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OPERATING AND SITE DEVELOPMENT AGREEMENT

BETWEEN

THE NATIONAL SCIENCE FOUNDATION

AND

THE UNIVERSITY OF HAWAII

**CONCERNING THE
DESIGN, CONSTRUCTION AND OPERATION
OF THE GEMINI 8-METER TELESCOPE**

**ON
MAUNA KEA, HAWAII**

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**OSDA ATTACHMENT A:
SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT
BETWEEN THE NATIONAL SCIENCE FOUNDATION AND THE
UNIVERSITY OF HAWAII**

- Exhibit A to Attachment A - General Lease S-4191
- Exhibit B to Attachment A - Consent to Sublease
- Exhibit C to Attachment A - Demised Premises
- Exhibit D to Attachment A - Description of Construction

OSDA ATTACHMENT B: ACCESS ROADS

OSDA ATTACHMENT C: RELOCATED ACCESS ROAD

OPERATING AND SITE DEVELOPMENT AGREEMENT

THIS AGREEMENT is made this 9th day of August, 1994, by and between the NATIONAL SCIENCE FOUNDATION, ("NSF") and the UNIVERSITY OF HAWAII ("UH").

WHEREAS, the optical and infrared regions of the electromagnetic spectrum have shown great scientific potential for contributing to our understanding of the astronomical universe;

WHEREAS, the summit area of Mauna Kea is exceptionally well-endowed as a site for observations in these wavelengths;

WHEREAS, the Astronomy Decade Survey Committee of the National Academy of Sciences of the United States of America recommended an infrared optimized 8-meter telescope on Mauna Kea, Hawaii as the nation's highest priority major initiative in ground-based astronomy;

WHEREAS, the NSF has entered into the Gemini Agreement with the Particle Physics and Astronomy Research Council of the United Kingdom of Great Britain and Northern Ireland and the National Research Council of Canada (and contemplates the addition of the similar agencies in Chile, Argentina, and Brazil through amendment to said agreement) concerning the construction and operation of an 8-meter telescope on Mauna Kea, Hawaii and an 8-meter telescope on Cerro Pachon, Chile to be known as the Gemini Facilities;

WHEREAS, the Gemini Agreement establishes NSF as the Executive Agency for the partnership and charges NSF with securing access to the sites for the telescopes;

WHEREAS, NSF and UH believe that the best interests of both parties are to be served through a program of close scientific cooperation centered around this telescope and related facilities;

WHEREAS, the operation of the Gemini Telescope on Mauna Kea will greatly benefit the academic and research programs at UH;

WHEREAS, NSF and UH have a common interest in insuring that the development of the Mauna Kea site will enhance the effective operation of this telescope;

WHEREAS, NSF and UH executed a Memorandum of Understanding on March 15, 1993, which provides that once NSF has identified funds for the construction and operation of the Gemini Telescope on Mauna Kea, an Operating and Site Development Agreement shall be negotiated between UH and NSF;

NOW, THEREFORE, in consideration of the mutual agreements herein contained, NSF and UH agree as follows:

I. DEFINITIONS

For purposes of construing the provisions of this Operating and Site Development Agreement, the following definitions apply:

"Base Support Facilities" refers to any possible headquarters in Hawaii for the operations of the Gemini Telescope on Mauna Kea.

"BLNR" stands for the Board of Land and Natural Resources of the State of Hawaii.

"Demised Premises" refers to the land subleased to NSF by UH with the approval of the BLNR. The Demised Premises are a portion of that certain land area leased to UH by BLNR and described in General Lease S-4191, Exhibit A of Attachment A hereto, and more specifically identified in Exhibit C of Attachment A hereto; both Exhibits A and C are incorporated herein by reference.

"Easement" is that non-exclusive easement granted by UH to NSF under the terms of the Sublease.

"Facilities" include, but are not limited to, the Telescope and enclosure; the support building (the space necessary to support scientific observers and technical personnel while at the summit); together with instruments, electrical conductors, cableways and tunnels; driveways and parking lots; power, telephone and communications conduits and lines; and access roads within the border of the Demised Premises. "Facilities" does not include the Mid-Level Facilities, the Base Support Facilities, or any other facilities located outside the Mauna Kea Science Reserve.

"Gemini" means the collaborative project involving the construction and operation of an 8-meter telescope on Mauna Kea, Hawaii and an 8-meter telescope on Cerro Pachon, Chile, as described in the Gemini Agreement.

"Gemini Agreement" refers to the "Agreement Among The National Science Foundation of the United States of America, The Particle Physics and Astronomy Research Council of the United Kingdom of Great Britain and Northern Ireland, and The National Research Council of Canada Concerning the Construction and Operation of an 8-Meter Telescope on Mauna Kea, Hawaii and an 8-Meter Telescope on Cerro Pachon, Chile, to be known as the Gemini Facilities", executed October 25, 1993, as amended from time to time.

