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EXHIBIT “11”

I do hereby certify that the foregoing is a full, true and correct copy of the official court record of the Courts of the State of Hawai'i.
Dated at: Honolulu, Hawai'i 18-JAN-2024, /s/ Lori Ann Okita, Clerk of the First Judicial Circuit, State of Hawai'i



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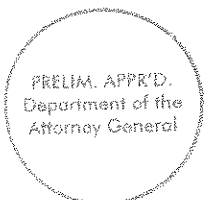
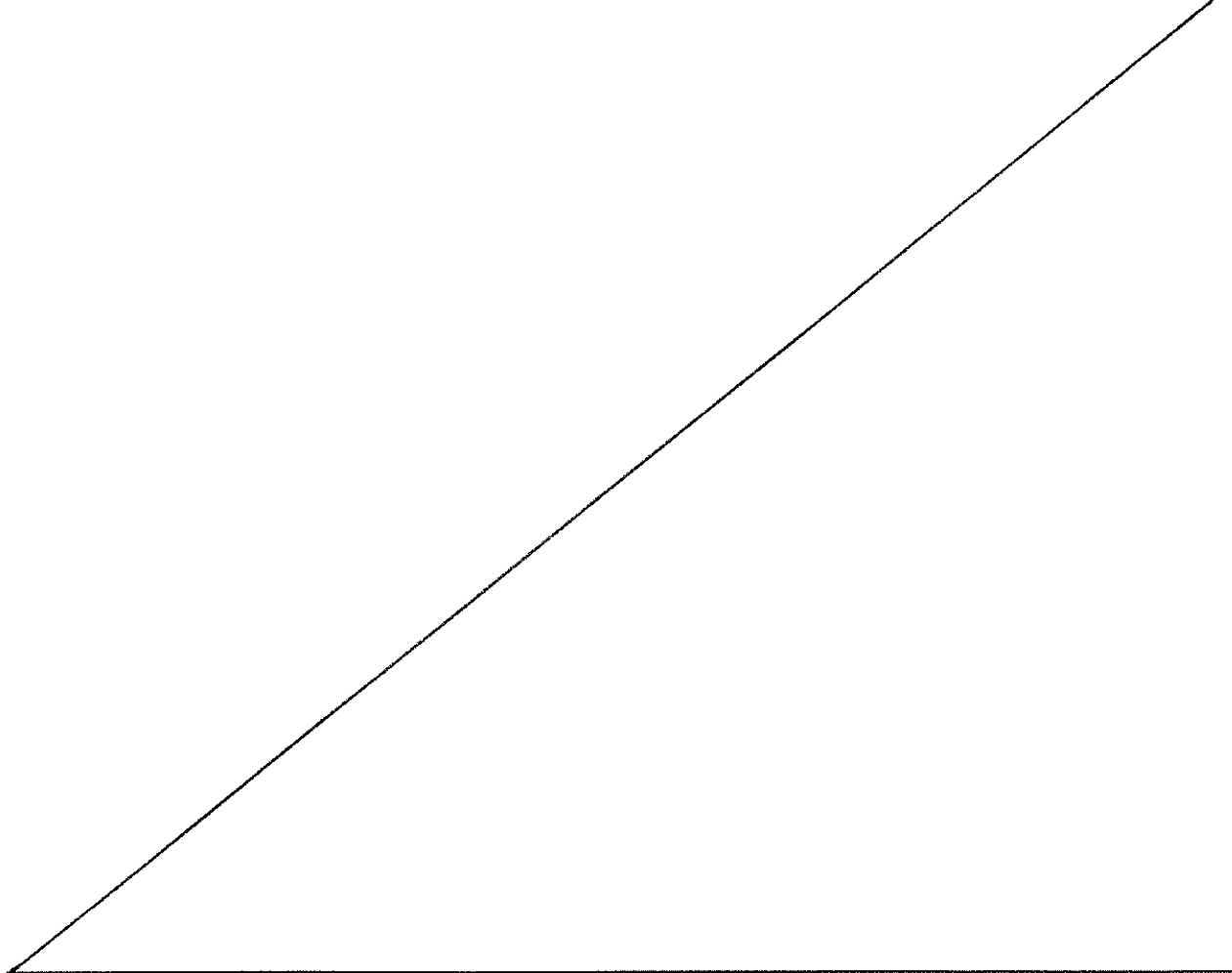
PRELIM. APPR'D.
Department of the
Attorney General

EXHIBIT "11"

and covenants or the duties and obligations of the Lessee or Sublessee under General Lease No. S-4191.

IT IS UNDERSTOOD that except as provided herein, should there be any conflict between the terms of General Lease No. S-4191 and the terms of the Sublease, the former shall control; and that no further sublease or assignment of any interest of the premises or any portion thereof shall be made without the prior written consent of the Board of Land and Natural Resources.

FURTHERMORE, Lessee hereby acknowledges that the Lessor's consent to sublease under General Lease No. S-4191, does not release the Lessee of any and all responsibilities, obligations, liabilities, and claims respecting or arising under or out of said General Lease prior to the effective date of this sublease.



IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 20th day of July, 1999.

STATE OF HAWAII

Approved by the Board of Land and Natural Resources at its meeting held on August 21, 1997.

