Preserving America's Heritage

CONSIDERATION OF HIGHLY TECHNICAL AND SCIENTIFIC FACILITIES IN SECTION 106 REVIEW

INTRODUCTION

When future generations reflect upon the most significant historic resources of the past hundred years, the sites associated with man's first ventures into space, the splitting of the atom, the development of computers and artificial intelligence, and the first successful products of genetic engineering may well be the first examples that spring to mind. America's scientific and technical facilities stand as monuments to the nation's supreme ability to invent and exploit new technology and to advance scientific and engineering knowledge. In a national survey by the Gannett Corporation's Newseum, a poll of journalists and the public both ranked the development and use of the atomic bomb during World War II as the top story of the last century.

Some facilities and structures significant in the early history of science and technology are now inactive or have been deemed obsolete, and are in danger of being lost. Other significant facilities continue in use, which can impact their integrity through the need to constantly modify and upgrade them. How can we ensure that future generations of Americans have the opportunity to study, appreciate, and learn from our rich scientific, technological, and industrial heritage?

BACKGROUND AND GUIIDANCE CONTEXT

The Advisory Council on Historic Preservation (ACHP) has a long history of involvement in the Section 106 review of historic highly technical and scientific facilities. The ACHP also has provided guidance for other parties consulting under Section 106 on issues to consider in the identification, assessment of effect, and resolution of adverse effects for these kinds of historic properties. Part of the Department of Defense's Legacy Resource Management Program in the 1990s was an effort to inventory for preservation consideration the considerable number of its Cold War-era facilities, structures, and equipment; much of this is technological or scientific in nature.

In 1991, the ACHP published *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities*, a congressionally-requested study of issues associated with the designation of scientific research institutions as historically significant for their role in scientific and technological advancements. Congress' primary concern was how a balance could be struck between the preservation of physical reminders of the scientific legacy of the United States and the ongoing operation and upgrading of scientific and technical research facilities.

In 2001, under an interagency agreement with the Department of Energy (DOE), the ACHP prepared a report entitled *Recommendations and Preservation Options for Manhattan Project Signature Facilities at Oak Ridge and Hanford Reservations: the Graphite Reactor, the Beta-3 Racetrack at Y-12, the K-25 Building at Oak Ridge; the 105-B Reactor, the 221-T Chemical Separations Plant at Hanford*. This report, developed by a six- member panel of experts convened by the ACHP, presented the Secretary of

Energy with strategies for using DOE's historic "Signature Facilities" to convey the legacy of the World War II Manhattan Project to future generations of Americans. DOE selected eight facilities at five sites that are, according to DOE, "nationally significant historic properties that best convey and interpret the scale and importance of the Manhattan Project, and provide the core for the Department's ability to successfully interpret, whether in situ or through museum or other interpretive setting, its Manhattan Project mission of developing atomic bombs during World War II." None of these structures are significant for their architectural features, but for what went on inside them.

In 2011, the National Aeronautics and Space Administration (NASA), the ACHP, and the State Historic Preservation Officers (SHPOs) of Alabama, California, Florida, and Texas (sites of the major NASA centers) executed a Memorandum of Agreement for retirement of the Space Shuttles *Atlantis*, *Endeavour*, and *Discovery* from active service. The shuttles had been determined historic for the contribution they made to space flight and exploration and their engineering significance. Also in 2011, the Department of the Interior recommended that Congress establish a "Manhattan Project National Historical Park" with units at Los Alamos, New Mexico; Oak Ridge, Tennessee; and Hanford, Washington, to commemorate the top-secret effort to create the atomic bomb during World War II. At the announcement of this recommendation Secretary of the Interior Ken Salazar remarked that "the secret development of the atomic bomb in multiple locations across the United States is an important story and one of the most transformative events in our nation's history. The Manhattan Project ushered in the atomic age, changed the role of the United States in the world community, and set the stage for the Cold War." In 2014 Congress passed this "Manhattan Project National Historical Park Act" into law.

