-West

Once at the K-W Basin, the STC will be opened and the transfer and storage containers will be removed, all happening underwater. These transfer and storage containers will be placed on the basin floor. The transfer and storage containers are considered equivalent to the other sludge containers in the basin that are currently storing K Basin sludge. The empty STC could be returned to the K-East Basin, left in K-West Basin, or removed and managed as K Basin debris.

5.0 Disposition of Sludge In Transfer and Storage Containers

The sludge in these transfer and storage containers will be a feed stream to the sludge treatment process. The remedial design aspects of the transfer process, will be described in the *Remedial Design Report for the K Basins Interim Remedial Action: Sludge Treatment and Interim Storage Phase 1, Transfer of Sludge from the K West Basin to the Cold Vacuum Drying Facility,* DOE/RL-2006-06.1.

6.0 Other Uses and Considerations

The underwater filtration system may also be used to maintain water clarity in the pools to support operations.

This use of the existing Fuel Transfer System that was used originally to transfer spent nuclear fuel from the K-East to the K-West Basin may also be used to transfer debris from the K-East to the K-West Basin, i.e. within the boundary of the K Basins CERCLA interim remedial action.

7. 0 Applicable or Relevant and Appropriate Requirements (ARAR) Analysis Associated with the Changes

The applicable ARARs from the CERCLA Record of Decision associated this remedial design change are those associated with its operational phase involving the management of waste generated by the operation of the sludge collection process described above. Waste generated by this operation will be managed in accordance with existing waste management plans and waste sampling and analysis plans.