MEMORANDUM OF AGREEMENT
Among
The National Aeronautics And Space Administration,
The Advisory Council On Historic Preservation,
The Hawai'i State Historic Preservation Officer,
The University of Hawai'i,
The California Association for Research in Astronomy, and
The California Institute of Technology,
Regarding The Outrigger Telescopes Project,
Mauna Kea, Hawai'i

WHEREAS, the National Aeronautics and Space Administration (NASA) has determined that the placement of the four, and potentially six, Outrigger Telescopes (hereinafter referred to as the "Undertaking") adjacent to the existing Keck Telescopes at the W.M. Keck Observatory (WMKO) on the summit of Mauna Kea, will meet the purpose and need of NASA's ground-based interferometry objectives; and

WHEREAS, by signing this Memorandum of Agreement (MOA), the Signatory or Concurring Party does not necessarily signify that the party approves of the Undertaking, but rather that the provisions of the MOA are an appropriate means to mitigate effects on cultural resources in the event that the Undertaking obtains all required approvals and is implemented; and

WHEREAS, NASA has been considering other alternatives, including the No Action alternative; and

WHEREAS, NASA acknowledges that the Native Hawaiian people place spiritual and religious significance on Mauna Kea; and

WHEREAS, NASA has determined that the Undertaking will have an adverse effect on Pu'u Hau 'Oki, one cinder cone within the cluster of cinder cones which merge and collectively form the summit of Mauna Kea. This single landscape feature (*i.e.*, cluster of cinder cones) probably bore the name Kūkahau'ula and is now called Pu'u Hau 'Oki, Pu'u Kea, and Pu'u Wēkiu. NASA, in consultation with the State Historic Preservation Officer (Hawai'i SHPO), has determined that this cluster of cones satisfies the criteria to be eligible for listing as an historic property in the National Register of Historic Places (hereinafter referred to as the "National Register"); and

WHEREAS, NASA has determined that the Undertaking will have an adverse effect on the summit region of Mauna Kea, an area that NASA and the Hawai'i SHPO agree satisfies the criteria for listing as an historic district in the National Register; and

WHEREAS, NASA recognizes that human burials exist in the summit region of Mauna Kea; and

WHEREAS, NASA has made a commitment that a Wēkiu Bug Mitigation Plan will be prepared and implemented as a part of the Undertaking and has determined that some components of the mitigation plan, including certain activities associated with habitat restoration and monitoring, could have an effect on the historic property and historic district; and

WHEREAS, NASA is aware of a complex of historic properties located to the south and west of the staging area at Hale Pōhaku, and the concern of the Hawai'i SHPO to avoid any potential effects on two historic properties (*i.e.*, shrines) located directly south of the staging area; and

WHEREAS, NASA has consulted with the Hawai'i SHPO and the Advisory Council on Historic Preservation (hereinafter referred to as the "Council") on ways to avoid, reduce, or mitigate these adverse effects, pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. 470f), and has invited the Hawai'i SHPO and the Council to participate in the development of this MOA and sign as Signatories; and

WHEREAS, NASA has consulted with and invited those parties who will construct, install, operate, and manage the Outrigger Telescopes—including the California Association for Research in Astronomy (CARA), which will supervise on-site construction, installation, and operation of the Outrigger Telescopes; the University of Hawai'i (UH), which has the responsibility for the overall monitoring and management of the Mauna Kea Science Reserve; and the California Institute of Technology (Caltech), which holds the sublease for the WMKO site—to participate in the development of the terms of this MOA and sign as Signatories; and

WHEREAS, NASA is aware of the historic/cultural significance of Mauna Kea and has conducted and participated in outreach and consultation efforts in Hawai'i to inform local communities, organizations, and the general public of its plans for the proposed construction and operation of the Outrigger Telescopes and their effects on historic properties, and has invited and considered input on potential measures that could avoid, minimize, or mitigate the effects to the historic properties on Mauna Kea; and

