



*Many Voices Working for the Community*

# Oak Ridge Site Specific Advisory Board

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March 24, 2008

Mr. Steve McCracken  
Assistant Manager for Environmental Management  
DOE-Oak Ridge Operations  
P.O. Box 2001, EM-90  
Oak Ridge, TN 37831

Dear Mr. McCracken:

## **Recommendation 167: Recommendation on Historic Preservation of the K-25 Building at East Tennessee Technology Park**

At our March 12, 2008, meeting, the Oak Ridge Site Specific Advisory Board approved the enclosed recommendation.

As you know, the recommendation was approved with the minimum number of votes necessary for passage. As a result, a minority opinion on the issue has been developed and is included with this recommendation.

While the board supports preserving the legacy of K-25 in some manner, those who have signed the minority opinion have a number of questions regarding cost estimates to develop the K-25 North Tower as a tourist attraction, who the future owners will be, estimates concerning how many people would visit such a site annually, safety concerns, and other issues that have the potential to impact the viability of the recommendation as it was approved.

We realize the issue of preserving the K-25 Building at East Tennessee Technology Park is an emotional one that is close to the hearts of many people. As such we recognize the difficult decision facing you in proposing what should be done to preserve the legacy of K-25.

We look forward to hearing your decision on the issue and receiving your written response to this recommendation and the minority opinion by June 12, 2008.

Sincerely,

A handwritten signature in black ink, appearing to read "Lance J. Mezga".

Lance J. Mezga, Chair

Enclosures (2)

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cc/enc:

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Dave Adler, DOE-ORO  
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Connie Jones, EPA Region 4  
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James O'Connor, Oak Ridge City Manager  
Melissa Nielson, DOE-HQ  
John Owsley, TDEC



## **Oak Ridge Site Specific Advisory Board Recommendation 167: Recommendation on Historic Preservation of the K-25 Building at East Tennessee Technology Park**

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### **Background**

#### ***Historical Significance of K-25 Gaseous Diffusion Plant***

The East Tennessee Technology Park (ETTP) (formerly the K-25 Site), located on the southwestern end of the Oak Ridge Reservation, used the gaseous diffusion method to separate uranium-235 from uranium-238. Although the final product was measured in grams, gaseous diffusion required a massive facility to house the hundreds of cascades.

The K-25 Building was completed in early 1945 at a cost of \$500 million. The U-shaped building measures half a mile by 1,000 feet and is larger than the Pentagon. Operations at the K-25 Building were shut down in 1964.

In 1989, the Oak Ridge Reservation (including ETTP) was placed on the Comprehensive Environmental Restoration, Compensation, and Liability Act (CERCLA) National Priorities List. Since then, K-25 Building conditions have deteriorated despite ongoing surveillance and maintenance. Demolition of the K-building is planned based on poor physical condition and the cost and risk of maintaining it.

In February 2002, the Department of Energy-Oak Ridge Office (DOE-ORO) operations manager approved an action memorandum that selected demolition of the K-25 and K-27 buildings as a cleanup alternative. Because the community expressed concern for the preservation of historical property, DOE teamed with consulting preservation experts and public participants to evaluate preservation priorities. Final preservation plans were documented in a memorandum of agreement (MOA) with the consulting parties. The K-25 Building is recognized by DOE as one of seven Manhattan Project Signature Facilities that deserve to be preserved.

#### ***Regulatory Requirements***

The National Historic Preservation Act of 1966, Section 106 requires, as amended through 2000, *“The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or Federally assisted undertaking in any state and the head of any federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation established under Title II of this Act a reasonable opportunity to comment with regard to such undertaking.”*

The goal of consultation is to identify historic properties potentially affected by the undertaking, assess its effects, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties. The agency official shall involve the consulting parties in findings and determinations made during the Section 106 process. The following parties shall have roles in the 106 consultative process: Advisory Council on Historic Preservation, State Historic Preservation Officer (SHPO), representatives of local governments and additional consulting parties, and certain individuals and organizations with a demonstrated interest in the undertaking may participate as consulting parties due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the

undertaking's effects on historic properties. The agency official must complete the Section 106 process "prior to the approval of the expenditure of any federal funds on the undertaking or prior to the issuance of any license."