This guidance document includes excerpts from the ACHP's studies along with additional information based on our extensive experience in Section 106 review of scientific and technical facilities. The focus here is on active facilities, i.e., those that are historically significant and in continued operation, and not with static museums or museum-type displays. Thus, properties like The Henry Ford Museum or Thomas Edison's laboratory, (part of the Edison National Historic Site managed and operated by the NPS), which is preserved as a museum like it was when Edison used it to make many of his discoveries, are not considered here.

WHY AN INTEREST IN SCIENTIFIC AND HIGHLY TECHNOLOGICAL FACILITIES?

Historical interest in scientists and their experiments has a long history in this country: schoolchildren today still learn about Benjamin Franklin flying his kite in a storm to learn more about electricity, and about the many inventions and discoveries of Americans such as George Washington Carver and the Wright Brothers. Many of their laboratories are today static museums or historic sites which is the principal manner in which scientists and scientific discoveries have traditionally been presented to the public. But public interest in the history of science and technology continues to grow: millions visit the Kennedy Space Center each year, and the Smithsonian's National Air and Space Museums (which includes the Steven F. Udvar-Hazy Center at Washington's Dulles International Airport) is the most popular of all Smithsonian museums, hosting more than 8 million visitors in 2014. In fact, NASA is now concerned enough that (not-too-distant) future lunar visitation could disturb the equipment and setting at the moon's "heritage lander sites" (e.g., *Apollo 11*'s Tranquility Base) and "heritage impact sites" (e.g., *Ranger 7* impact site) that it has issued a guidance document *NASA Recommendations to Space-Faring Entities: How to Protect and Preserve the Historic and Scientific Value of U.S. Government Lunar Artifacts* with recommendations about how to approach these sites and how close to come to avoid contamination or disturbance at these perfectly preserved "archaeological" sites. To this end, in 2015 the House of Representatives passed bill H.R. 810, authorizing NASA's programs and inserted into it Section 725, "Protection of Apollo landing sites" calling on the federal government within one year to "carry out a review and assessment of the issues involved in protecting and preserving historically important Apollo

Program lunar landing sites and Apollo program artifacts residing on the lunar surface, including those pertaining to Apollo 11 and Apollo 17."

The increasing pace of federal and federally sponsored scientific research and advancements that began around World War II adds pertinence to the subject of preserving historically significant scientific facilities and equipment, and many federal agencies are taking a more active role in documenting the history of their achievements.

THE FEDERAL ROLE IN SCIENTIFIC RESEARCH

The federal government participates in research in a variety of ways: through its own agencies using federal employees and facilities, through contracts with private industry and universities, and through grant programs to individuals and academic institutions for research.

In cases where the government undertakes research at its own installations, or where its own equipment is used, the federal role and interests are much clearer and more easily defined than in those cases where the federal government is involved in the conduct of research only through financial assistance. For example, the National Science Foundation only provides grants for scientific research; in this capacity, it directly manages no historic properties. In addition, the vast majority of federal funds for scientific research are used to acquire state of the art and more basic equipment or used to pay staff salaries. *Most federally-funded scientific research, therefore, is unlikely to affect scientific or technological historic properties through destroying or altering their historic characteristics*. A small minority of such activities, however, does have that potential and must be carefully considered.

WHAT MAKES A SCIENTIFIC OR TECHNOLOGICAL PROPERTY HISTORIC?

Historically significant scientific and technological facilities, structures, and objects are those that meet the criteria for inclusion in the National Register of Historic Places or that qualify for designation as National Historic Landmarks for the contributions they made, role they played, or breakthroughs made, in American science, technology, and industry. Scientific and technological properties considered significant can be the equipment itself or the facility where it was used or built.