WHEREAS, NASA has consulted with and invited the Office of Mauna Kea Management, Mauna Kea Management Board, and Kahu Ku Mauna (hereinafter collectively referred to as OMKM) to participate in the development of this MOA; and

WHEREAS, NASA has consulted with and invited the State Office of Hawaiian Affairs (OHA), and the following Native Hawaiian organizations, the Hawai'i Island Burial Council (hereinafter referred to as the "Burial Council"), the Royal Order of Kamehameha I, Ahahui Ku Mauna, Mauna Kea Anaina Hou, and Hui Mālama I Nā Kūpuna o Hawai'i Nei to participate in the development of the terms of this MOA and sign this MOA as Concurring Parties; and

WHEREAS, NASA's consultations with the parties invited to be Signatories and Concurring Parties and OMKM (hereinafter collectively referred to as "Consulting

Parties") indicate that off-site mitigation should focus on preservation and protection of historic/cultural resources related to Mauna Kea and the educational needs of Native Hawaiians. As a component of the Outrigger Telescopes Project in Hawai'i, NASA is committed to implementing effective measures to preserve and protect historic/cultural resources, expanding the knowledge of Hawaiian culture and address educational needs in the Hawaiian community; and

WHEREAS, Signatory or Concurring Party status is achieved only through signing this MOA.

NOW, THEREFORE, NASA, the Council, the Hawai'i SHPO, UH, CARA, and Caltech agree that, upon NASA's decision to proceed with the Undertaking, such an Undertaking shall be implemented in accordance with the following on-site and off-site stipulations in order to take into account its effects on historic properties; and NASA shall ensure that its funding of the Undertaking is conditioned upon compliance with such stipulations.

I. CULTURAL AND ARCHAEOLOGICAL MONITORING

A. General

1. The Construction Manager, hired by CARA, the contractor(s), supervisors, and all construction workers will be provided training to become aware of the historic/cultural significance of the project site and surrounding areas of the summit as set forth in this MOA.

2. A Cultural Monitor will be provided free access for monitoring activities during excavation, other on-site construction, and telescope installation (See I.C below for qualifications and duties of the Cultural Monitor).

3. A qualified Archaeologist will be present to monitor all excavation activities (See I.D below for qualifications and duties of the Archaeologist).

4. The CARA Construction Manager will oversee the on-site professional personnel and all on-site construction and equipment installation. The CARA Construction Manager will schedule mutually agreed upon meetings with the Archaeologist, Cultural Monitor, and OMKM, to ensure that work is being carried out according to applicable terms of this MOA. The CARA Construction Manager, at the request of the Archaeologist or the Cultural Monitor or on his/her own initiative, has the authority to stop construction if the stipulations in this MOA are not being complied with.

5. The CARA Construction Manager shall encourage the Cultural Monitor and Archaeologist to work closely with one another.

6. Review of any plan hereinafter referenced shall occur within a 45-day period. When a Consulting Party provides comments to one of these plans, the party submitting the plan shall, to the extent practicable during the 45-day review

period, enter into a dialogue with a commentor. NASA, at its sole discretion, may grant time extensions.

B. Monitoring of Historic Properties Affected by the Undertaking

1. Cultural -- Prior to construction, a cultural monitoring plan will be developed by the Cultural Monitor (see I.C below) in consultation with CARA. CARA shall submit the plan for review by NASA and all Consulting Parties.