The 106 process requires the agency official to apply the criteria of adverse effects to historic properties. The agency official is required to consider any views concerning such effects, which have been provided by consulting parties and the public. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

If an adverse effect is found, the agency official shall notify the consulting parties and consult further to resolve the adverse effect pursuant to 36 CFR Section 800.6. If the agency official and the consulting parties (i.e., including the Advisory Council on Historic Preservation) agree on how the adverse effects will be resolved, they shall execute an MOA. The agency official must submit a copy of the executed MOA to the Council prior to approving the undertaking in order to meet the requirements of Section 106. An MOA, executed and implemented, evidences the agency official's compliance with Section 106. The agency official shall ensure that the undertaking is carried out in accordance with the MOA. The signatories have sole authority to execute, amend, or terminate the MOA in accordance with the Section 106 process.

For those DOE-ORO actions determined in consultation with the SHPO and the Advisory Council to have potential for an adverse effect on properties included or eligible for inclusion in the National Register, DOE-ORO entered into MOAs with the SHPO and Advisory Council in accordance with National Historic Preservation Act.

#### ***Status of Historic Preservation Agreements for ETTP***

On April 12, 2004, DOE-ORO and the Tennessee SHPO ratified the MOA pursuant to the National Historic Preservation Act requirements as applicable to demolition of 108 buildings and structures at ETTP. The consulting parties agreed with the DOE reassessment of National Register of Historic Places eligibility for ETTP and determined that 11 buildings and structures, including the K-25 and K-27 buildings, are eligible for inclusion in the National Register, and demolition of these properties at ETTP will have an adverse effect on the historical character of these structures as well as the K-25 Site Main Plant and Powerhouse Historical Districts. DOE-ORO also agreed to set aside nine buildings which are included in the 108 buildings covered in the MOA for a period of up to 12 months, ending in April 2005. If any of these nine buildings were eliminated from further consideration prior to April 2005, then this agreement would be documented in consulting party meeting minutes.

On March 28, 2005, DOE-ORO ratified the MOA in agreement with the consulting parties (Tennessee Historical Commission, Advisory Council on Historic Preservation, City of Oak Ridge, Oak Ridge Reservation Local Oversight Committee, Oak Ridge Site Specific Advisory Board, Oak Ridge Heritage and Preservation Association, Environmental Protection Agency Region 4) and after reevaluation that eight buildings (i.e., K-1002, K-1008-C, K-1019-5A, K-1021, K-601, K-1024 and K-1101) listed in the April 12, 2004, MOA are not necessary for interpretation of the K-25 Site and can be demolished. DOE and the consulting parties agreed upon the best and most cost-effective mitigation to permanently commemorate, interpret, and preserve the significance of ETTP as being the use of the north tower of the K-25 Building and to proceed with demolition of the remaining scientific and technological facilities. This MOA calls on DOE to retain the north tower of K-25 that connects the two long 'legs' of the building, mark the footprint of the building, and the retain the upper 10 feet of the inner basement area walls between the legs. The resulting walls could be used for murals and other visual displays to explain

the historical significance of K-25. Markers along the former footprint of the building would help visitors comprehend the size of the structure.

On April 3, 2007, DOE-ORO and consulting party representatives agreed to conduct several meetings between April and November 2007 to discuss concerns with the MOA regarding building decontamination and equipment issues, differences in “war-time” and current building codes, deteriorating building conditions that present serious safety risks, and issues with transfer of this facility for free release and reuse.

On November 14, 2007, DOE-ORO solicited the advice of the Oak Ridge Site Specific Advisory Board (ORSSAB) as well as a cross section of the community regarding actions to commemorate and preserve historical significance of the K-25 Building. DOE-ORO will consider advice from various sources and make a decision for proposed modification of the MOA to the consulting parties. ORSSAB agreed to provide DOE with a recommendation regarding appropriate actions to commemorate and preserve historical significance of the north tower of the K-25 building and to assist DOE with obtaining community input through sponsoring and hosting a public meeting in coordination with the Local Oversight Committee.