There are several broad categories of historic scientific and technological properties:

- First, there are the sites publicly associated with major scientific advances or technologically significant events **(e.g., the Mission Control Center at Johnson Space Center near Houston, Texas; the Los Alamos National Laboratory in Los Alamos, New Mexico; Rogers Dry Lake at Edwards Air Force Base, California; the National Institutes of Health in Bethesda, Maryland)**;

- Second, there is the equipment and facilities used to make significant advances in science and technology **(e.g., the Saturn V Dynamic Test Stand at Marshall Space Flight Center in Huntsville, Alabama; the full scale wind tunnel at Langley Research Center, Hampton, Virginia; the Graphite Reactor at Oak Ridge National Laboratory, Tennessee)**;

- Third, there are the rare or unique examples of historically significant technology itself **(e.g., the Hale 200 Inch Telescope at Palomar Observatory in San Diego County, California; the Space Shuttles *Discovery*, *Atlantis*, and *Endeavour*; the Experimental Breeder Reactor No. 1 near Arco, Idaho; the 1903 Wright Brothers' *Flyer*; the Confederate submarine *Hunley*)**; and,

- Finally, architecturally significant laboratory buildings and facilities where research was carried out **(e.g., Yerkes Observatory; U.S. Naval Observatory buildings)**.

Application of the National Register Criteria for Evaluation. The criteria for evaluation of a potentially historic property as promulgated by the National Park Service (NPS) for the National Register of Historic Places (36 CFR 60.4) identifies four complementary types of significance. Properties are historic if they:

(a) are associated with events that have made a significant contribution to the broad patterns of history, **(e.g., landings on the moon, the development of energy sources [hydro, atomic])** or

(b) are associated with the lives of persons significant in the past **(e.g., Salk and the Polio Vaccine, or Edison and his lights/movie projectors, etc.)**, or

(c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction **(e.g., Air Force DEW Line facilities, the U.S. Naval Observatory, Roebling's Brooklyn Bridge)**, or

(d) have yielded, or may be likely to yield, information important in prehistory or history.

Within this general framework, scientific and technical resources with historic value generally fall under one or more of the first three criteria.

National Historic Landmarks. While National Register listed and eligible properties can have three levels of significance—national, state, and local—all properties designated as National Historic Landmarks (NHLs) are nationally significant historic properties, meaning they are exceptionally important for, and reflect significantly on, the nation as a whole. There are numerous scientific and technological objects, structures, and facilities that are National Historic Landmarks including the remains of the ironclad **USS *Monitor*** within the Monitor National Marine Sanctuary off the coast of North Carolina, the Tennessee Valley Authority's **Wilson Dam** in northwest Alabama, the Department of Energy's **B Reactor** at Hanford Site in central Washington state, the Mayo Clinic's **Plummer Building** in Rochester Minnesota, the **Gaithersburg Latitude Observatory** in Maryland, the **Peavey–Haglin Experimental Concrete Grain Elevator** in Minnesota), and the **Graphite Reactor** at the Oak Ridge National Laboratory in Tennessee.

The National Park Service's "Man in Space" NHL theme study identified 25 properties owned by NASA, the Air Force, the Army, and the Smithsonian Institution that were determined to hold national historic significance for their role in that achievement. The NHL facilities range from Cape Canaveral rocket launch pads to rocket engine test stands, to wind tunnels, to one of the Saturn V rockets.

HOW DOES FEDERAL PRESERVATION LAW RELATE TO SCIENTIFIC FACILITIES?

The two major provisions of federal historic preservation law that apply to highly technical and scientific facilities are Sections 106 and 110 of the National Historic Preservation Act (NHPA) (54 U.S.C. 306108 and 306101).

Section 106 requires that federal agencies take into account the effects of their projects and programs on historic properties, and allow the ACHP an opportunity to comment on them. The ACHP's regulations (36 CFR Part 800) set forth this process, requiring the federal agency to consult with State Historic Preservation Officers (SHPOs and, as appropriate, Tribal Historic Preservation Officers [THPOs] or Native Hawai'ian organizations) to determine if the proposed project or program will have an effect on a

property on or eligible for the National Register of Historic Places, and if so, what measures might be appropriate to avoid, minimize, or mitigate any adverse effects. While the SHPO/THPO and the ACHP assist the federal agency in these steps and make recommendations about appropriate treatments, final project decisions in the section 106 process rest with the federal agency.