Inadvertent Discovery of Human Remains and Archaeological Properties

a. Prior to construction, an Inadvertent Discovery of Human Remains and Archaeological Properties monitoring plan will be developed by the Archaeologist (see I.D below) in consultation with the Cultural Monitor and CARA and will comply with draft State Historic Preservation Division Rules (Titles 13-275, 13-279, and 13-280). CARA shall submit this plan for review by NASA and all Consulting Parties. Thereafter, CARA shall submit the plan to the Hawai'i SHPO for approval.

b. The above monitoring plan (see I.B.2.a) shall include burial and notification components that comply with Hawai'i Revised Statutes (HRS) Title 6E-43.6 (Inadvertent Discovery of Burial Sites), and Hawai'i Administrative Rules (HAR) Title 13-300-40 (Inadvertent Discovery of Human Remains) for the burial components; and with applicable draft State Historic Preservation Division Rules (*e.g.*, Sections 13-275-12, 13-279-1 *et seq.*, and 13-280-1 *et seq.*) for the archaeological components. The burial treatment component will reflect a preference, to the extent practicable, and if confirmed to be culturally appropriate, for any human remains found to be preserved in place.

3. As a minimum, if there were to be an inadvertent discovery of human remains, the Archaeologist has the authority to halt ground-disturbing activities in the immediate area of such remains until all parties identified in the plan have been notified, and the requirements of the appropriately approved plan have been carried out.

4. As a minimum, if previously unidentified historic/archaeological properties (*e.g.*, deposits, artifacts, and stone alignments) were to be discovered during construction, the Archaeologist has the authority to halt ground disturbing activities in the immediate area of such properties until all parties identified in the plan have been notified, and the requirements of the appropriately approved plan have been carried out.

C. Cultural Monitor

1. Qualifications of the Cultural Monitor. In consultation with NASA and the other Consulting Parties, CARA shall develop criteria for and select an individual

to be the project's Cultural Monitor. Any Consulting Party may submit the names of persons who they believe would be appropriate to serve as a Cultural Monitor.

a. This individual will have knowledge or awareness of Mauna Kea's cultural landscape, and traditions, practices, beliefs, and customs associated with Mauna Kea.

b. This individual will be able to communicate cultural values and protocols to others, both within and outside of the culture.

2. Cultural Monitor Responsibilities

a. The Cultural Monitor will become aware of the general scope and requirements of the on-site construction and installation of the Outrigger Telescopes including, but not limited to, becoming familiar with: project boundaries, identified areas of historic/cultural sensitivity, the "Construction Best Management Practices Plan" (BMP), the construction worker responsibilities, responsibilities of the Archaeologist, and the sequence of operations to ensure that mitigation actions are implemented. The Cultural Monitor shall develop the Cultural Monitoring plan referenced in I.B above.

b. The Cultural Monitor will provide cultural orientation to individuals who are associated with the on-site construction and installation of the Outrigger Telescopes and who will be on Mauna Kea. For safety purposes, all communication for the purpose of cultural orientation between project personnel and the Cultural Monitor will be scheduled and overseen by the CARA Construction Manager.

c. The CARA Construction Manager will provide to the Cultural Monitor a weekly schedule of all construction activities planned for the following week. Based on that schedule, the Cultural Monitor will determine his/her need to visit the site during construction and installation as deemed necessary by him/her. For safety purposes, prior to entering the site, the Cultural Monitor will meet and confer with the CARA Construction Manager.

d. The site and grading development drawings and the BMP for the Outrigger Telescopes project site, the staging areas, and nearby areas of the summit region will be provided to the Cultural Monitor. The Cultural Monitor shall keep a log and map notes of every visit — noting date of visit; identifying work locations; noting findings date; and reporting on potential problems, if any. All findings identified and deemed to be significant by the Cultural Monitor shall be reported to the CARA Construction Manager and OMKM; in turn, CARA shall promptly notify NASA, the Council, the Hawai'i SHPO, UH, Caltech, and any other Consulting Party that has requested to be notified of the Cultural Monitor's findings. The Cultural Monitor will submit a final report to the CARA Construction Manager; CARA, in turn, will provide copies to NASA, the Council, the Hawai'i SHPO,

UH, OMKM, Caltech, and any other Consulting Party that has requested the report.

e. The Cultural Monitor shall consult with the CARA Construction Manager to determine under what circumstances the Cultural Monitor should have direct authority to halt construction activities in a given area.