The ORSSAB Stewardship Committee heard presentations on the topic at its December 2007 meeting from Partnership for K-25 Preservation (PKP) and the American Museum of Science and Energy on alternatives to preserve the history of K-25. After those presentations the Stewardship Committee formed a subcommittee to study the issue and develop a recommendation for the full board to consider.

On January 12, 2008, DOE-ORO arranged a tour for ORSSAB members to observe overall facility conditions. The tour included a walkthrough of the vault floor, cell floor, and observation of the operating floor. Examples of corbels requiring repair were observed by the ORSSAB members. Structural engineers were available to answer questions regarding structural stability.

On February 19, 2008, ORSSAB and the Local Oversight Committee sponsored a meeting to invite community input to the decision-making process of historic preservation of the K-25 Building North Tower. Historic preservation options were presented by DOE-ORO and PKP, as well as members of the community. In addition to receiving live public comment, questionnaires were made available to gather input. The subcommittee used the public meeting, the results of the questionnaire, and input for ORSSAB members to formulate a recommendation.

## **Discussion**

### ***K-25 Decontamination & Decommissioning***

The planned demolition of the K-25 Building is being performed under CERCLA as a non-time-critical removal action that consists of the three following actions:

- Remove high-risk process system components
- Establish facility as criticality incredible
- Demolish building (except K-25 North Tower)

K-25 demolition is scheduled to begin September 2008 and be completed in September 2010.

### ***Facility Conditions***

Concerns have arisen about preserving the building as planned in the 2005 MOA because of the rapid deterioration of the building. During the demolition process of the east and west wings of the “U” some parts of the north tower will need to be shored up to keep areas from collapsing before work is started. Roof deterioration allowing water to leak in is causing additional damage. The floors, support columns,

and corbels are in poor condition, and the operating floor in the north tower cannot remain in place because it is unsafe.

### ***MOA Cost Revisions***

In July 2007, DOE-ORO identified revised assumptions to the cost estimates of the 2005 MOA stipulations. Significant changes were identified in the cost estimate assumptions for the following stipulations: roof replacement, transite sealing, facility decontamination, internal modifications, and operating floor replacement. The cost estimates for completion of the stipulations of the 2005 MOA were revised from \$26.7 million to \$47 million to implement the current MOA. Contributing factors to the revised cost estimates include safety issues requiring a revised demolition approach as well as cost assumptions in the 2005 MOA that were not well defined.

### ***Historic Preservation Options***

The following historic preservation options were identified by the ORSSAB Stewardship Committee for consideration:

- Retain K-25 North Tower: Remove North End Stipulations
- Retain K-25 North Tower: Revise MOA to Change Stipulations
- Retain North Tower: PKP Preferred Option D
- Demolition of K-25 Building North Tower and Construction of an Interpretative Center
- Demolition of K-25 Building North Tower

### ***Evaluation Criteria***

ORSSAB identified the following evaluation criteria for historic preservation options:

- How does the interpretation convey an authentic experience?
- What is the feasibility of the option?
- What is the cost?
- What is the implementation schedule?

### ***Authentic***

The term *authentic* refers to the use of artifacts, facilities, and sites or other methods to convey a sense of the size, magnitude, and understanding of the gaseous diffusion process as it would have been experienced during actual operations in the K-25 Building. This should be the most important criteria to evaluate adequacy of historical interpretation options. The ultimate goal of historic interpretation is to “tell a story” in a manner that emphasizes the importance of preserving for future generations and encouraging an appreciation of the importance of historic places. These criteria should consider the “what” and “why” of preservation of a portion of the building and its equipment.

### ***Feasibility***

The feasibility goals must be met within the framework of the interpretation of the site as guided by the following design principles:

1. The visitor experience is authentic.
2. The entire site is the visitor experience.
3. Technology is explained in simple, clear ways.
4. The main site experience is via bus or vehicle.
5. The pedestrian experience is compact as possible and limited to 200 feet radius from stops on the tour
6. New visitor accommodations are designed to provide an overview of the entire site, visually and thematically
7. Representative equipment is preserved and located for public visits.

These criteria should consider the “how” and “where” of the historic interpretation at ETPP.

### ***Cost***

Costs should not be the primary criteria for evaluating historical interpretation options. Total DOE costs are provided for all options where available. Consideration should also be given to the secondary party costs (e.g., construction and design of the museum) to determine economic viability and implementation obstacles. The costs of the entity that will take responsibility for the K-25 North Tower are beyond the scope of DOE.