By Imut K. Kawale
Chairperson and Member
Board of Land and
Natural Resources

LESSOR

UNIVERSITY OF HAWAII, a body corporate

By Eugene S. Imai
Eugene S. Imai
Its Senior Vice President for
Administration

By _____
Its _____

APPROVED AS TO FORM:

DNSC
Deputy Attorney General

Dated: 7/13/99

By Kenneth P. Mortimer
Kenneth P. Mortimer
Its President, University of Hawaii and
Chancellor, University of Hawaii at
Manoa

LESSEE

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gls-4191conssublse\tnk(3)4-4-15:09kaohu\h.h.\natlradio.dc

STATE OF HAWAII)
) SS.
CITY AND COUNTY OF HONOLULU)

On this 19th day of April, 1999,
before me appeared KENNETH P. MORTIMER and EUGENE S. IMAI,
to me personally known, who, being by me duly sworn, did say that they are the
President, University of Hawai'i and Chancellor, University of
Hawai'i at Mānoa and Senior Vice President for
Administration, respectively, of the UNIVERSITY OF HAWAI'I, a
body corporate, and that seal affixed to the foregoing instrument
is the corporate seal of said University and that the foregoing
instrument was signed and sealed in behalf of said University by
authority of its Board of Regents, and the said KENNETH P.
MORTIMER and EUGENE S. IMAI acknowledged said instrument to
be the free act and deed of said University.

Helen T. Nakamura
Notary Public, State of Hawai'i
HELEN T. NAKAMURA

My Commission expires: 5-27-2002

STATE OF HAWAII)
) SS.
CITY AND COUNTY OF HONOLULU)

On this _____ day of _____, 19_____,
before me appeared _____ and
_____, to me personally
known, who, being by me duly sworn, did say that they are the
_____ and _____, respectively,
of the UNIVERSITY OF HAWAII, a body corporate, and that seal
affixed to the foregoing instrument is the corporate seal of said
University and that the foregoing instrument was signed and
sealed in behalf of said University by authority of its Board of
Regents, and the said _____
and _____ acknowledged said instrument to be
the free act and deed of said University.

Notary Public, State of Hawaii

My commission expires: _____

EXHIBIT “12”

OSDA ATTACHMENT A

SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT

BETWEEN

THE NATIONAL ASTRONOMICAL OBSERVATORY OF JAPAN

AND

THE UNIVERSITY OF HAWAII

EXHIBIT "12"

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SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT

5th THIS Sublease and accompanying non-exclusive Easement is made this day of June, 1992, by and between the UNIVERSITY OF HAWAII, hereinafter called "Sublessor," and the NATIONAL ASTRONOMICAL OBSERVATORY OF JAPAN, hereinafter called "Sublessee." This Sublease and Easement is approved pursuant to General Lease S-4191, dated June 21, 1968, between Sublessor and the State of Hawaii, Board of Land and Natural Resources, hereinafter called "Lessor." A copy of said General Lease S-4191 and "Consent to Sublease of General Lease S-4191," are attached hereto as Exhibits A and B, respectively, and are incorporated herein by reference.

WITNESSETH THAT:

Sublessor, in consideration of the rent hereinafter reserved and upon the conditions, covenants and agreements hereinafter expressed, does hereby demise and let to Sublessee the parcel of land described in Exhibit C, attached hereto and incorporated herein by reference, and Sublessee does hereby sublease from Sublessor said parcel for the purpose of erecting a telescope facility to be constructed and operated by and at the expense of Sublessee through a contractual arrangement set forth in a separate "Operating and Site Development Agreement Between The National Astronomical Observatory of Japan and the University of Hawaii Concerning the Design, Construction and Operation of the 8-Meter Japan National Large Telescope on Mauna Kea, Hawaii" (hereinafter "OSDA").

Construction will include the Japan National Large Telescope (hereinafter "JNLT") building and dome, its optical/infrared telescope having an effective diameter of approximately 8 meters, related equipment and instrumentation and related support facilities and infrastructure improvements required on the Demised Premises to support the operations of the JNLT (collectively "Facilities").

I. GENERAL

A. Location/Area

The location/area comprises a portion of that certain land area, described in General Lease S-4191 and its Exhibit A, and more specifically identified in Exhibit C attached hereto.

B. Non-Exclusive Easement

Sublessee shall have the right of access to and egress from the Demised Premises over and across the Mauna Kea Science Reserve, utilizing the common entrances and rights of way, together with others entitled thereto under such rules and regulations as may be established by and amended from time to time by Sublessor.

C. Survey/Specific Description

The site designated in Exhibit C is subject to survey by Sublessee within SIX (6) months from the date of this Sublease. The exact area covered by this Sublease shall

be more specifically described and agreed to by Sublessor and Sublessee after the aforesaid survey has been completed, and is subject to approval by the County of Hawaii. Such description shall be binding upon Sublessor, Sublessee and the State of Hawaii.

D. Term of Sublease

The term of this Sublease shall be from the date first above written and shall expire on December 31, 2033, unless sooner terminated or extended, as respectively provided for in IV.F and II.C.

E. Rental Charge

Sublessee hereby covenants and agrees to pay rental for the Demised Premises at ONE DOLLAR (\$1.00) per year in legal tender of the United States of America for the duration of the Sublease. Said fee shall be paid to the University of Hawaii, Vice President for Finance and Operations, 2444 Dole Street, Honolulu, Hawaii 96822, U.S.A.

F. Fire or Destruction of Facilities

If all three of the following events occur: (1) the Facilities are destroyed by fire or other causes rendering the same unsuitable for purposes of optical and infrared astronomy, (2) Sublessee elects not to restore the Facilities, and (3) this Sublease is terminated as provided for in IV.F.6., Sublessee shall have such unsuitable damaged property or debris removed within ONE (1) year, after written notice to remove, and shall restore the property or any portion affected thereby to even grade. In the event Sublessee fails to remove such damaged property or debris and restore the land within ONE (1) year, such property may be removed and the land affected thereby restored to even grade by Sublessor at the expense of Sublessee.