D. Archaeologist

1. Qualifications of the Archaeologist. The Archaeologist will be hired by CARA in consultation with the Hawai'i SHPO and OMKM. The archaeologist serving as principal investigator for the Undertaking shall have the following professional qualifications:

a. A graduate degree in archaeology, or anthropology with specialization in archaeology, or an equivalent field;

b. At least one year of cumulative archaeological experience in Hawai'i or the Pacific;

c. At least four months of supervised archaeological field and analytic experience in Hawai'i;

d. At least one year of archaeological research administration or management at a supervisory level with at least four months of field experience;

e. A demonstrated ability to carry research to completion, as shown by completed theses, publications, and manuscripts; and

f. A demonstrated knowledge of historic preservation laws, rules, and guidelines.

2. Archaeologist Responsibilities

a. The Archaeologist will follow State Historic Preservation Division draft Hawaiian Administrative Rules for archaeological monitoring studies and reports (draft HAR Chapter 279). The Archaeologist will develop the Inadvertent Discovery of Human Remains and Archaeological Properties monitoring plan referenced in I.B above.

b. The Archaeologist shall familiarize him/herself with the WMKO site before construction begins.

c. The Archaeologist will become aware of the general scope and requirements for the on-site construction of the Outrigger Telescopes Project This would include, but not be limited to, becoming familiar with: project boundaries, identified areas of historic/cultural sensitivity, the BMP, construction worker responsibilities, responsibilities of the Cultural Monitor,

and the sequence of operations to ensure that mitigation actions are implemented.

d. The Archaeologist will monitor all excavation activities for on-site construction. The CARA Construction Manager will provide to the Archaeologist a weekly schedule of all construction activities planned for the following week. The Archaeologist will have access to the site and be present during all excavation activities. For safety purposes, prior to entering the site, the Archaeologist will meet and confer with the CARA Construction Manager.

e. The site and grading development drawings and the BMP for the Outrigger Telescopes project site, the staging areas, and nearby areas of the summit region will be provided to the Archaeologist. The Archaeologist shall keep a log and map notes of every visit — noting date of visit; identifying work locations; noting findings date; and reporting potential problems, if any. All findings identified and deemed by the Archaeologist to be significant shall be reported to the CARA Construction Manager, the Hawai'i SHPO, and OMKM; in turn, CARA shall promptly notify the NASA, the Council, UH, Caltech, and the Cultural Monitor of the Archaeologist's findings. The Archaeologist will also notify the Cultural Monitor if human remains are found so that he or she can assist with notifying and consulting those individuals and organizations identified in the Inadvertent Discovery of Human Remains and Archaeological Properties monitoring plan. . The Archaeologist will submit a draft report to the CARA Construction Manager; CARA, in turn, will forward the draft report to the Hawai'i SHPO for approval. The approved final report will be distributed by CARA, who will provide copies to NASA, the Council, UH, OMKM, Caltech, and any other Consulting Party that has requested a copy of the report.

II. ON-SITE PRE-CONSTRUCTION, CONSTRUCTION, AND INSTALLATION

A. Grading and Site Development Review

1. Proposed grading and site development drawings will be provided to all the Consulting Parties for a 45-calendar day review and comment period to ensure that every reasonable effort has been made to reduce the adverse effects on Pu'u Hau 'Oki and on the summit region of Mauna Kea by minimizing disturbance from the on-site construction and installation of the Outrigger Telescopes.

2. The goal of the grading and site development planning will be to minimize alteration of the cinder cone as it presently exists, maintain the general shape and form of the cinder cone as it presently exists, and to stabilize the cinder cone in the on-site construction and installation areas.