The ACHP's regulations neither ordain an outcome nor do they mandate preservation of historic properties; they only mandate the *consideration of historic values* in project decision making. The ACHP's regulations also set forth a timetable for completion of the review process.

Section 110 of the NHPA sets forth the broad affirmative Federal agency responsibilities with respect to their programs for balancing mission with historic values. The intent of Section 110 is to ensure that historic preservation is fully integrated into the programs of Federal agencies. To assist agencies in achieving the purposes of Section 110, the ACHP and the National Park Service have jointly issued a guidance document entitled *"The Section 110 Guidelines: Annotated Guidelines for Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act*." Both Section 306107 of the NHPA and the ACHP's regulations (36 CFR Part 800.10) require that special care be taken to minimize harm to National Historic Landmarks through advance planning and care of these sites.

ISSUES TO CONSIDER IN SECTION 106 REVIEW OF SCIENTIFIC AND HIGHLY TECHNOLOGICAL FACILITIES, STRUCTURES, AND OBJECTS

The issue of uniqueness. In theory, considerations of the uniqueness of a property, whether it is "one of a kind," should not enter into decisions about whether a property is historic. It does not matter whether it is rare, relatively common, or ubiquitous in order to be considered historic for purposes of Section 106. Only at the time that evaluation gives way to consultation about what is to be done with the historic property should the number of extant examples be considered in reaching a decision about appropriate mitigation or its future.

Most of the facilities, objects, and structures under discussion here are examples from a very small universe, or are unique. *But they are not historic because they are unique; they are historic for the role they played in important scientific advances.*

Consensus among the preservation community is generally that, where possible, rare or unique historic properties should be preserved. This is not necessarily feasible or prudent when it comes to scientific facilities or equipment. Except in rare instances such equipment is constantly modified and upgraded lest it lose its ability to contribute to scientific advancement (and thus be discarded or cannibalized), and virtually all pieces of scientific equipment in "historic" facilities are both representative and unique in some ways.

The issue of integrity. For a property to be historically important for its scientific or technological advances also does not mean that it cannot be unchanged, or moved to a new location; equipment is constantly being modified for new kinds of research, or is built for specific purposes and dismantled, cannibalized, or discarded after use.

Many of the active NASA and US Air Force launch complexes are illustrative here; over time, they have been continually modified to support new generations of rockets. The historically significant large telescopes, on the other hand, have seen little physical change to their basic structures. The body and mount of the 200 inch Hale telescope at Palomar, or the 40 inch refractor telescope at Yerkes, for example, have been little modified since their installation many years ago. What have changed in these cases are the appurtenant drive mechanisms, detection instruments, and other electronic and optic systems that enable these telescopes to continue to make their scientific contributions.

The telescopes and most NASA facilities that meet the criteria for inclusion as NHLs are certainly unique, one-of-a-kind devices, usually very expensive to build. In the case of the telescopes, there is little chance that their basic structure, the part that makes them unique, will ever be changed. They need to remain in use, and to replace them would be prohibitively expensive. Except for operational testing facilities or launch complexes, which in some cases undergo major modifications (e.g., Launch Complex 39 at Kennedy Space Center, which has seen extensive modifications to launch the shuttle instead of the Saturn rockets, and now has been modified again for the next generation of rockets) and those facilities that are no longer in use, few structures in use today will undergo modification to such an extent that all significance is lost. At the least, there may always be integrity of association.

The issue of continuity of use. Many of the sites and much of the equipment that facilitated modern scientific and technological development are still in active use; *it is by their continued long term use, in fact, that they have become part of America's heritage*.