If the Facilities or a portion thereof are restored, such restoration shall be subject to approval by Sublessor, and shall be in keeping with III.H. Such approval by the Sublessor will not be unreasonably withheld.

G. Controlling Lease

Sublessee shall observe and comply with all terms and conditions of General Lease S-4191.

In the event that any term or condition contained herein is inconsistent with or contrary to General Lease S-4191, said General Lease shall be controlling.

H. Operation of the Facilities

Neither Sublessee nor its successor or assigns shall operate or permit to be operated the aforementioned Facilities for purposes of research without an effective OSDA. The Facilities may be operated by Sublessee in the absence of the aforesaid OSDA only when necessary to ensure the safety of personnel or of the Facilities.

I. Indemnity/Insurance

Sublessee shall indemnify, defend and hold harmless Lessor and Sublessor, their officers, agents, employees or any person acting on their behalf from and against any claim or demand for loss, liability or damages, including, but not limited to, claims

for property damage, personal injury or death, based upon any accident, fire, or other incident on the Demised Premises and roadways adjacent thereto, which arises from any act or omission of Sublessee, its officers, agents, employees, or invitees, or occasioned by any failure on the part of the Sublessee to maintain the Demised Premises in a safe condition or to observe or perform any of the terms and conditions herein or any regulation, ordinances and laws of the Federal, State, Municipal or County governments.

Additionally, Sublessee shall be responsible for maintaining liability insurance for personal injury or death and property damage in the minimum amounts of ONE MILLION DOLLARS (\$1,000,000.00) per person and FIVE MILLION DOLLARS (\$5,000,000.00) per occurrence for personal injury or death, and FIVE HUNDRED THOUSAND DOLLARS (\$500,000.00) 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 Lessor and Sublessor and shall name Lessor and Sublessor 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, 1400 Lower Campus Road, Room 15, Honolulu, Hawaii 96822, U.S.A.

II. SUBLESSOR HEREBY COVENANTS WITH SUBLESSEE AS FOLLOWS:

A. Peaceful Enjoyment

Upon provision to Sublessor of the rights (in lieu of rent) provided in the aforesaid OSDA and upon observance and performance of all the terms, covenants and conditions contained herein, Sublessee shall peaceably hold and enjoy the Demised Premises during the term hereof without hindrance or interruption. Any proposed use of the Demised Premises by Sublessor or Lessor, their successors or assigns, as contemplated in, but not limited to, those paragraphs entitled "Hunting Recreation Rights" and "Right to Use Demised Land" as set forth in General Lease S-4191, shall be subject to coordination with Lessor, Sublessor and Sublessee; such proposed use shall not interfere unreasonably with Sublessee's use of the Demised Premises.

B. Covenant Against Contingent Fees

Sublessee warrants that no person or selling agency has been employed or retained to solicit or secure this Sublease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by Sublessee for the purpose of securing business. For breach or violation of this warranty, Sublessor shall have the right to annul this Sublease without liability or, in its discretion, to deduct from said Sublease price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

C. Renewal

At least SIX (6) months prior to the expiration of the General Lease S-4191 on the 31st day of December 2033, Sublessor shall seek to negotiate a renewal of said General Lease with Lessor or its successor. In the event of renewal, Sublessor shall renew or extend this Sublease, or shall negotiate in good faith a new Sublease with Sublessee, if so desired by Sublessee, and under such terms and conditions as may then be mutually acceptable. Sublessor shall make every effort to ensure renewal, extension, or renegotiation of said General Lease.

D. Faithful Performance

Sublessor and Sublessee recognize that in reliance upon the faithful performance by Sublessor of its obligations hereunder and under the terms of the General Lease S-4191, Sublessee has agreed to make a substantial commitment of financial and human resources. In view of this reliance and commitment by Sublessee, Sublessor agrees to perform faithfully its obligations under General Lease S-4191 and this Sublease so that neither of these agreements is terminated earlier than its natural expiration date.

III. SUBLESSEE HEREBY COVENANTS WITH SUBLESSOR AS FOLLOWS:

A. Right of Entry

Sublessee shall allow Sublessor or its agent(s) known to Sublessee or carrying suitable identification, free access at all reasonable times to the Demised Premises for the purpose of examining the same and determining whether the covenants herein are being fully observed and performed.

B. Janitorial and Other Services

Sublessee shall provide janitorial, custodial, and security services to the Demised Premises, including sewerage and sanitation facilities and services.

C. Repairs and Maintenance

At all times during the term of this Sublease, Sublessee shall, at Sublessee's own cost and expense, keep and maintain the Demised Premises and the Facilities in good order and repair and in a clean condition. This obligation shall include, but not be limited to, the obligation to paint the Facilities as appropriate and to make any modification or alteration thereof when necessary.

D. Utilities and Other Charges

Except as may be agreed in the aforesaid OSDA, Sublessee shall pay for or shall cause to be paid when due all charges associated with the Facilities and all charges, duties and rates of every description, including electricity, water, communications, sewer, gas, refuse collection or any other similar charges, as to which said Demised Premises, or any part thereof, or any improvements thereon, or which Sublessor or Sublessee in respect thereof, may during said term become liable, whether assessed to or payable by Sublessor or Sublessee.