### ***Implementation Schedules***

The implementation schedule should consider those issues that would impact the schedule. This is a qualitative estimate of approximate timeframe to complete all actions for completion of museum planning, construction and operation.

### ***Recommendation***

ORSSAB recommends that DOE-ORO preserve the K-25 Building North Tower and gaseous diffusion equipment where possible. Preserving a portion of the K-25 Building and equipment will allow visitors to access the facility and see authentic historic gaseous diffusion equipment in context. The costs of preserving the K-25 Building North Tower are reasonably well defined as compared to the 2005 MOA. The construction and development of an interpretative center within the K-25 North Tower is considered feasible to the entity that will assume responsibility for the facility.

The 2005 MOA should retain the K-25 North Tower as the focus for interpreting the activities that occurred at the K-25 Site and as an invaluable educational tool and a historic tourism asset. The development of an interpretive center at the K-25 Site is estimated to significantly increase the number of visitors to Oak Ridge on a yearly basis.

ORSSAB recommends that the attainment of compliance with current building code requirements remain beyond the scope of DOE preservation of the K-25 North Tower.

ORSSAB recommends that DOE-ORO revise the 2005 MOA to implement the PKP Preferred Option D as presented on the February 2008 public meeting. The following are a summary of actions of the PKP Preferred Option D:

- Retain the entire building shell, re-roof.
- Install two-hour fire walls on each floor at simplest building junctures to seal approximately 40 percent occupied space from the empty 60 percent of the building
- Clean out west half down to cell floor, which will remain, but seal it off under new roof.
- Utilize the east half for interpreting history – with the essentials on each floor
- MOA modification to remove all 276 north end compressors and 138 converters
- MOA modification to replace operations floor
- Decontaminate interior of K-25 North Tower with cleanup goal of free release
- Replace transite siding
- MOA modification of modified mural wall of approximately 200 feet

ORSSAB recommends that the DOE-ORO re-baseline the K-25 North Tower historic preservation activities to document costs and schedule as determined by safety and revised MOA stipulations consistent with the PKP Preferred Option D. Because the deterioration of the K-25 Building North Tower will continue to accelerate until the roof is replaced and rainwater intrusion controlled, DOE-ORO should avoid delaying historic preservation actions of the K-25 North Tower.

ORSSAB recommends that DOE-ORO develop an updated fact sheet for the public on the K-25 North Tower final historic preservation decision. This fact sheet should communicate the general requirements of the National Historic Preservation Act and changes to the 2005 MOA based on community input as well as the final decision of DOE-ORO in agreement with the consulting parties.

ORSSAB recommends that DOE-ORO ensure objects and equipment removed from the K-25 Building are properly curated. The relative importance of each artifact and equipment should be determined prior to exhibit and design and construction.



Minority Opinion on  
Preservation of the North End Structure of the K-25 Building

On March 12, 2008, the Oak Ridge Site Specific Advisory Board (ORSSAB) approved a recommendation (12 voting in favor, five abstaining, and one voting no) that the Department of Energy-Oak Ridge Office (DOE) retain the north tower of the K-25 Building at East Tennessee Technology Park and take steps to upgrade the structure in accordance with the 2005 memorandum of agreement (MOA).

While this recommendation was reached with a majority vote of the ORSSAB, a straw poll of ORSSAB members taken before the March 12 meeting indicated strong concerns expressed by several members about various aspects of the undertaking. Fourteen members responded in the straw poll. Eight voted to preserve the north tower while six voted to demolish it. It should be noted that voicing these reservations in no way should be interpreted to suggest that there is not a strong sense of historic preservation by these ORSSAB members. Following is a summary of concerns:

