

DEPARTMENT OF PARKS AND RECREATION OFFICE OF HISTORIC PRESERVATION

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April 26, 2023

VIA Email

In reply, refer to: NASA_2023_0317_001

Mr. Jonathan Ikan Center Cultural Resources Manager NASA Ames Research Center Mail Stop 213-8 Moffett Field, CA 94035

Subject: Arc Jet Modernization Project, Ames Research Center, Moffett Field, Santa Clara County, California

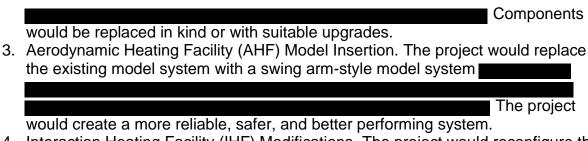
Dear Mr. Ikan:

The California State Historic Preservation Officer (SHPO) has received the March 17, 2023, letter initiating consultation regarding an undertaking at NASA Ames Research Center (ARC). NASA is consulting with the State Historic Preservation Officer (SHPO) to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. §306108), as amended, and its implementing regulations at 36 CFR Part 800.

Along with the letter, NASA submitted a document entitled "Memorandum, Section 106 Consultation on Arc Jet Complex Modernization Project, NASA Ames Research Center, Moffett Field, Santa Clara County, California," prepared by AECOM and dated March 3, 2023.

The proposed undertaking, as described, involves upgrading the Arc Jet Complex, which includes Building N234, N238, and the Steam Vacuum System (SVS). The scope of work includes the following components.

- Data Acquisition System Upgrade. The project would replace (in kind) or update hardware of the Data Acquisition System, as necessary. The existing system was installed in the 1990s and has been modified several times to meet advancements in technology and other changing needs, but now requires more substantial modernization.
- Air and Argon Flow Controls. The project would replace obsolete programmable logic controllers, controller interfaces, flowmeters, regulators, sensers, and valve actuators



- 4. Interaction Heating Facility (IHF) Modifications. The project would reconfigure the existing IHF hose system and construct a new IHF enclosure. The IHF currently poses workplace safety risks and maintenance challenges that would be addressed by the project.
- 5. Transformer Arc Jet Risk Reduction Project (TARRP). The project would modify existing transformers to prevent high risk degradation or failure.
- 6. Safety and Interlock Control System. The project would replace the existing safety and interlock control system with a modern standard system.
- 7. Power Supply Improvements. The project would repair and upgrade the 60-MW Power Supply Substation with replacement transformers and other parts as necessary to restore full functionality.

NASA identified an Area of Potential Effects (APE) for the undertaking that encompasses areas that may be affected by both temporary and permanent construction activities. The undertaking does not include any ground-disturbing activities; therefore, the vertical APE does not extend below grade. Because of the scale and nature of the project, the APE is limited to the Arc Jet Complex and the 60-MW Power Supply Substation

The APE encompasses one historic property, the Arc Jet Complex, which was listed in the National Register of Historic Places in 2017. No ground-disturbing activities are proposed; therefore, archaeological resources were not considered as part of this study. The property is listed under Criterion A for its association with advancements in arc jet technology and research and development of Thermal Protection Systems (TPS) for NASA's spaceflight programs, including the exceptional role of the 60-MW Interaction Heating Facility arc jet in developing and refining TPS for the Space Shuttle Program (SSP). The property is also listed under Criterion C for its design and engineering, which allowed for significant innovations in arc jet technology. The period of significance is 1962, the year Building N234 and the SVS were constructed, to the end of the SSP in 2011. The property is also listed under Criteria Consideration G as a property that has achieved significance within the past 50 years in relation to its exceptional significance within the context of the SSP.

NASA determined that the undertaking would not adversely affect historic properties within the APE. The project would modify interior equipment in the NRHP-listed Arc Jet

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Complex. To facilitate continued technological advancements, the project would replace in kind or upgrade technical equipment to sustain and improve functionality and safety. Exterior alterations are limited to transformer system upgrades to the 60-MW Power Supply Substation. The proposed work would have no effect. These changes would not indirectly affect the Arc Jet Complex. The criteria of adverse effect were applied to the project and its proposed alteration of the Arc Jet Complex. NASA determined that the project would meet the Secretary of the Interior's Standards for Rehabilitation, and the Arc Jet Complex would retain integrity of location, design, setting, materials, workmanship, feeling, and association after implementation of the project. The continued function of the Arc Jet Complex as a laboratory aligns with the its historical associations, and its improvement will reflect the changing nature of a highly technical facility as addressed in the Advisory Council for Historic Preservation's 1991 Program Comment Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities (ACHP 1991). The proposed undertaking would not alter, directly or indirectly, any of the characteristics of a historic property that qualify it for inclusion in the National Register.

Based upon this analysis, NASA proposes a Finding of No Adverse Effect. After reviewing the information submitted, the SHPO offers the following comments.

- This project qualifies as an undertaking with the potential to affect historic properties.
- The APE is sufficient to take direct and indirect effects of the undertaking into account.
- Identification and evaluation efforts are sufficient for this consultation.
- Based on the documentation submitted, the SHPO does not have enough information to comment on the proposed Finding of No Adverse Effect. Please see the following comments for areas needing clarification.
 - For project component 1, Data Acquisition System Upgrade: This
 equipment was installed during the period of significance. Please provide
 a photograph and more information about what "substantial
 modernization" entails.
 - For project component 3, Aerodynamic Heating Facility (AHF) Model Insertion: please provide a photograph of the existing equipment, the date it was installed, describe subsequent modifications, and provide further information about the replacement equipment.
 - For project component 6, Safety and Interlock Control System: please provide a photograph of the existing equipment, the date it was installed, describe subsequent modifications, and provide further information about the replacement equipment.

If there are any questions or concerns, please contact State Historian Mark Beason, at (916) 445-7047 or mark.beason@parks.ca.gov.

Sincerely,

Julianne Polanco

State Historic Preservation Officer