B. Construction Worker Training

1. As part of an orientation process to ensure work is carried out in as sensitive and respectful a manner as possible, the CARA Construction Manager, the contractor(s), supervisors, and all construction workers will be required to view a specially scripted training videotape reviewing the historic and sacred qualities of Mauna Kea.

2. This training videotape will be prepared by CARA in consultation with the Hawai'i SHPO and OMKM. This training videotape will include a presentation on the history of Mauna Kea and its significance to Native Hawaiians, and an overview of what to do if human remains or archaeological properties are found. CARA shall provide the Consulting Parties an opportunity early in the videotape development process to provide ideas on subject matter that should be discussed and highlighted CARA shall afford the Consulting Parties an opportunity to review the draft script and preview the videotape before the videotape is produced in final form. Should disagreements arise, CARA will enter into consultation to resolve the disagreements. The time for such script review, videotape preview, and consultations shall cumulatively not exceed 45 days, unless CARA, at its sole discretion, agrees to a longer cumulative period.

3. The videotape or related orientation will also advise the workers of the potential that CARA will demand their removal from this Undertaking if they fail to comply with the conditions imposed by the Construction Best Management Practices Plan (see II.C below).

4. The CARA Construction Manager, contractor (s), supervisors, and construction workers will also be briefed by the Archaeologist and Cultural Monitor on Native Hawaiian objects, artifacts, and remains, and what to do if such materials are found during construction activities.

C. Construction Best Management Practices Plan

1. In order to implement a series of precautions and procedures to be undertaken to avoid or minimize adverse effects and prevent or reduce adverse impacts to the cinder cone and inner crater slope during on-site construction and installation, the CARA Construction Manager and the on-site construction and installation contractor(s) will prepare a "Construction Best Management Practices Plan" (BMP) in consultation and coordination with OMKM and UH. The BMP will be finalized prior to the start of construction. This BMP will reference this MOA and include it as an appendix.

2. Prior to the start of construction, CARA will submit the draft BMP to the other Consulting Parties for review. Copies of all comments received will be provided to NASA. CARA will take those comments into account before its final approval of the BMP and prior to mobilization. CARA will take no more than 15 calendar days to conclude consultation on any issues stemming from the comments.

3. On-site construction and installation activities related to the Outrigger Telescopes — from delivery of materials and equipment to the WMKO site or one of the two construction staging areas, excavation and removal of excess cinder to the summit stockpile area through assembly of the domes and telescopes to clean up of the staging, stockpile and WMKO site — will be managed in accordance with the BMP. The CARA Construction Manager will be responsible for following the BMP.

4. To address the effects on historic properties, the BMP will include, but not necessarily be limited to, the following items:

a. The process to be followed if there were to be an inadvertent discovery of human remains or archaeological properties (see I.B above).

b. Site characterization, including the locations of all construction and laydown/stockpile areas on the site, and temporary on-site fill material stockpiles.

c. The sequence of construction activities will be designed to minimize potential adverse effects on historic properties and to allow efficient scheduling of appropriate monitoring times.

d. The specific methods needed to protect the attributes of the historic properties within the project site, staging areas, and within the immediate vicinity of the project area will include, but are not limited to:

(1) Installing a temporary silt fence along the crater rim to facilitate on-site containment of all material, including cinder, so that no such material will spill over the slope. A silt fence will be used whenever excavation occurs within six feet of the slope.

(2) Transferring all excavated material, to the extent not necessary for backfill or Wēkiu bug habitat restoration, to other locations accessible from the established roads on the summit of Mauna Kea. These locations will be identified after consultation with the Hawai'i SHPO and OMKM prior to the start of construction.

(3) Following all applicable County of Hawai'i and State Department of Health (DOH) regulations concerning dust control which include, but are not limited to, suspending all dust-generating activities, securing equipment and materials during high winds and storms, minimizing dust by spraying with water or other environmentally-acceptable soil stabilizers whenever necessary, and, if needed, covering excavated material with a tarp which is anchored down.