E. Taxes and Assessments

If, at any time in the future, government taxes or assessments are made, Sublessee shall pay or cause to be paid when due, the amount of all taxes, rates, assessments, and other outgoings of every description as to which said Demised Premises or any part thereof, or any improvements thereon, or Sublessor or Sublessee in respect thereof, are now or may be assessed or become liable by authority of law during the term of this Sublease.

F. Assignment and Subleasing

Neither Sublessee nor its successors or assigns shall, without the prior written

consent of Lessor and Sublessor, assign, sublease or mortgage this Sublease or any interest therein, or sublet the Demised Premises, in whole or in part; provided, however, that such consent shall not be arbitrarily or capriciously withheld or delayed, and that this provision shall not operate to prevent Sublessee from making the Demised Premises available to invitees for the purposes permitted hereunder.

G. Use of Demised Premises

1. Sublessee shall use the Demised Premises exclusively for the Facilities, which are to be constructed and operated by and at the expense of Sublessee or others working in cooperation with Sublessee through the aforesaid OSDA and through any other agreements which may be agreed to by Sublessor and Sublessee.

2. All goods, wares, merchandise, equipment or other property of Sublessee shall be kept on the Demised Premises at the sole risk of Sublessee.

3. Sublessee shall not permit or make any waste or strip, or make any unlawful, improper or abusive use of the Demised Premises or any part thereof, and Sublessee shall be liable to Sublessor for all damages beyond reasonable wear and tear. As used in this Sublease, the term "reasonable wear and tear" shall include without limitation such grading, excavation and filling of the Demised Premises as may be reasonably required for the construction of the improvements contemplated by this Sublease. Such grading, excavation and filling shall not be deemed to constitute strip or waste. Sublessee shall make reasonable effort to minimize grading, excavation and filling.

H. Improvements and Alterations

Sublessee shall, at the Sublessee's sole cost and expense, construct the Facilities or cause them to be constructed on the Demised Premises.

In the event that Sublessee desires to make a substantive structural alteration of or addition to the Facilities, which will significantly alter the external appearance or structure of the Facilities, Sublessee first must seek and obtain written approval of Sublessor prior to commencing work on such structural alteration or addition, which approval shall not be withheld unreasonably.

Sublessor shall use its best efforts to secure Lessor's consent and to provide its own approval or objection within SIXTY (60) days after receipt by Sublessor of any request for approval for such structural alteration or addition.

I. Laws, Rules and Regulations, etc.

Sublessee shall observe and comply with Chapter 2 of Title 13, Administrative Rules of the Department of Land and Natural Resources (formerly Regulation 4), and with all other laws, ordinances, rules and regulations of the Federal, State, Municipal or County governments affecting the Demised Premises or the Facilities.

IV. AND THE PARTIES MUTUALLY COVENANT AS FOLLOWS:

A. Service of Process

Sublessee shall designate a representative within the State of Hawaii duly

authorized to accept service of process on its behalf. In the event that Sublessee fails to so designate such a representative or such designated representative is unavailable, Sublessee consents that service of any notice or process issued against it may be served upon it by filing the same with the Director of Commerce and Consumer Affairs, State of Hawaii or, in his/her absence, with the Deputy Director. Sublessor shall forward by certified mail to Sublessee a copy of any such notice or process served on the Director of Commerce and Consumer Affairs.

B. Governing Law; Severability

The validity, construction and performance of this Sublease, and the legal relations among the parties to this Sublease shall be governed by and construed in accordance with the laws of the State of Hawaii, excluding the body of law applicable to choice of law. Should any provision of this Sublease be held by a court of competent jurisdiction to be either invalid, void, or unenforceable, the remaining provisions of this Sublease shall remain in full force and effect.

C. Binding on Successors

This Sublease shall be binding on and inure to the benefit of the successors of the parties hereto.

D. Final Agreement

This Sublease constitutes the final agreement between Sublessor and Sublessee regarding the Sublease of the Demised Premises and the grant of Easement to Sublessee for purposes of Sublessee's construction of the Facilities. All prior discussions and/or agreements among the parties concerning the subject matter addressed in this Sublease shall have no force and effect.

E. Notices

All notices required or permitted to be given hereunder by Sublessor to Sublessee, or Sublessee to Sublessor, shall be in writing and sent to the following addresses:

If to Sublessor: University of Hawaii
2444 Dole Street
Honolulu, Hawaii 96822
Attn: Vice President for Finance and Operations

If to Sublessee: National Astronomical Observatory
Osawa 2-21-1
Mitaka, Tokyo
Japan PC 181
Attn: Chief of Administration

Sublessor and Sublessee may change the address of the recipient of notices by sending a written notice of each such change to the last designated address of the addressee.

F. Termination

This Sublease shall terminate upon the occurrence of any of the following

events:

1. If the planned construction of the Facilities as described in Exhibit D is not substantially completed by the 31st of December 1999, unless otherwise agree to in writing between Sublessor and Sublessee.
2. Termination of the aforesaid OSDA unless a new OSDA between UH and another party or parties is executed and Lessor, Sublessor, and Sublessee agree in writing to a continuation of this Sublease.
3. The expiration of General Lease No. S-4191 on December 31, 2033 without renewal, extension or renegotiation. If said General Lease is renewed, extended or renegotiated, then this Sublease shall be renewed, extended or renegotiated at that time in accordance with II.C.
4. If Sublessee fails to observe or comply with any of the terms or conditions herein within SIXTY (60) days after being notified in writing by Sublessor of such failure. In the event that more than SIXTY (60) days are reasonably required to observe or perform, Sublessee shall in good faith and within said SIXTY (60) days, initiate action and provide a plan for observance or performance, and shall diligently prosecute the same to completion.
5. If Sublessee peaceably surrenders or abandons the Demised Premises.
6. Destruction of the Facilities by fire or other causes rendering the same unsuitable for purposes of optical and infrared astronomy, unless Sublessee notifies Sublessor in writing within SIX (6) months of the date of casualty of its intention to restore the Facilities to their prior condition as specified in I.F.
7. By Sublessee upon SIX (6) months' notice in writing, in the event Sublessee's contemplated sources of funding become unavailable and, after diligent effort, Sublessee is unable to procure alternate sources of funding which, in Sublessee's good faith judgment, are adequate.
8. By Sublessee, if Sublessee gives Sublessor TWO (2) years' prior written notice.
9. Mutual agreement in writing between Sublessor and Sublessee.