Other historic facilities, structures, and sites of comparable significance, are occasionally lost to future generations. Deemed inactive or obsolete, used for purposes other than their original use, or "abandoned in place" under federal property management rules, these historic properties suffer from neglect or inadequate maintenance, or a conscious decision not to do anything to them. For example, at Cape Canaveral Air Force Station, Florida, adjacent to NASA's Kennedy Space Center, a number of early launch complexes have been abandoned in place by the Air Force and NASA and their salvageable equipment removed. This includes historic Launch Complex 34, scene of the 1967 *Apollo 1* capsule fire that killed three astronauts during training exercises.

The issue of age. In general, properties are usually not considered for eligibility to the National Register unless they are at least 50 years old. This is obviously not a hard and fast rule; most all of the "Man in Space" NHLs were determined historically significant before they reached this age. The NPS' National Register Criterion Consideration "G" explicitly states that properties less than 50 years old can be listed if they are of "exceptional importance." Caution needs to be exercised if any such arbitrary year cutoff is contemplated. Given the nature of the scientific process, few such facilities or equipment can be expected to remain completely unaltered for any long period of time. Searching for pristine significant facilities or equipment at least 50 years old may be a fruitless exercise.

What exactly is considered to be historic? In making determinations of what is historic, it is necessary to clearly identify the historic component. It has been the ACHP's experience that significant equipment and facilities are often housed in non-historic structures or buildings, and it is critical to understand this distinction. *This has been a consistent complaint of scientists and managers about the preservation process—those representing preservation tend to have little or no understanding of what is significant, and why*.

It also should be noted that many members of the scientific community distinguish between scientific advancements themselves, and the facilities and equipment used to achieve them. What is important about going to the moon, they say, may well be that the United States found this goal worthy of pursuit, and the technological achievements that grew out of that commitment (e.g., the Saturn V launch vehicle, the Lunar Rover and Lunar Module) are already in museums.

Thus, the basic equipment or specialized facilities that led to these historic achievements are no more historically valuable than the hammer or saw used to build a historic house. No one at NASA, for example, would argue that the Apollo spacecraft or its predecessors, the Mercury and Gemini capsules, are not prime examples of American engineering excellence and should be preserved. The launch sites, test equipment, and ancillary structures used to support the missions, however, merely facilitated the spacecraft's ultimate and successful use and generally are not in themselves historically significant in the

same way. In this view, the basic—although sometimes unique—equipment or specialized facilities that played a role in hardware design and construction are merely tools used to produce the final product—scientists' and engineers' "hammers."

To be deemed historically significant or included in a historic district, most buildings and structures located at the research or scientific facility will need to be associated with specific and significant events (unless they possess some special architectural or engineering merit as noted above). Simply because a building or structure was in existence when the facility or agency made scientific contributions or breakthroughs is not sufficient to meet the National Register's criterion G threshold of "exceptional importance." For example, support buildings at a NASA center could be eligible for the specific, identifiable, contribution they made during the Apollo or Shuttle eras, but are not historic just because they were extant when NASA was sending men to the moon. This perspective is well presented in the Department of Energy's *Cold War Context Statement, Sandia National Laboratories-California Site* (2003:13):

> "It is not enough to be part of the Cold War or built in support of the Cold War—a structure or district must show a clear and significant affiliation with Sandia National Laboratory/California's role in or contribution to the Cold War to be considered significant in this context. The SNL/CA site exists because of the Cold War, but not everything at the site contributed significantly to the Cold War…."

Where does the public interest lie? Where does the public interest lie in the preservation and interpretation of historic scientific and technological resources? Who benefits from their preservation? In the preamble to NHPA, Congress declares that "*the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people."* The Act goes on to affirm that *"the preservation of this irreplaceable heritage is in the public interest so that its vital legacy of cultural, educational, aesthetic, inspirational, economic, and energy benefits will be maintained and enriched for future generations of Americans*."