(4) Ensuring adherence to effective drainage and erosion control as provided for in the BMP.

(5) Ensuring that precautions are adopted to prevent potential adverse effects on the historic properties arising from use of the staging areas near the summit of Mauna Kea and at Hale Pōhaku.

(6) Providing the process and identifying the project personnel responsible for reporting the inadvertent discovery of human remains or archaeological properties pursuant to the monitoring plans referenced in I.B.

(7) Providing an organization chart that identifies project personnel with the responsibility for maintaining the integrity of the historic properties and the historic district with respect to the following:

(a) controlling all trash and construction material stored on-site so that it does not blow or fall onto surrounding areas of the summit;

(b) recovering trash and construction material which, despite best efforts, blows or falls onto surrounding areas of the summit;

(c) ensuring that all outdoor trash containers will be secured to the ground and have secured lids and plastic liners;

(d) removing all trash, construction debris, and waste material on a regular basis (weekly during construction);

(e) removing all construction equipment and excess materials in a timely manner after construction is completed;

(f) ensuring that a magnetic device is driven over roadways to remove nails and other metallic debris; and

(g) ensuring daily proper disposal of all perishable waste products

e. To reduce the visual impact on the cinder cone and the historic district, all structures or portions thereof will be of colors designed to blend in with the surrounding terrain; provided, however, that such colors would not adversely affect the operation and scientific capability of the Outrigger Telescopes. CARA will afford the Consulting Parties an opportunity to review and comment on the colors to be used.

f. Characteristics of any discharge of a pollutant into the environment associated with the construction activity (including solid waste, sanitary waste, oily waste, or toxic/hazardous waste, if any) will be identified as soon as it is practicable. Proposed control measures and/or treatment methods for any unplanned or accidental discharge of pollutants associated with construction activity will be developed by the contractor(s) and managed in accordance with the BMP.

g. Noise associated with construction will be minimized through the use of equipment with proper noise muffling devices. Idling of equipment when not in use will be kept to a minimum. The contractor(s) must comply with Hawai'i DOH rules (HAR, Chapter 46, Community Noise Control).

D. Wēkiu Bug Mitigation

Because Wēkiu bug habitat restoration and monitoring may affect the historic/cultural resources of the project site and surrounding areas, and only for this reason, they are mentioned in this MOA. Any activities related to the Wēkiu bug itself will be covered in the separate Wēkiu Bug Mitigation Plan. Prior to implementation of the Undertaking and finalization of the Wēkiu Bug Mitigation Plan, CARA will consult with the Hawai'i SHPO to ensure that the plan contains appropriate provisions that will avoid or minimize, to the extent practicable, any potential adverse effects on the historic property and historic district. These shall include, but not necessarily be limited to, installing permanent signs identifying Wēkiu bug habitat, preventing the dispersal of debris, screening and washing cinder for habitat restoration, placement of the restoration material, and erosion control.

E. Cultural Interpretation

During the construction and installation of the Outrigger Telescopes, OMKM, in consultation with the Hawai'i SHPO, will develop and provide interpretive materials concerning the cultural significance of Mauna Kea. The Consulting Parties will be afforded an opportunity to review and comment on the interpretive materials during their development.

F. On-Site Compliance with Conditions

1. CARA shall ensure that the plans and mitigation measures reflected in this MOA for adverse effects on historic properties, including, visual impacts, erosion control, permit requirements and conditions, and monitoring commitments are incorporated into the contract(s) with its contractors and subcontractors; and that such contract(s) include a provision that CARA's Construction Manager has the authority to enforce such requirements or conditions and, if infractions occur, to order work to stop until the contractor/subcontractor is in compliance.

2. CARA shall make provisions for the Consulting Parties to monitor and review the work during on-site construction and installation activities. However, for safety purposes, all construction site visits must be coordinated through the CARA Construction Manager's office. If it appears that the terms of this MOA are not being followed, Consulting Parties are encouraged to notify NASA, CARA, and the Hawai'i SHPO.