"Gemini Board" means the Board established under the Gemini Agreement which serves as the primary forum for interaction and decisions concerning Gemini.

"Gemini Director" refers to the individual appointed by the Managing Organization to direct Gemini in accordance with the Gemini Agreement.

“Gemini Mauna Kea” means the Gemini 8-Meter Telescope on Mauna Kea and the entire operation in Hawaii to support the Telescope including the Facilities, the Gemini share of the Mid-Level Facilities, and any Base Support Facilities or other facilities that may be built or operated in Hawaii on behalf of Gemini.

“Gemini Parties” refers to the parties to the Gemini Agreement, as amended.

“Gemini Partners” refers to NSF, PPARC and NRC.

“Gemini Telescope” means the Gemini 8-Meter Telescope on Mauna Kea, to be located on the Demised Premises and used for astronomical observations.

“HELCO” stands for the Hawaii Electric Light Company, the public utility which provides electricity to the Mauna Kea Observatories.

“IfA” stands for the Institute for Astronomy and refers to that unit within UH which is responsible for conducting a research program in astronomy, and for representing the interests of UH on UH-leased land in the Mauna Kea Science Reserve.

“Information Station” is the building and associated infrastructure (access, parking, utilities) near the Mid-Level Facilities which is used as a public information building.

“Infrastructure Improvements” are any capital improvements made for the common good of the Mauna Kea Observatories including, but not limited to, roads, power, telephone and communications installations, and the Mid-Level Facilities.

“Instruments” include cameras, photometers, spectrometers, and other special-purpose equipment used to detect and analyze radiation, together with computers, test equipment, and tools required to equip the Facilities.

“Major Astronomical Facilities” are: UH 88-inch Telescope, Canada-France-Hawaii Telescope (CFHT), NASA Infrared Telescope Facility (IRTF), United Kingdom Infrared Telescope (UKIRT), James Clerk Maxwell Telescope (JCMT), Caltech Submillimeter Observatory (CSO), Keck I, Keck II, VLBA Antenna, Japan National Large Telescope (Subaru), and Gemini Mauna Kea. Future telescope facilities forming a part of the Mauna Kea Observatories shall be considered “Major Astronomical Facilities” unless otherwise agreed in writing by UH.

“Managing Organization” means the organization appointed by NSF to manage Gemini, as specified in the Gemini Agreement.

“Mauna Kea Observatories” includes, but is not limited to, the Mauna Kea Science Reserve, the astronomical facilities and infrastructure improvements on Mauna Kea, and UH operations which support the astronomical facilities on Mauna Kea.

“Mauna Kea Science Reserve” is the land in the summit area of Mauna Kea consisting generally of that land above 12,000 feet altitude and specifically that which is leased by UH from the BLNR under General Lease S-419L.

“Mauna Kea Users’ Committee” is the committee established by UH to serve as the official forum in which the Major Astronomical Facilities may discuss aspects of the management of the Mauna Kea Observatories. The committee is chaired by the Director of the IfA. Currently, each Major Astronomical Facility is entitled to two representatives on the Mauna Kea Users’ Committee.

“Mid-Level Facilities” include, but are not limited to, the bedrooms, laboratories, common areas, and offices at Hale Pohaku on Mauna Kea.

“MKSS” stands for Mauna Kea Observatories Support Services, which is operated by UH through the IfA, and is responsible for providing services to support the Mauna Kea Observatories.

“MKSS Oversight Committee” is the committee established by UH to oversee the activities and management of MKSS and to recommend changes to the Director of the IfA. Currently each Major Astronomical Facility is entitled to one representative on the MKSS Oversight Committee.

“NRC” refers to the National Research Council of Canada.

“NSF” refers to the National Science Foundation of the United States of America, acting as Executive Agency for the Gemini partnership under the terms of the Gemini Agreement.

“OSDA” stands for this “Operating and Site Development Agreement Between the National Science Foundation and the University of Hawaii Concerning the Design, Construction, and Operation of the Gemini 8-Meter Telescope on Mauna Kea, Hawaii,” and to which is attached the Sublease and Non-Exclusive Easement. The rights and responsibilities of this OSDA shall not concern any other astronomical facilities on Mauna Kea which may involve NSF.

“PPARC” refers to the Particle Physics and Astronomy Research Council of the United Kingdom of Great Britain and Northern Ireland.

“Principal Parties” are NSF and UH, and refer to the Principal Parties to this OSDA.

“Sublease and Non-Exclusive Easement” is that agreement between NSF and UH, and approved by BLNR, attached hereto as Attachment A, including the exhibits thereto.

“Telescope” means the Gemini 8-Meter Telescope on Mauna Kea, to be located on the Demised Premises and used for astronomical observations (same as “Gemini Telescope”).

II. RELATIONSHIP BETWEEN THE GEMINI AGREEMENT AND THIS OSDA

A. NSF shall ensure that all parties to the Gemini Agreement, (the Gemini Parties), as well as any other entities which become entitled to observing time on Gemini Mauna Kea or otherwise participate in Gemini Mauna Kea, concur with and abide by all provisions of this OSDA.