G. Title to the Facilities, Alterations, Additions, and Improvements, and Disposition in Event of Termination or Expiration

1. Title to the Facilities, alterations, additions, and improvements (collectively referred to herein as "Property") on, affixed or installed in, or placed on the Demised Premises by Sublessee shall, at all times, remain in the name of Sublessee.
2. If this Sublease terminates or expires, and Sublessor has neither voluntarily terminated General Lease S-4191, nor defaulted on either this Sublease nor on General Lease S-4191, Sublessee shall be responsible for removal of the Property from the Demised Premises within ONE (1) year of the termination or expiration of this Sublease, unless agreed to in writing between Sublessor and Sublessee. If Lessor and Sublessor grant written approval, which approval shall not be arbitrarily or capriciously withheld, said Property can be sold, abandoned, or surrendered in whole or in part and the following conditions shall apply:

a. Sale. Sublessee may sell the Property to Sublessor and/or to a third party acceptable to Sublessor. Such sale by Sublessee to a party other than Sublessor shall be contingent upon the execution of a new Sublease and Operating and Site Development Agreement between the new party and Sublessor.

b. Surrender. Sublessee may peaceably surrender all or part of the Property in place and good repair, order, and clean condition, reasonable wear and tear excepted.

3. Unless otherwise agreed in writing by Sublessor, the following conditions shall apply if all or part of the Property is removed under this Section IV.G:

a. Said removal will be at the expense of Sublessee;

b. Sublessee shall restore the Demised Premises, or any portion affected thereby, to even grade to the extent that Property is removed, and shall repair any damage done to the Property not removed in the event that equipment is removed.

c. In the event that Sublessee fails to remove such Property or debris and restore the Demised Premises within TWELVE (12) months, such Property may be removed and the land restored as described above by Sublessor at the expense of Sublessee.

4. If this Sublease terminates or expires, and Sublessor has either voluntarily surrendered General Lease S-4191, or defaulted on either this Sublease or General Lease S-4191, and if Sublessee is allowed its continued right to quiet enjoyment of the Property and the Demised Premises under the terms of the Consent to Sublease as stated in Exhibit B, then Sublessee agrees to honor the terms of this Sublease.

If said surrender or default results in Sublessor's rights of General Lease S-4191 being (a) returned to Lessor, then Sublessee agrees to negotiate in good faith a new Operating Agreement with Lessor on the terms and conditions of Sublessee's continued use of the Demised Premises; or (b) transferred to an organization other than Sublessor, then Sublessee agrees to negotiate in good faith a new Operating Agreement with the new sublessor of the Demised Premises, and to honor the terms and conditions of said superseding Operating Agreement with said new sublessor. Continued right to quiet enjoyment of the Property and the Demised Premises is contingent upon satisfactory negotiation of an Operating Agreement with Lessor or said new sublessor, the terms of which shall be substantially equivalent to those of the OSDA.

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

SUBLESSOR:

FOR THE UNIVERSITY OF HAWAII:

By *Donald N. B. Hall* 6/5/92
Donald N. B. Hall Date
Its Director, Institute
for Astronomy

By *Ralph T. Horii, Jr.* 6/5/92
Ralph T. Horii, Jr. Date
Its Vice President for
Finance and Operations

By *Albert J. Simon* 6/5/92
Albert J. Simon Date
Its President

APPROVED AS TO FORM:

By *Harriet G. Lewis* 5/20/92
Its Deputy Attorney Date
General, University
of Hawaii

SUBLESSEE:

FOR THE NATIONAL
ASTRONOMICAL
OBSERVATORY OF JAPAN:

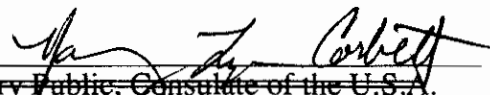
By *Harushige Nagasue* 6/2/92
Harushige Nagasue Date
Its Chief of Administration
and Obligating Officer

By *Yoshihide Kozai* 6/2/92
Yoshihide Kozai Date
Its Director

300
300

EMBASSY
~~=CONSULATE~~ OF THE UNITED STATES OF AMERICA)
TOKYO, JAPAN) ss.
)

On this 2nd day of June, 1992, before me appeared
Harushige NAGASUE and Yoshihide KOZAI,
personally known to me, who, being by me duly sworn, did say that they are Chief of
Administration and Obligating Officer and Director,
respectively, of the National Astronomical Observatory of Japan; that the seal affixed
to the foregoing instrument is the official seal of said institution; that said instrument
was signed and sealed on behalf of said institution; and said
Harushige NAGASUE and Yoshihide KOZAI
acknowledged the instrument to be the free act and deed of said institution.