- The structural condition of the north end is quite poor and is deteriorating daily; its seismic stability is questionable. True, the structural condition can be rectified with enough fiscal support, as with any structure, but the expenditure in this case is questionable for a number of reasons, as noted below. Initial DOE estimates to put the structure in transferable condition, as specified in the 2005 MOA, have risen from \$27M to \$47M, and could certainly go higher. Modification “option D,” as presented at the February 19 public meeting, places the costs at approximately \$29M (a figure unconfirmed by DOE). Regardless of which number is accepted, the costs are very high compared to demolition costs of some \$13M.
- If the north end were to be restored and turned over to another party for ultimate conversion to a museum, it would be turned over in a non-code-compliant condition with no utilities, no fire suppression system, no internal structure, and uninhabitable. It would in all probability take several years and millions of dollars (one estimate is \$13M) to convert the structure into a museum-like facility. There is no plan that we are aware of for this fund-raising and no guarantees that it would be accomplished. What might happen in several years if the funding can not be raised? What costs would be incurred if, for some compliance reason, the building can not be turned over to another party after some \$29M has been spent to upgrade it? What would DOE’s liability (or that of the receiving party) be at that juncture?
- Utility costs during the period of time that the building is being converted into a museum-like facility, including the time for fund-raising (several years), will be incurred because the building, we are told, will need to be heated to maintain the integrity of the new roof. How will these costs be handled?
- Operational costs, as well as continuing utility costs once the facility is converted, will amount to a few million dollars per year, in all probability, including heating the 60 percent of the building that remains unused. What is the plan for supporting these costs?
- Estimates of some 200,000 visitors per year (300,000 each of the first two years), presented in support of retaining the north end, are seen to be overly optimistic. For instance, the American Museum of Science and Energy (AMSE) – an established tourist attraction in Oak Ridge – averages approximately 120,000 visitors per year, including outreach activities. Even if 200,000 visitors per year were realized, that would not be sufficient income to support operation of the museum; for instance, only about 20 percent of AMSE’s operational costs are realized from admission charges.

In summary, it is felt that the chance of success for making the north end a viable museum is exceptionally small and the potential for failure is quite high. If the endeavor fails, the negative impact on the Oak Ridge community and its emerging plans for heritage tourism will be considerable and long-lasting.

Accordingly, the following actions are recommended. DOE should raze the north end structure and proceed expeditiously with development of alternate plans for commemorating the history of the site. Such plans could include construction of a modern-day interpretive center – preferably unmanned to reduce operational costs – and various other widely-agreed upon steps, such as restoration of portal 4, marking the footprint of the K-25 Building, etc. These steps could be accomplished relatively quickly and the community could begin to reap the benefits, rather than waiting multiple years for fund-raising and conversion of the north end to a museum with the potential that this objective may never be reached. At the same time, construction of an interpretive center at the AMSE site would help the concept that that museum is intended to tell the entire Manhattan Project story and exhibits there would be designed to complement what is displayed at the K-25 site.

The original recommendation passed by the ORSSAB incorporated four evaluation criteria (authentic experience, feasibility, cost, and implementation schedule), which were used subjectively in weighing various options for the north end. Based on the concerns expressed above and the recommended actions, these four criteria are evaluated in the following fashion:

- Authentic experience. If the north end were razed, there is no question that a true “authentic experience” could not be realized because the original building would no longer be there. The interpretive center could replicate some degree of the authentic experience, but appreciation of the magnitude of the original operation and structure would be damaged. However, a replica of the operating floor, built to modern standards and outfitted with original equipment, could be constructed at reduced cost, creating a far improved environment for telling the K-25 story and transmitting the sense of the magnitude of the original structure. It should be remembered that the real story of K-25 involves the people who made it happen, not the building itself. A creatively designed interpretive center(s) can emphasize this aspect of the story, while at the same time replicating a high degree of the “authentic experience,” including appreciation for the magnitude of the original building.
- Feasibility. Steps proposed above would definitely lead to a more highly feasible outcome in a much shorter timeframe and at relatively lower risk. Many tourism-oriented suggestions in the original recommendation (representative equipment, visitor accommodations, etc.) would be equally feasible.
- Cost. There is no question that the suggestions presented above are of considerably less cost than those associated with the original recommendation.
- Implementation schedule. The suggestion actions would lead to a greatly accelerated schedule, with positive results realized within a matter of a few years.

We take this position with full respect for those individuals who are supportive of the preservation of the north end and we respect their insight and perseverance. However, we feel that this approach is best overall for the community and for all parties.

Prepared by:

Bill Bass  
Ron Murphree

Bob Olson  
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