B. UH undertakes to cooperate with NSF and with the other Gemini Parties in the realization of Gemini Mauna Kea.

C. NSF shall ensure that the Managing Organization concurs with and abides by all provisions of this OSDA.

D. NSF shall inform UH of all formal meetings which are between the Gemini Parties and which concern Gemini Mauna Kea, and NSF shall invite UH to send a representative to such meetings.

III. LOCATION OF THE FACILITIES

The Sublease (Attachment A) specifies the location on Mauna Kea where the Facilities will be situated.

IV. INTERACTION BETWEEN NSF AND UH

While the Principal Parties to this OSDA are NSF and UH, day-to-day interaction between them regarding design, construction and operation of the Facilities shall usually be carried out by specified representatives of NSF and UH or their designees. In the case of UH, the specified representative will normally be the Director of the IfA and, in the case of NSF, this will normally be the Gemini Director.

V. SOLE RESPONSIBILITIES OF UH

A. Management of the Mauna Kea Observatories

UH shall provide a forum to allow the Major Astronomical Facilities which form a part of the Mauna Kea Observatories to discuss, on an equal footing, aspects of the management of the Mauna Kea Observatories. Such a forum currently exists and is referred to as the Mauna Kea Users' Committee. NSF shall be entitled to appoint two representatives to the Mauna Kea Users' Committee. Should this committee be replaced with another forum at some time in the future, NSF shall be entitled to participate on the same basis as the other agencies operating Major Astronomical Facilities. Since UH is the primary lessee with the State of Hawaii, it is recognized that final responsibility for management of the Mauna Kea Science Reserve resides with UH.

VI. SOLE RESPONSIBILITIES OF NSF

A. Design, Fabrication, Construction, Installation, and Operation of the Facilities

NSF shall be solely responsible for securing the funding for the design, fabrication, construction, installation, and operation of the Facilities. NSF, through the Managing Organization, commits to minimize any inconvenience which Gemini Mauna Kea construction activities may create for other telescope facilities.

B. Power and Communications Conduits and Lines

NSF, through the Managing Organization, shall fund and arrange for the installation of electric power and communications conduits from a handhole near the Gemini Telescope site to the Facilities. These conduits shall conform to the standards set for the summit power and communications distribution system. NSF, through the Managing Organization, shall also fund and arrange for connection of commercial power and telephone service via these conduits, both of which shall be individually metered. The relocation and upgrading of the summit power and communications loop in the vicinity of the Gemini Telescope site is discussed in VII.F.1.c.(i).

VII. RESPONSIBILITIES SHARED JOINTLY BY NSF AND UH

A. Research Environment

Under General Lease S-4191 between UH and BLNR (Exhibit A of Attachment A), UH is to use the Mauna Kea Science Reserve as a scientific complex and as a buffer zone to prevent the intrusion of activities inimical to said scientific complex. UH, in its role as custodian of the Mauna Kea Science Reserve, carries the responsibility also to protect the site from interference that may emanate from within or from outside the Mauna Kea Science Reserve.

1. UH:

a. UH shall continue to protect the interests of the astronomical facilities in the Mauna Kea Science Reserve from interference emanating from within the Mauna Kea Science Reserve which would affect the scientific integrity of the sites on which the astronomical facilities are located.

b. UH shall continue to pursue actively the initiation and/or improvement of such local and County laws and ordinances as are necessary to assure that man-made light emanating from other areas of the County of Hawaii during nighttime does not over time increase significantly or change in character, so as to interfere with the effectiveness of optical or infrared observations.

2. NSF:

NSF shall ensure that the Managing Organization conducts its activities in the Mauna Kea Science Reserve in a manner compatible with and not inimical to the activities of other astronomical facilities located there, and that the Managing Organization conforms to applicable regulations established by UH, by the State of Hawaii, and by the United States of America for the preservation of the environmental quality and the scientific integrity of the Mauna Kea Science Reserve.

B. Permits

1. UH:

UH shall submit to the appropriate local authorities, and on behalf of NSF or its designee(s), such applications for permits connected with the Facilities, the Mid-Level Facilities and Base Support Facilities as are required and have been prepared by NSF for use of State of Hawaii land.

2. NSF:

NSF or its designee(s) shall prepare such applications for permits connected with the Facilities, the Mid-Level Facilities and Base Support Facilities as are required for use of State of Hawaii land.

C. Rights of Access

1. UH:

UH shall ensure the Managing Organization right of access to the Demised Premises and shall ensure its right to have access to a handhole or handholes for the commercial power, telephone, and data communications described in VI.B and VII.F.1.c.(i), under the conditions described therein. UH shall grant to or use its best efforts to obtain for the Managing Organization such other rights of access as may be needed for utilities and cableways.

2. NSF:

NSF, through the Managing Organization, shall pay any costs, fees and other charges associated with the rights of access described in VII.C.1.