~~Notary Public, Consulate of the U.S.A.~~
~~Tokyo, Japan~~ Nancy Corbett
Vice Consul of the United States of America
duly commissioned and qualified
~~My commission expires:~~ _____

STATE OF HAWAII

CITY AND COUNTY OF HONOLULU

)
) ss.
)

On this 5 day of June, 1992, before me appeared Donald N. B. Hui, Ralph T. Hui, Jr. and Albert J. Simone, personally known to me, who, being by me duly sworn, did say that they are Director, V.P. Finance & Operations and President, respectively, of the University of Hawaii, a Hawaii corporation; that the seal affixed to the foregoing instrument is the corporate seal of said corporation; that said instrument was signed and sealed on behalf of said corporation by the authority of its Board of Regents; and said they ~~and~~ acknowledged the instrument to be the free act and deed of said corporation.

Nancy L. Little
Notary Public, First Circuit
State of Hawaii

My commission expires: 4/4/96

1X

Exhibit A to OSDA Attachment A
GENERAL LEASE NO. S-4191

THIS INDENTURE OF LEASE, made this 21st day of June, 1968, by and between the STATE OF HAWAII, by its Board of Land and Natural Resources, pursuant to the provisions of Section 103A-90(b), Revised Laws of Hawaii 1955, as amended, hereinafter referred to as the "LESSOR", and the UNIVERSITY OF HAWAII, a body corporate, whose post office address is 2444 Dole Street, Honolulu, City and County of Honolulu, State of Hawaii, hereinafter referred to as the "LESSEE",

WITNESSETH THAT:

FOR and in consideration of the mutual promises and agreements contained herein, the Lessor does hereby demise and lease unto the said Lessee and the said Lessee does hereby rent and lease from the Lessor, all of that certain parcel of land situate at Kaohe, Hamakua, County and Island of Hawaii, State of Hawaii, and more particularly described in Exhibit "A", hereto attached and made a part hereof.

TO HAVE AND TO HOLD, all and singular the said premises, herein mentioned and described, unto the said Lessee, for and during the term of sixty-five (65) years, to commence from the 1st day of January, 1968, and to terminate on the 31st day of December, 2033.

DEPARTMENT OF LAND AND NATURAL RESOURCES
HONOLULU, HAWAII

RESERVING UNTO THE LESSOR THE FOLLOWING:

1. Water Rights. All surface and ground waters appurtenant to the demised premises, together with the right to enter and to capture, divert or impound water; provided, that the Lessor shall exercise such rights in such manner as not to interfere unreasonably with the Lessee's use of the demised premises; provided, further, that the Lessee shall have the right to use the waters of Lake Waiau for any purpose necessary or incidental to the use permitted by this lease on the following conditions:

a. No drilling or disturbance of Lake Waiau's bottom, banks or areas adjacent thereto shall be permitted;

b. No activity shall be permitted which will result in the pollution of the waters of Lake Waiau;

c. Lessee shall not take or divert any of the waters arising from springs which furnish the water supply for Pohakuloa, and no alterations to said springs shall be made by Lessee.

2. Access. All rights to cross the demised premises for inspection or for any government purposes.

3. Hunting and Recreation Rights. All hunting and recreation rights on the demised lands, to be implemented pursuant to rules and regulations issued by said Board in discharging its fish and game or state parks responsibilities; provided, however, that such hunting and recreation activities shall be coordinated with the activities of the Lessee on the demised lands; and provided, further, that such hunting and recreation activities shall be limited to day-light hours only.

4. Right to use Demised Lands. The right for itself, and its successors, lessees, grantees and permittees, to use any portion of the lands demised and the right to grant to others rights and privileges affecting said land; provided, however, that, except as otherwise provided herein, no such use shall be permitted or rights and privileges granted affecting said lands, except upon mutual determination by the parties hereto that such use or grant will not unreasonably interfere with the Lessee's use of the demised premises; provided, further, that such agreement shall not be arbitrarily or capriciously withheld.

THE LESSEE, IN CONSIDERATION OF THE PREMISES, COVENANTS WITH THE LESSOR AS FOLLOWS:

1. Surrender. The Lessee shall, at the expiration or sooner termination of this lease, peaceably and quietly surrender and deliver possession of the demised premises to the Lessor in good order and condition, reasonable wear and tear excepted.

2. Maintenance of the Premises. The Lessee shall keep the demised premises and improvements in a clean, sanitary and orderly condition.

3. Waste. The Lessee shall not make, permit or suffer, any waste, strip, spoil, nuisance or unlawful, improper or offensive use of the demised premises.

4. Specified Use. The land hereby leased shall be used by the Lessee as a scientific complex, including without limitation thereof an observatory, and as a scientific reserve being more specifically a buffer zone to prevent the intrusion of activities inimical to said scientific complex.

Activities inimical to said scientific complex shall include light and dust interference to observatory operation

Rev'd
~~during hours of darkness~~ and certain types of electric or electronic installation on the demised lands, but shall not necessarily be limited to the foregoing.

5. Assignments. The Lessee shall not sublease, subrent, assign or transfer this lease or any rights thereunder without the prior written approval of the Board of Land and Natural Resources.

6. Improvements. The Lessee shall have the right during the existence of this lease to construct and erect buildings, structures and other improvements upon the demised premises; provided, that plans for construction and plot plans of improvements shall be submitted to the Chairman of the Board of Land and Natural Resources for review and approval prior to commencement of construction. The improvements shall be and remain the property of the Lessee, and shall be removed or disposed of by the Lessee at the expiration or sooner termination of this lease; provided, that with the approval of the Chairman such improvements may be abandoned in place. The Lessee shall, during the term of this lease, properly maintain, repair and keep all improvements in good condition.