Many preservationists view historical manifestations of scientific or technological achievements, including both equipment and physical facilities, as equally as worthy of preservation as more ubiquitous reminders of the past, such as houses, battlefields, and archaeological sites. Each facility or piece of equipment, they argue, illustrates a specific moment in America's historical development; these vestiges of scientific advancement, therefore, deserve preservation consideration. Many scientific institutions and organizations, on the other hand, while proud of their achievements, view preservation as simply one more regulatory hurdle that must be checked off for the scientific process to advance. Indeed, it was objections by some of these organizations to the National Park Service "Man in Space" and "Astronomy and Astrophysics" studies that sparked the congressional request to the ACHP to investigate this issue in the first place. Complaints were made primarily on the grounds that such designations would place additional demands on money, manpower, and time, and impede and inhibit scientific progress by requiring compliance with Section 106 of NHPA when changes were made to these facilities.

WHAT ARE POSSIBLE OPTIONS TO MITIGATE ADVERSE EFFECTS TO SCIENTIFIC AND TECHNOLOGICAL FACILITIES?

What are the most appropriate measures to mitigate the effects of development or modification to historically significant scientific and technological properties?

A great variety of treatment measures have been used to assist in preserving important information about facilities and structures that must be altered or removed. Because many of these focus on documenting

what was there, how it worked, and contributions it made, they do not impede the scientific and technological missions. The following measures, for example, have been used in Section 106 projects:

- Permanently retain and preserve the historically significant structure, site, or facility. NASA has preserved the Redstone Test Stand NHL at the Marshall Space Flight Center, and most recently has committed to preserving a rocket engine test stand at its Santa Susana Field Laboratory. As part of its cleanup and removal of the K-25 facility at Oak Ridge, DOE will construct a building to preserve and interpret gaseous-diffusion cells and associated uranium enrichment equipment.

- Further encourage Web-based content, including popular and technical histories and interactive components. Under the provisions of the National Aeronautics and Space Act of 1958, for example, NASA is charged with development of public education and outreach programs. An excellent recent example is NASA's recordation of the Space Shuttles as called for in the 2011 PA for their retirement from service. (See: www.nasa.gov/agency/crm/shuttle/index.html.) This MOA set out how NASA would prepare the shuttles for public display, and the kind of documentation and public outreach NASA will make as the shuttles take their prominent place in museums around the country. The goal is to provide members of the public, engineers, and space enthusiasts with appropriate and comprehensive documentation of how the flight hardware of the shuttle was conceived, developed and used, and its accomplishments.

- In consultation with NPS's Historic American Engineering Record (HAER), locate, archive, and, as appropriate, make available photographs and video or movie footage of facilities at various stages of use over the years, or from selected scientific tests and research programs. For example, each engine/structure test at NASA's Marshall Space Flight Center was filmed for review and analysis.

- Provide increased support for museums associated with scientific and technological institutions. Many NASA installations, the California Institute of Technology's Palomar Observatory, and DOE facilities such as the Los Alamos National Laboratory and the Oak Ridge Reservation have museums where the visitors can learn more about the agency and the research a given installation is conducting under its aegis. As part of its cleanup and removal of the K-25 facility at Oak Ridge, DOE and the NPS will work together in planning for interpreting the contributions of Oak Ridge for the Manhattan Project National Historical Park.

- Provide increased support for the existing offices of agency historians and archivists, and financially support the increased dissemination on the Web of historical documentation and official agency histories, already available but little known outside the agency. Many federal agencies have on staff official historians and/or archivists whose duties are to compile and provide historical information on the agency and to manage repositories of information generated by the agency in the past. Additionally, prominent agencies such as NASA, the branches of the Department of Defense, and various individual federal programs, e.g., the Manhattan Project, have been subjects of official and unofficial histories.

- Emphasize the importance of collecting oral histories. The intellectual resources of scientists and managers who have recently retired or are nearing retirement are assets that should not be overlooked. Several agencies have aggressive programs to interview and retain the stories of those who worked on the early space program or the Manhattan Project or Cold War. As part of its cleanup at Santa Susana Field Laboratory, NASA committed to conducting twelve oral history transcripts of personnel who formerly worked at SSFL for inclusion on NASA's oral history website (http://www.jsc.nasa.gov/history/nasa_history.htm).