3. Before excavation begins, CARA and NASA will provide points of contact to the Consulting Parties, along with a copy of the final executed Memorandum of Agreement.

III. OFF-SITE MITIGATION MEASURES

Preservation and Protection of Historic/Cultural Resources and Educational Mitigation Measures

1. NASA, in consultation with OMKM, will fund, out of funds for the Outrigger Telescopes Project, an initiative that deals with preservation and protection of historic/cultural resources on Mauna Kea and educational needs of Hawaiians as a mitigation component of the Outrigger Telescopes Project. Funding such an initiative, however, is conditioned on the approval of the Outrigger Telescope's being placed at the WMKO site on the summit of Mauna Kea, Hawai'i. This initiative will be sensitive to Native Hawaiian culture, history, and institutions.

2. The necessary first step is the formation of a local citizens' working group. NASA and OMKM, in consultation with the other Consulting Parties, will ensure the formation of this working group. The working group members will serve on a volunteer basis. OMKM will coordinate and manage the activities of this working group and provide administrative services.

3. Once this working group is formed, its task will be to inform NASA as to what types of opportunities or goals will best benefit Hawaiians, including Native Hawaiians. The working group will be asked to prioritize their proposals. The working group will have one year after it is formed to develop its recommendations, but is encouraged to submit the proposals sooner, if possible.

4. Funding will be subject to the availability of appropriated funds in accordance with Federal law (*e.g.*, the Anti-Deficiency Act). Such funds will be allocated to the proposals as prioritized by the working group until available funds are exhausted.

IV. OPERATIONS

CARA will ensure that all persons involved with the operations of the Outrigger Telescopes shall be required, within a thirty day period of commencing their job, to view as part of worker orientation the training videotape which addresses the cultural significance of Mauna Kea to Native Hawaiians. CARA will report to OMKM quarterly on the status of worker compliance with the viewing of the training videotape.

V ADMINISTRATIVE STIPULATIONS

A. Dispute Resolution

1. Should any Signatory or Concurring Party object at any time to the manner in which the terms of this MOA are implemented, NASA shall consult with the objecting party(ies) to resolve the objection. NASA shall have no more than 45 days to resolve the objection. If resolution is reached, the terms of this MOA shall be carried out in accordance with such resolution. If resolution is not reached through such consultation, NASA shall forward all documentation relevant to the objection to the Council, including its proposed response to the objection, and request the Council's comments in accordance with 36 CFR 800.2(b)(2). Any comments provided by the Council, and all comments from the Signatory or Concurring Party regarding the objection, shall be taken into account by NASA in reaching its final decision regarding the objection. NASA will promptly provide all Signatory and Concurring Parties with a copy of its final decision regarding resolution of the dispute. After reviewing NASA's decision, the Council or the Hawai'i SHPO, if in disagreement with the decision, may proceed under the provisions of V.B.2 below.

2. NASA's responsibility to carry out all actions under this MOA that are not the subject of the dispute will remain unchanged. Actions subject to dispute under paragraph 1 above shall be carried out in accordance with NASA's final decision.

B. Amendment and Termination

1. If any Signatory believes that the MOA should be amended, that Signatory may propose amendments to the other Signatories and Concurring Parties, whereupon all Signatories and Concurring Parties will consult to consider amendments pursuant to 36 CFR 800.6(c)(7) and 800.6(c)(8).

2. If NASA determines that it cannot implement the terms of this MOA, or if the Council or Hawai'i SHPO determines that the MOA is not being properly implemented, any of these three Signatories may propose that the MOA be terminated. The Signatory proposing termination shall so notify all of the other Signatories and Concurring Parties to the MOA, explaining the reasons for termination and affording these other Signatories and Concurring Parties at least 15 working days to consult and seek alternatives to termination. The parties shall then consult.