7. Termination by the Lessee. The Lessee may terminate this lease at any time by giving thirty (30) days' notice in writing to the Lessor.

8. Termination by the Lessor. In the event that (1) the Lessee fails to comply with any of the terms and conditions of this lease, or (2) the lessee abandons or fails to use the demised lands for the use specified under paragraph 4 of these covenants for a period of two years, the Lessor may terminate this lease by giving six months' notice in writing to the Lessee.

9. Non-Discrimination. The Lessee covenants that the use and enjoyment of the premises shall not be in support of any

policy which discriminates against anyone based upon race, creed, color or national origin.

10. General Liability. The Lessee shall at all times, with respect to the demised premises, use due care for safety, and the Lessee shall 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 the Lessee on or in connection with the demised premises, subject to the laws of the State of Hawaii governing such liability.

11. Laws, Rules and Regulations, etc. The Lessee shall observe and comply with Regulation 4 of the Department of Land and Natural Resources and with all other laws, ordinances, rules and regulations of the federal, state, municipal or county governments affecting the demised lands or improvements.

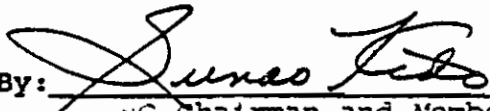
12. Objects of Antiquity. The Lessee shall not appropriate, damage, remove, excavate, disfigure, deface or destroy any object of antiquity, prehistoric ruin or monument of historical value.

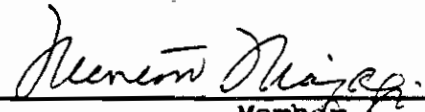
13. Undesirable Plants. In order to prevent the introduction of undesirable plant species in the area, the Lessee shall not plant any trees, shrubs, flowers or other plants in the leased area except those approved for such planting by the Chairman.

IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 21st

day of June, 1968, and the UNIVERSITY OF
HAWAII, by its Acting President and VP for Business Affairs
has caused these presents to be duly executed this 17th
day of June, 1968, effective as of the day and
year first above written.

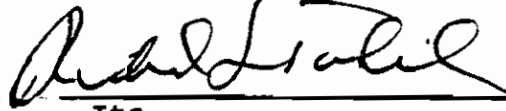
STATE OF HAWAII

By: 
Chairman and Member
Board of Land and
Natural Resources

And By: 
Member
Board of Land and
Natural Resources

UNIVERSITY OF HAWAII

By: 
Its ACTING President

And By: 
Its

APPROVED AS TO FORM:

Deputy Attorney General
Dated: 5-8-68

mm

Proofed by: 1

EXHIBIT "A"

MAUNA KEA SCIENCE RESERVE

Kaohē, Hamakua, Island of Hawaii, Hawaii

Being a portion of the Government Land of Kaohē

Beginning at a point on the south boundary of this parcel of land, the coordinates of said point of beginning referred to Government Survey Triangulation Station "SUMMIT 1955" being 12,325.95 feet South and 471.84 feet West, as shown on Government Survey Registered Map 2789, thence running by azimuths measured clockwise from True South:-

1. Along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 135° 00' 18,667.62 feet;
2. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 225° 00' 18,667.62 feet;
3. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 281° 18' 04.6" 5173.56 feet;
4. 207° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
5. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1200.00 feet, the chord azimuth and distance being: 297° 49' 06.5" 2400.00 feet;

6. 27° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
7. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 306° 59' 47.4" 1824.16 feet;
8. 227° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
9. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1500.00 feet, the chord azimuth and distance being: 317° 29' 00.9" 3000.00 feet;
10. 47° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
11. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13200.00 feet, the chord azimuth and distance being: 325° 31' 55.2" 701.87 feet;
12. 245° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
13. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 2000.00 feet, the chord azimuth and distance being: 335° 46' 12.7" 4000.00 feet;
14. 65° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
15. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 352° 14' 32.9" 3563.50 feet;

16. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 45' 00' 18,667.62 feet to the point of beginning and containing an AREA OF 13,321.054 ACRES.

EXCEPTING and RESERVING to the State of Hawaii and to all others entitled thereto, the Mauna Kea-Humuula and Mauna Kea-Umikoia Trails, and all other existing trails within the above-described parcel of land, together with rights of access over and across said trails.

ALSO, EXCEPTING and RESERVING to the State of Hawaii, its successors and assigns, the waters and all riparian and other rights in and to all the streams within the above-described parcel of land.