D. Access Roads to the Facilities

1. UH:

UH shall provide to the Managing Organization the use of existing roads for access to the Facilities. The existing roads in the vicinity of the Mauna Kea summit are shown in Attachment B. Improvements to the Mauna Kea Access Road are discussed in VII.F.1.(c).

2. NSF:

NSF, through the Managing Organization, shall design, construct, and exclusively fund the relocation of the spur access road which currently serves the Canada-France-Hawaii Telescope (CFHT) facility and which will serve as the access road for both Gemini Mauna Kea and CFHT (see Attachment C). The design shall be subject to the approval of UH and BLNR, UH's approval not to be unreasonably withheld.

NSF, through the Managing Organization, shall ensure that neither the construction of the Facilities nor the relocation of the spur access road results at any time in a blockage of vehicular access to CFHT or to the UH 88-inch Telescope facility.

E. Relocation of the 24-inch Planetary Patrol Telescope

1. UH:

UH will remove the 24-inch Planetary Patrol Telescope, as well as any portion of its enclosure and support facilities that UH requires (which includes, without limitation, its foundation and pier), by UH's own means and at UH's expense on or before THIRTY (30) days after the execution of this OSDA.

2. NSF:

NSF, through the Managing Organization, upon completion of such removal, may dispose of all items remaining on the Gemini Mauna Kea site related to the 24-inch Planetary Patrol Telescope in any manner that NSF deems appropriate. In partial consideration for the loss of use of the Planetary Patrol Telescope and for UH's expenses for its removal, NSF, through the Managing Organization, shall pay to UH the sum of TWO HUNDRED FIFTY-FIVE THOUSAND DOLLARS (\$255,000.00) on or before THIRTY (30) days after the execution of this OSDA.

F. Infrastructure Improvements Shared in Common with Other Facilities at the Mauna Kea Observatories

UH has taken responsibility to fully or partially fund and arrange for infrastructure improvements to the Mauna Kea Observatories which are and will be of common benefit to all the

astronomical facilities which operate there. All such infrastructure improvements are subject to State and County permits, approvals, and funding.

1. Commercial Power, Data Communications Conduits and Lines, and Road Improvements

a. Description of Improvements:

UH has completed the installation of commercial electric power to Hale Pohaku and to the Mauna Kea summit. At the summit, the power is distributed by means of a distribution loop (not yet complete), comprising two conduits containing the electrical cables, and conforming to HELCO standards, which passes near each of the existing astronomical facilities and also near some of the sites proposed for future facilities. Each facility accesses the commercial power by connecting to the distribution loop at a suitable handhole near its location. UH has also provided two communications conduits from Hale Pohaku to a central point at the summit, and from there to a distribution system comprising two or more conduits which generally follows the same path as that used for the power. UH has installed fiber-optic cable in one of these conduits. This cable is part of the Mauna Kea Observatories Communications Network, a high-bandwidth communications system which is intended to link the facilities of the Mauna Kea Observatories with each other, with base facilities, and with commercial carriers which can provide links to home institutions and other institutions around the world. UH has completed improvement and paving of the upper section of the Mauna Kea Access Road (above elevation 11,800 feet) and of the connecting roads to the existing facilities at the summit.

b. Access to Existing Improvements by NSF:

For purposes of Gemini Mauna Kea, NSF and its Managing Organization shall have access to the infrastructure improvements described in VII.F.1.a. as follows:

(i) Commercial power for the Facilities to a peak capacity of 750 kVA (to be provided by a nominal 1000 kVA transformer derated for altitude). The Facilities shall connect to the commercial power and telephone service and to the communications conduits as described in VI.B. and VII.F.1.c.(i).

(ii) Use of the access roads within the Mauna Kea Science Reserve subject to the conditions given in VILD.

(iii) The right to join the Mauna Kea Observatories Communications Network and to participate in the network on the same terms as other network members. The costs associated with connecting the Facilities to the network shall be borne by NSF, through the Managing Organization,

c. Contribution to Future Infrastructure Improvements by NSF:

NSF, through the Managing Organization, shall contribute a total of TWO MILLION, THREE HUNDRED SIXTY-THREE THOUSAND Dollars (\$2,363,000) (in second-half 1993 dollars, with escalation following the most recently published State of Hawaii All Urban Consumers Price Index), toward the cost of continued development of the Mauna Kea Infrastructure. A portion of this infrastructure contribution shall be used to fund two specific improvements, in order of priority:

(i) Relocation and upgrading of the summit power and communications distribution loop between the existing Electrical Building and handhole group 16 near the CFHT. For the electrical power, the improvements will include new runs of conduit and cable between handhole group 12 and handhole group 16. For the communications, the improvements will include new runs of conduit, telephone cable and fiber-optics cable from the Electrical Building to handhole group 16. The new power and communications conduits will be located in one or more trenches that run from the Electrical Building to the spur access road, and then roughly along that road to handhole group 16. The new power and communications cables will be spliced to the existing cables (to CFHT, IRTF, Keck and Subaru) at handhole group 16; or alternatively subject to mutual agreement between UH and NSF, some or all of the above-mentioned existing cables may be replaced by new cables. NSF, through the Managing Organization, shall arrange for the design and construction of these improvements. The design shall conform to the standards set for the summit power and communications distribution system and shall be subject to approval by UH, by HELCO and by GTE Hawaiian Tel. All contractors involved with these improvements to the power and communications infrastructure shall be required to specify the associated costs separately from the costs for any other work, both in the initial bids and in the final invoices. Before any contracts for these improvements are finalized, NSF, through the Managing Organization, shall provide to UH for approval a Cost Estimate for the improvements, which figure may include a contingency factor up to 10%. If UH approves the Cost Estimate, then UH shall use a portion of the NSF infrastructure contribution to reimburse the Managing Organization for the actual cost of the improvements, as specified in invoices submitted to UH, up to a maximum amount equal to the above-mentioned Cost Estimate.

(ii) Improvement of the Mauna Kea Access Road from Hale Pohaku to the 11,800 foot elevation so as to allow transportation of 8-meter mirrors and related equipment such as mirror support cells and coating equipment.

If funds remain after items (i), (ii) are accomplished, UH shall be free to use such funds for other infrastructure improvements which UH considers desirable.

Should the funds provided by the NSF infrastructure contribution be insufficient to complete item (ii) above, UH shall use its best efforts to secure funds for (ii) from the infrastructure contributions of other new 8-meter class facilities also needing to transport large mirrors over the Mauna Kea Access Road.

NSF, through the Managing Organization, shall make this infrastructure contribution on or before THIRTY (30) days after the execution of this OSDA. UH agrees that the Managing Organization may withhold from the payment an amount equal to or less than the approved Cost Estimate for the infrastructure improvements described in VII.F.1.c.(i) above. Following acceptance of the work and within NINETY (90) days of the receipt of final invoices, NSF, through the Managing Organization, shall provide UH with a final accounting of the cost of these infrastructure improvements, and shall remit to UH the amount, if any, by which the sum withheld exceeds the actual cost.

The Principal Parties may agree to have the Managing Organization arrange for some or all of these infrastructure improvements (in addition to item VII.F.1.c.(i) above), in which case actual costs up to an agreed limit will be reimbursed by UH.

2. Mid-Level Facilities Expansion

a. UH:

If desired by NSF, UH shall arrange for the expansion of the Mid-Level Facilities to accommodate additional dormitory space for Gemini Mauna Kea subject to separate written agreement negotiated between NSF and UH. Both parties agree to negotiate in good faith in order to meet the requirements of Gemini Mauna Kea for space at the Mid-Level Facilities.

b. NSF:

If Gemini Mauna Kea elects to participate in expansion of the Mid-Level Facilities, this participation shall be governed by the terms of the separate agreement negotiated between NSF and UH.

3. Information Station Expansion

a. UH:

UH expects that it may be in the best interests of the astronomical facilities forming a part of the Mauna Kea Observatories to expand the Information Station at some future time. UH shall consider this possibility and pursue it if this becomes appropriate.

b. NSF:

(i) NSF, through the Managing Organization, shall fund the initial costs of the design and installation of an Information Station display for Gemini Mauna Kea, which display is subject to reasonable acceptance by UH.

(ii) NSF shall in good faith entertain proposals by UH for the expansion of the Information Station and for additional outreach activities associated with Gemini Mauna Kea.

c. UH and NSF:

UH and NSF agree to each work toward funding, at an appropriate level, an Information Station and outreach program associated with Gemini Mauna Kea.

4. Other Infrastructure Improvements to the Mauna Kea Observatories

It may become necessary or desirable for the greater benefit of the astronomical facilities that form a part of the Mauna Kea Observatories to construct infrastructure improvements beyond those described in VII.F.1. through VII.F.3. If such infrastructure improvements are funded entirely by contributions from new funding sources (e.g., new astronomical facilities which join the Mauna Kea Observatories) and/or UH, then Gemini Mauna Kea shall enjoy access to such improvements on an equal footing with the other astronomical facilities. If such infrastructure improvements require contributions from some or all of the astronomical facilities for which there are signed Operating and Site Development Agreements with UH, then Gemini Mauna Kea shall have access to such improvements, and NSF, through the Managing Organization, shall be liable to contribute to the cost of such improvements, only if and to the extent that NSF and UH have agreed in writing to such access and contributions. If NSF elects to participate in any such improvements, NSF and UH shall negotiate in good faith to determine the fair share of the cost of such improvements which NSF shall contribute. The amount of this fair share shall be set forth in separate written agreements and normally shall be based on the fractional utilization by Gemini Mauna Kea of any such improvements. In cases where utilization is not readily quantifiable, the share paid by NSF shall not exceed a fraction, the numerator of which is ONE (1), and the denominator of which is the number of subleases, including the NSF Sublease, which have been executed for land within the Science Reserve for separately identified telescope facilities.