3. Should such consultation fail, either NASA, the Council, or the Hawai'i SHPO may terminate this MOA by so notifying the other Signatories and Concurring Parties.

4. Should this MOA be terminated, NASA shall either consult in accordance with 36 CFR 800.6 to develop and execute a new MOA or request the comments of the Council pursuant to 36 CFR 800.7.

C. Duration of this MOA

1. Unless terminated pursuant to Stipulations V.B.3/4 above, this MOA will be in effect until NASA, in consultation with the other Signatories and Concurring Parties, determines all of its terms have satisfactorily been fulfilled, or June 30, 2009, whichever is earlier.

2. Subsequent to the completion of the installation of Outrigger Telescopes 1 to 4, this MOA will be held in abeyance for on-site activities, pending determination by NASA as to whether Outrigger Telescopes 5 and 6 will be installed at the WMKO site. If NASA were to install Outrigger Telescopes 5 and 6, this MOA will remain in full force and effect for on-site activities during the period of installation. This MOA shall not apply to Outrigger Telescopes 5 and 6, if installation of those telescopes were to begin later than December 31, 2007. Should NASA decide to begin on-site installation of Outrigger Telescopes 5 and 6 after December 31, 2007, their installation will be considered a new Undertaking, and NASA will reinitiate the Section 106 process with the Hawai'i SHPO and the Council.

3. Upon determination by NASA that all of this MOA's terms have been satisfactorily fulfilled, the MOA will terminate and have no further force or effect. NASA will promptly notify the other Signatories and Concurring Parties with written notice of its determination and of termination of this MOA.

D. Applicability of this MOA

1 This MOA applies only to the Undertaking as defined herein.

2. If, following execution of this MOA, NASA is unable or decides not to construct or install the Outrigger Telescopes, this MOA will automatically become null and void.

SIGNATORIES TO THIS MEMORANDUM OF AGREEMENT

FOR THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION:

By: _____ Date: 2-22-02

Printed Name: EDWARD J. WEILER

Title: ASSOCIATE ADMINISTRATOR FOR SPACE SCIENCE

FOR THE ADVISORY COUNCIL ON HISTORIC PRESERVATION:

By: _____ Date: 3/5/02

Printed Name: JOHN M. FOWLER

Title: EXEC. DIR.

FOR THE HAWAI'I STATE HISTORIC PRESERVATION OFFICER:

By: _____ Date: 2/28/02

Printed Name: Don Hibbard

Title: Deputy SHPO

FOR THE UNIVERSITY OF HAWAI'I:

By _____ Date

Printed Name: _____

Title: _____

FOR THE CALIFORNIA ASSOCIATION FOR RESEARCH IN ASTRONOMY:

By _____ Date: _____

Printed Name: _____

Title: _____

FOR THE CALIFORNIA INSTITUTE OF TECHNOLOGY

By: _____ Date

Printed Name _____

Title _____

SIGNATORIES TO THIS MEMORANDUM OF AGREEMENT

FOR THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION:

By: _____ Date: _____

Printed Name: _____

Title: _____

FOR THE ADVISORY COUNCIL ON HISTORIC PRESERVATION:

By: _____ Date:

Printed Name: _____

Title:

FOR THE HAWAI'I STATE HISTORIC PRESERVATION OFFICER:

By: _____ Date: _____

Printed Name: _____

Title: _____

FOR THE UNIVERSITY OF HAWAI'I:

By: _____ Date: _____

Printed Name: _____

Title: _____

FOR THE CALIFORNIA ASSOCIATION FOR RESEARCH IN ASTRONOMY:

By: Frederic H. Chaffee Date: 03/01/02

Printed Name: Frederic H. Chaffee

Title: Director, W.M. Keck Observatory

FOR THE CALIFORNIA INSTITUTE OF TECHNOLOGY

By: _____ Date: _____

Printed Name: _____

Title: _____