

**TECHNICAL ASSISTANCE REQUEST  
COLUMBUS CLOSURE PROJECT  
CCP 03-02-1**

**INDEPENDENT REVIEW OF THE JN-1  
RADIOACTIVE MATERIALS INVENTORIES AND AIR DISPERSION MODELING**

**SECTION 1 -- APPROVALS FOR TECHNICAL ASSISTANCE**

_____ Contractor Site Representative	_____ OST/HQ Program Manager
_____ DOE Site Manager	_____ OST/HQ Office Director
_____ DOE OH Manager	

**SECTION 2 -- BACKGROUND AND PROBLEM DESCRIPTION:**

This Technical Assistance Team (TA) will be requested to focus on independently reviewing the amount of radioactively contaminated material expected to be released during the demolition and removal of building JN-1 and the associated air dispersion modeling. Building JN-1 is part of the Battelle Columbus Laboratories Decommissioning Project (BCLDP). JN-1 is on the Battelle West Jefferson site which is located near a residential area and is currently used as an industrial site concurrently with the cleanup activities.

The BCLDP technical baseline approach calls for demolishing building JN-1 and shipping the debris off-site for burial as low level waste. Information regarding the type and extent of remaining radioactively contaminated material is based on process knowledge estimates and actual current radiological data. This information can serve as source term input to models predicting release of radioactively contaminated materials to various pathways, primarily airborne releases, during demolition activities and evaluation of D & D options. Radiological data can significantly impact evaluation of demolition options, such as to leave contaminated building components in place until they can be removed and disposed of during the building demolition stage. Performing the demolition with only the essential containment, including degrees of "Open Air" demolition is expected to yield significant cost savings.

Experience to date has shown that estimates and the resulting modeling can be overly conservative, leading to a less than optimal baseline. Estimates have not yet been specifically established for potential releases to the air resulting from demolition of JN-1. It is believed critical for closure that the BCLDP develop an accurate determination of the amount of radioactively contaminated material remaining and its release potential using a reasonable safety margin. This is especially important because the correct inventory is needed in order to assure the safety of the public and the private industrial operations located on-site while remaining in compliance with the appropriate regulatory limits.

After sufficiently accurate estimates of contamination are achieved, the site will have to address the appropriate degree of decontamination, in conjunction with the proposed and any improved demolition approaches, needed to meet the NESHAPS requirements during demolition.

**SECTION 3 -- SCOPE:**

The scope of work for the TA Team is divided into several areas:

- a. Extent of Contamination: The TA Team will examine the existing contamination data and projections for contamination and releases and recommend improvements needed to more accurately determine the true extent of contamination in and under the building. The need for more detailed contaminant data will be driven by the Team's analysis of the relative impact of the radioactive contamination in achieving the NESHAPS goals for the site coupled with the potential for mitigation of these releases through the use of existing and/or innovative technologies and processes. If more data is required, the Team will recommend optimum methods for gathering any additional data needed and then determine how the data can best be used to accelerate closure. The Team will also review the source term for validation and the impact of the contamination on overall site emissions.
- b. Computer Modeling: The BCLDP uses CAP-88 as an air dispersion model to demonstrate compliance with the NESHAPS requirements. The TA Team is requested to assist in independently reviewing the reasonableness and accuracy of the modeling used. Included in the analysis of the CAP-88 model and the relevant NESHAPS requirements will be a determination of the relative contribution of the radioactively contaminated material in JN-1 to the total airborne release from the site.
- c. Better D&D Techniques: The BCLDP has developed a baseline plan for demolishing building JN-1 based on the previously expected levels of contamination. The Team will independently develop and recommend any currently available technologies or different technical approaches to improve the proposed approach, from the standpoints of schedule acceleration, cost reduction and regulatory compliance.
- d. Fugitive Emissions: As possible additional scope (optional), the Team could recommend methods to reduce fugitive emissions for on- or off-site, both before and during demolition and while packaging / loading waste. (This has been the subject of a Value Engineering Study at Mound Closure Project (MCP), observed by Columbus Closure Project (CCP) representatives, that could serve as the launch point for this effort.) In addition to reduction in risk, the alternatives proposed should offer improvements over the cost and schedule resulting from the baseline methodology.

Prior to arrival on site, the Team will be provided with background information concerning the problems being addressed and a description of proposed technical solutions. Upon arrival on site, the Team will review the scope of the study and the expectations of DOE and contractor management. The contractor will also provide a briefing on the current baseline estimates for levels of contamination and how they were obtained and used. The Team will tour the building JN-1 with the contractor and have any questions answered before addressing the scope of the study.

**SECTION 4 -- SCHEDULING REQUIREMENTS:**

Consistent with the present site D&D schedule for JN-1 and the sequence of work, it will be helpful if the requested TA can be accomplished by May 2003. Preparation of the technical specification(s) for subcontracted demolition of the JN-1 Building are starting now, and results of the air dispersion modeling and the effect on needed demolition techniques and technologies must be factored into these documents.

**SECTION 5 -- BENEFITS:**

The primary benefits of this TA will be to strengthen the BCLDP plan by validating or improving existing contamination assumptions, by identifying improved technologies and processes for determining the actual levels of contamination of building JN-1, and by identifying improved technologies and processes for demolition of building JN-1, which is on the critical path of the BCLDP Closure. It is expected that the TA Team will find improvements in at least some of the following areas:

- a. Evaluate the site's available radiological characterization data and how that data was used in preparing the current baseline estimates.
- b. Review previous BCLDP CAP-88 dispersion modeling.
- c. Determine any additional data needs for more accurate modeling including sensitivity analysis for radiological contamination and how the data should be collected and processed.
- d. Review regulator/NESHAPS interpretation on cleanup criteria for nuclear facilities and the degree of compliance of the BCLDP baseline.
- e. Recommend methods of detection that demonstrate compliance with NESHAPS during demolition.
- f. Recommend an optimum approach to CAP-88 modeling.
- g. Recommend techniques and processes for building JN-1 demolition.
- h. (Optional) Recommend improvements to reduced fugitive emissions before and during demolition.

The cost estimate to complete this TA is about \$50,000, and it is anticipated that a cost avoidance of approximately \$200,000 or more should result from TA recommendations in one or more of the areas listed above.

**SECTION 6 -- DELIVERABLES:**

Any recommended alternatives will be developed to the extent possible and presented to DOE and Contractor management as a draft final report prior to leaving the site. It is anticipated that after completion of the final report, some portion of the team will be made available for consultation during the course of removal of the buildings and the remediation of the soil and structures underneath. The consultation may range from phone calls to site visits either individually or as part of a team.