G. Operations and Maintenance

1. UH:

a. UH shall provide services on a basis of no profit, no loss to Gemini Mauna Kea through Mauna Kea Observatories Support Services (MKSS). Such services may include, but shall not be limited to: food and lodging; library; fuel, water and utilities; data communications; road maintenance; snow removal; emergency services; public information services and access control; and general administration.

b. The cost of MKSS services shall be shared among the astronomical facilities operating or under construction at the time the costs are incurred. For some services the costs may be allocated to each facility as shares. For others a rate will be set and the charge to the facility will be based on actual utilization of that service. Each year, in its budget, MKSS will establish the shares and rates so that projected costs equal projected revenue for each service. MKSS will adjust said shares and rates if actual expenditures or revenues differ significantly from the projections.

c. NSF, or its designee, shall be represented on the MKSS Oversight Committee, which reviews MKSS activities, recommends changes to the activities, and reviews and makes recommendations on the MKSS budget.

2. NSF:

a. NSF shall, through the Managing Organization, provide the funds necessary to operate and maintain the Facilities.

b. NSF, through the Managing Organization, shall pay Gemini Mauna Kea's share of the cost of MKSS services as described in VII.G.1. Said share shall include all MKSS services except as follows:

(i) public information services are not included until first light;

(ii) library is not included until Gemini Mauna Kea becomes a participant in the Mid-Level Facilities;

(iii) data communications is not included until Gemini Mauna Kea becomes a participant in the Mauna Kea Observatories Communications Network.

c. NSF shall, through the Managing Organization, fund the cost of operating and maintaining the power and communications lines from the handhole described in VI.B. to the Facilities.

d. NSF shall encourage the Director, Joint Astronomy Centre and the Gemini Director to utilize UH resources for the operation of Gemini Mauna Kea, provided such resources meet the operational requirements.

H. Sublease and Non-Exclusive Easement

Immediately upon execution of this OSDA, and for so long as it shall remain in force, UH and NSF shall each fulfill all of their respective obligations as specified in Attachment A hereto.

VIII. DELEGATION OF RESPONSIBILITIES BY NSF

NSF may delegate certain of its obligations and responsibilities hereunder to the Managing Organization or to other agents for the purpose of constructing or operating the Facilities. However, it is understood and agreed that NSF shall remain ultimately responsible for the obligations and responsibilities undertaken by it in this OSDA.

IX. ASSIGNMENT OF RIGHTS BY NSF

Any assignment of rights to the Facilities shall be bound by paragraph III.F. of the Sublease and Non-Exclusive Easement Agreement. In the event that the Gemini Parties decide that it would be beneficial to involve yet further parties in the construction and/or operation of Gemini Mauna Kea, NSF shall so notify UH so as to provide adequate time for UH to review the proposed terms and conditions of such partnership and to obtain the necessary prior consent of the UH Board of Regents, the State of Hawaii Board of Land and Natural Resources, and any other bodies who consent is required under the terms of the Lease, the Sublease, or other agreements and documents. NSF shall further provide UH with written assurance that the new party or parties concur with this OSDA and that they are legally bound to abide by it. In any case, NSF shall not assign or transfer any of its rights under this OSDA or under the Sublease and Non-Exclusive Easement without the prior written consent of UH.

X. SCIENTIFIC COOPERATION

In recognition of the potential for scientific interaction between NSF and UH which the Facilities offer, and of the contribution of UH in making the site available for Gemini Mauna Kea, NSF and UH agree on the following matters with regard to the operational phase of the Facilities.

A. UH Use of the Facilities

1. Recognizing UH's considerable investment in the development of Mauna Kea as an astronomical site, UH shall be entitled to a guaranteed fraction of 10% of the observing time on Gemini Mauna Kea. The UH observing time shall be allocated to proposals sponsored by UH as follows:

a. Gemini Mauna Kea shall be scheduled in blocks of no more than six (6)-month intervals. During each scheduled block, UH shall be entitled to 10% of the observing time after engineering time has been subtracted from the total time. Engineering time is telescope time whose purpose is not astronomical research but is rather the development, modification, or maintenance of the Telescope. During the third and subsequent years after first light, and for the purpose of determining the UH entitlement to observing time, engineering time may include up to 10% of the total time for the purpose of normal engineering activities, as defined above, plus any time allocated to an extended shutdown of the Telescope for the purpose of major repair or improvements, provided the shutdown has been approved by the Gemini Board.

b. The UH observing time shall be equally distributed over the seasons of the year and the phases of the Moon.

c. In the event of a major failure of the Facilities, the resulting lost observing time shall be accommodated by reducing the UH entitlement and the entitlement of the Gemini Parties in the same proportion.

principles approved by the Gemini Board. NSF and UH agree that UH may request the Gemini Director to extend the proprietary period for valid scientific reasons, said extension not to be unreasonably withheld.