- Encourage increased private and public participation in an effort to preserve America's scientific and technological past. Participation could take many forms. The National Oceanic and Atmospheric Administration (NOAA), for example, conveyed the Gaithersburg Latitude Observatory, an NHL observatory, to the City of Gaithersburg, Maryland, for use as a museum and interpretative center. NOAA also manages the *USS Monitor* National Marine Sanctuary off the coast of North Carolina and the Thunder Bay National Marine Sanctuary in Lake Michigan, founded exclusively to protect the many well preserved shipwrecks in the area. Organizations like the NASA Alumni League, the Computer History Museum in Mountain View, California, the National Museum of Health and Medicine in Silver Spring, Maryland, the STEM (Science, Technology, Engineering, Mathematics) Education Coalition, and the U.S. Space Society could become more involved in the determination of what parts of the nation's scientific heritage are worthy of retention in the first place.

- In consultation with NPS's Historic American Engineering Record (HAER), locate, archive, and, as appropriate, make available to the interested public copies of engineering and shop drawings and other technical materials for their historic facilities. NASA generated a massive amount of these materials during the Apollo program, for example.

- Develop Integrated Cultural or Historic Resource Preservation Management Plans (ICRMPs, HRMPs) to better integrate consideration for historically significant structures and facilities into the facility's mission and attendant master plans.

Copies of representative Memoranda of Agreement and Programmatic Agreements resolving adverse effects to significant scientific and technological properties are available upon request from the ACHP, including the agreement for retirement of the Space Shuttles (NASA) and the cleanup at the K-25 site (DOE).

GUIDELINES FOR CONSIDERATION OF HISTORIC SCIENTIFIC EQUIPMENT AND FACILITIES IN THE SECTION 106 PROCESS

That the United States should do all it can to stay in the forefront of scientific and technological advancement goes without question. All would agree that scientific institutions and research universities must be able to quickly mobilize the best available equipment and facilities if they are to respond to new and continuing challenges. One popular response to present day fiscal problems has been to exhort the nation's technical industries to maintain or reestablish leadership in these areas with the hope of continuing our international preeminence. New scientific discoveries and applications, as well as the means to capitalize on them, depend directly upon the scientific community's access to state of the art equipment and facilities. At the same time research institutions and facilities must remain sensitive to costs and pursue the most cost effective research methods and materials as they are developed. Many of these methods will involve reuse and modification of scientific and technological equipment and facilities.

First, it is critical that those assessing the historic significance of a scientific or technological property have a thorough understanding of both the historic context of the property and of the scientific contributions it made. In some Section 106 cases involving the ACHP, scientists and agency managers have disagrees with what, exactly, is being considered historic, or with the inclusion of ancillary properties that are seen to possess significance simply because of their proximity or construction date. *With some justification, agency managers are concerned that the historic preservation community does not have an adequate and clear understanding of these issues, including the technology involved, the precise identification and description of historic elements of a given facility, and appropriate boundaries*. Clearly, more scientists and facilities managers should be actively assisting those evaluating such potentially historic properties.

Second, Section 106 compliance staff and CRM contractors need to remember that these facilities and their equipment need to change and evolve through time, *and that it is through continued use that much of the equipment still exists at all*. There is validity to the notion that the scientific research process requires an unusual degree of flexibility in the planning and execution of research work. Further, it is difficult in many cases for scientists to state explicitly what effects proposed projects might have on historic properties. Research plans evolve and change during the research process; therefore, it may be impossible to specify precisely the consequences of their work with regard to physical effects on historic equipment or facilities.

Third, the scientific community needs to better acknowledge that it has a responsibility to future generations. It needs to think harder about its legacy and how it can be preserved and conveyed, and must actively promote and encourage this preservation.

***For further information**, contact Dr. Tom McCulloch at 202-517-0222 or via e-mail tmcculloch@achp.gov. For a copy of the reports mentioned in the text, contact the ACHP, 401 F St. NW, Washington, DC 20001.*

Issued April 30, 2012
updated January 2017