B. UH Participation in Gemini Instrument Development

In view of the recognized expertise of UH concerning instrumentation in the 1 to 5 micron region of the spectrum, NSF undertakes that the Gemini Partners will assign to UH the work package for the 1 to 5 micron imager (including the associated focal plane array development) currently planned for Gemini Mauna Kea. In the event this work package is substantially modified, UH and NSF shall mutually agree upon the work package which most closely resembles it for assignment to UH. Award of the work package shall be subject to final approval of the UH plan for this work package by an independent technical review to be arranged by NSF.

In return, UH will provide an agreed site within the Hilo University Park, adjacent to the Joint Astronomy Centre, for the Gemini Mauna Kea base facility, subject to the authorization of the UH Board of Regents, at a cost of \$1.00 per year and will use its best efforts to meet Gemini Mauna Kea's requirements for a particular site. UH will also use its best efforts to secure funds from sources other than NSF, PPARC and NRC for construction of a building in the Hilo University Park in which space will be made available rent free to NSF's Managing Organization for support and operation of Gemini. NSF, through the Managing Organization, shall however be responsible for its share of operating expenses such as utilities, janitorial services, buildings and grounds upkeep and maintenance, etc. In the event Gemini elects to utilize this space, UH will consult with the Gemini Project on the design of this facility and will use its best efforts to be responsive to Gemini's needs.

UH will be entitled to compete for other work packages through normal U.S. channels.

C. UH Membership on the Gemini Board

UH shall appoint one member to the Gemini Board. The UH member shall be entitled to vote only on science policy issues affecting Gemini Mauna Kea, but otherwise shall participate in Board activities in the same manner as other members. The UH member shall be entitled to attend all meetings of committees of the Gemini Board, including those of any Board-chartered oversight committee. In the event that UH's member is unable to attend a meeting, UH may designate an alternate.

D. Facilities Attribution

In all publications and news releases regarding results obtained from work performed at the Facilities, Gemini Mauna Kea shall be given appropriate credit. Results obtained at the Facilities by IfA faculty shall have credit for these results also given to "the University of Hawaii, Institute for Astronomy" in any publications or news releases.

d. Only proposals having a UH-affiliated Principal Investigator, and forwarded by the IfA Director, shall be considered in scheduling the UH allocation of observing time. UH shall be solely responsible for evaluation and selection of proposals to be included in the UH allocation of time. The selection shall be made on the basis of scientific merit. There shall be no restrictions on the eligibility of co-investigators to collaborate on observing programs utilizing the UH observing time.

e. Detailed scheduling of observing time is the responsibility of the Gemini Director and shall be performed by a single individual designated to perform this function for the Gemini Director.

f. In the event that UH and one or more of the Gemini Parties each forward proposals for the same time-critical observation, the Gemini Director or individual scheduling the Facilities shall attempt to achieve a resolution satisfactory to Gemini and UH. If this cannot be achieved, selection between the proposals shall be done by the Gemini Director on the basis of scientific merit.

g. In the event that UH and one or more of the Gemini Parties each forward proposals for the same observation which is not time-critical, the Gemini Director or individual scheduling the Facilities shall inform UH and the Gemini Party or Parties concerned.

h. NSF and UH recognize that, in order to achieve the full scientific potential of Gemini Mauna Kea, it may be necessary to adopt innovative and flexible approaches to the scheduling of the Facilities. Policies for scheduling of observations shall be approved by the Gemini Board and shall in general apply to UH in the same manner as they apply to the Gemini Parties. However, any scheduling of UH observing time other than in whole nights with the observer(s) at the Telescope shall require the prior concurrence of UH.

2. UH-sponsored observers shall receive technical and logistic support while at the Facilities and shall have access to the Facilities, all on the same basis as Gemini-sponsored observers.

3. UH shall be entitled to use its own instrumentation on the Telescope provided that such usage does not involve major scheduling problems or compromise the integrity or safety of the Facilities. A description of the interfaces required for instrumentation used at the Telescope shall be provided to UH no later than when the Telescope is handed over to the operations staff. NSF, through the Managing Organization, shall provide a normal level of technical support to assist in the mounting and operation of such instruments.

4. UH-sponsored personnel shall be subject to the authority of the Gemini Director when using the Facilities.

5. Data obtained by UH observers during UH time on Gemini Mauna Kea shall be proprietary to UH and subject to UH policy for eighteen (18) months after their collection. Thereafter the data shall become available to any qualified researcher in accord with general

E. Interaction with News Media

Except for the publication of scientific results, institutional interactions with news media shall be coordinated between Gemini Mauna Kea and UH. UH and/or Gemini Mauna Kea may request one another to coordinate specific media events. Each party shall keep the other informed of press releases, filming and live television transmissions.

XI. GENERAL LIABILITY AND INSURANCE

NSF and its Managing Organization, shall, at all times, use due care for safety, and be liable for any loss, liability, claim, or demand for property damage, personal injury, or death arising out of any injury, death, or damage on the Demised Premises caused by or resulting from any negligent activities, operations, or omissions of NSF or its Managing Organization on or in connection with the Demised Premises subject to Federal law, including but not limited to the National Science Foundation Act of 1950, as amended, and the Federal Tort Claims Act, as amended, and where not inconsistent therewith, to applicable laws of the State of Hawaii governing liability.

Additionally, NSF, through the Managing Organization, shall maintain liability insurance for personal injury or death and property damage in the minimum amounts of ONE MILLION DOLLARS/U.S. (\$1,000,000.00/U.S.) per person and FIVE MILLION DOLLARS/U.S. (\$5,000,000.00/U.S.) per occurrence for personal injury or death, and FIVE HUNDRED THOUSAND DOLLARS/U.S. (\$500,000.00/U.S.) against claims for property damage for any one occurrence, subject to revision every FIVE (5) years in writing. Said insurance is subject to the approval of UH, which shall not be unreasonably withheld, and shall name UH and the State of Hawaii as additional insureds. A Certificate of Insurance evidencing that said insurance is in full force and effect shall be deposited with the Director of Procurement and Property Management, University of Hawaii, 1400 Lower Campus Road, Room 15, Honolulu, Hawaii 96822, U.S.A.

XII. ATTORNEY'S FEES

NSF and UH shall each pay their own attorney's fees and any other legal expenses.

XIII. SERVICE OF PROCESS

The United States Attorney within the State of Hawaii is duly authorized to accept service of process on behalf of the National Science Foundation.

XIV. GOVERNING LAW: SEVERABILITY

The validity, construction and performance of this OSDA and the legal relations among the parties to this OSDA shall be governed by and construed in accordance with the laws of the State of Hawaii, excluding that body of law applicable to choice of law. In the event any provision of this OSDA shall be held by a court of competent jurisdiction to be contrary to law, the remaining provisions of this OSDA shall remain in full force and effect.

XV. AMENDMENTS TO THIS OSDA

This OSDA may be amended in writing at any time by mutual agreement of NSF and UH.

XVI. TERM OF THIS OSDA

This OSDA shall become effective on the date first above written to execute this document or the effective date of the Sublease, whichever is later, and shall terminate as provided in XVIII.

XVII. RENEGOTIATION OR EXTENSION OF THIS OSDA

If UH and the BLNR either renegotiate or extend General Lease S-4191 beyond December 31, 2033, or if UH obtains a lease providing the same general terms and conditions as General Lease S-4191 for a period beyond December 31, 2033, UH shall extend this OSDA accordingly, except that NSF and UH agree to negotiate in good faith any revisions to this OSDA proposed at the time by either NSF or UH.

XVIII. TERMINATION

This OSDA shall be terminated upon the first of any of the following events to occur:

1. Mutual written agreement of NSF and UH.
2. Termination of the Sublease.
3. Termination of management or operation of the Facilities by NSF or its assignee, if any, as approved under Section VIII.
4. December 31, 2033, when General Lease No. S-4191 terminates if there are no extensions or a superseding General Lease as described in XVII.

5. The expiration date of any superseding General Lease or extension of General Lease S-4191 as contemplated in XVII.

XIX. DISPOSITION OF FACILITIES ON TERMINATION

Disposition of the Facilities on termination shall be conducted pursuant to the provisions of the Sublease.

XX. FEDERALLY REQUIRED PROVISIONS

The following provisions are hereby incorporated into this OSDA by reference:

Officials Not to Benefit (APR 1984) at FAR 52.203-1

Covenant Against Contingent Fees (APR 1984) at FAR 52.203-5

Assignment of Claims (JAN 1986) at FAR 52.232-23

Equal Opportunity (APR 1984) at FAR 52.222-26

IN WITNESS WHEREOF, the parties hereto have executed these presents on the day and year first above written.

FOR THE UNIVERSITY OF HAWAII:

FOR THE NATIONAL SCIENCE
FOUNDATION:

By *Donald B. Hall* ⁸⁻⁹⁻⁹⁴
Donald N. B. Hall 8/25/94
Its Director, Institute Date
for Astronomy

By *Neal Lane* 8-3-94
Neal F. Lane Date
Its Director

By *Ralph T. Horii, Jr.* 8-9-94
Ralph T. Horii, Jr. Date
Its Senior Vice President for
Administration

By *Aaron R. Asrael* 7/29/94
Aaron R. Asrael Date
Its Grants and Agreements Officer
Division of Grants and Contracts

By *Kenneth P. Mortimer* 8/9/94
Kenneth P. Mortimer Date
Its President

By *G. Wayne van Citters, Jr.* 8/1/94
G. Wayne van Citters, Jr. Date
Its Staff Associate for Gemini
Division of Astronomical Sciences

Approved as to form:

By *Harriet Y. Lewis* 7/7/94
Harriet Y. Lewis Date
Deputy Attorney General
State of Hawaii