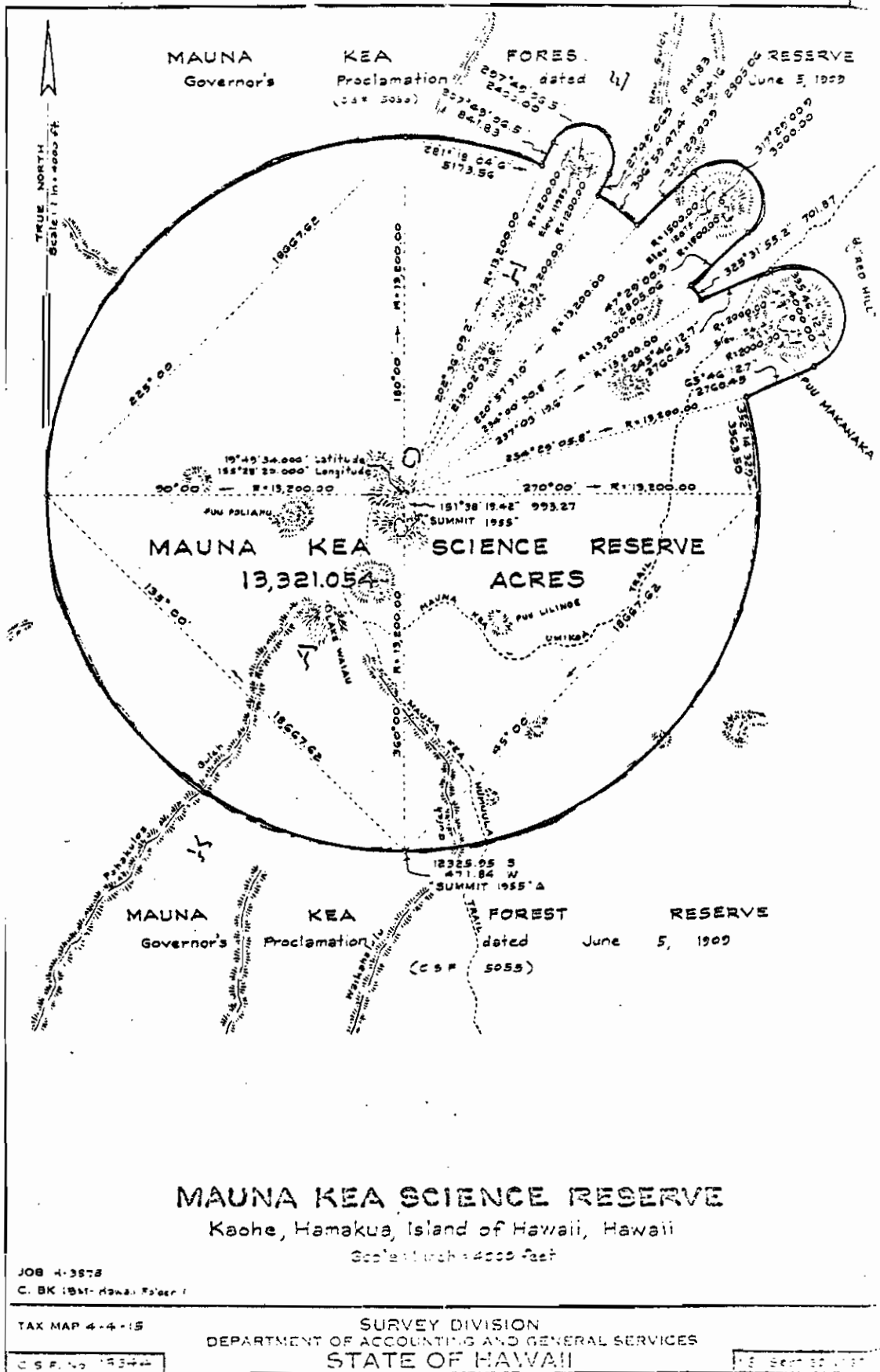


Exhibit B to OSDA Attachment A

**SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT
BETWEEN
THE NATIONAL ASTRONOMICAL OBSERVATORY OF JAPAN
AND
THE UNIVERSITY OF HAWAII**

**CONSENT TO SUBLEASE OF
GENERAL LEASE NO. S-4191**

CONSENT is hereby given by the **STATE OF HAWAII**, by its Board of Land and Natural Resources, **LESSOR** under General Lease No. S-4191, dated June 21, 1968, to the attached **SUBLEASE** of General No. S-4191, dated _____, by and between the **UNIVERSITY OF HAWAII**, as **SUBLESSOR**, and **THE NATIONAL ASTRONOMICAL OBSERVATORY OF JAPAN**, as **SUBLESSEE**;

PROVIDED HOWEVER, that this consent shall not in any manner be construed as varying in any respect the terms and conditions of said General Lease No. S-4191; and **PROVIDED FURTHER**, that no further assignment or sublease of any interest under said General Lease No. S-4191 shall be made without the written consent of the Board of Land and Natural Resources, State of Hawaii, being first obtained and endorsed thereon.

IT IS UNDERSTOOD that should there be any conflict between the terms and conditions of said General Lease No. S-4191, dated June 21, 1968, and the terms and conditions of the attached **SUBLEASE** dated _____, the former shall control.

IT IS FURTHER UNDERSTOOD AND AGREED by the **STATE OF HAWAII**, by its Board of Land and Natural Resources, that in the event said General Lease No. S-4191 is surrendered or defaulted upon by **LESSEE, UNIVERSITY OF HAWAII**, prior to the expiration of the term thereof, the attached **SUBLEASE** dated _____, shall remain in full force and effect for the remainder of the term thereof, and **SUBLESSEE, THE NATIONAL ASTRONOMICAL OBSERVATORY OF JAPAN**, shall be allowed its continued right to quiet enjoyment of the Demised Premises, upon and subject to the terms, conditions and covenants of General Lease No. S-4191, including, but not limited to, the payment of all lease rentals, taxes, rates, assessments, duties, charges and other outgoings of every description as to which the premises under said **SUBLEASE** or any improvements thereon, now or may be assessed or become liable by authority of law during the remainder of the term of said **SUBLEASE**.

Exhibit B to OSDA Attachment A
CONSENT TO SUBLEASE OF GENERAL LEASE NO. S-4191 - page 2

IN WITNESS WHEREOF, the **STATE OF HAWAII** by its Board of Land and Natural Resources has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this _____ day of _____, 19__.

STATE OF HAWAII

By _____
Chairman and Member
Board of Land and Natural Resources

And By _____
Member
Board of Land and Natural Resources

Approved by the Board of Land and Resources
at its meeting held on _____

APPROVED AS TO FORM:

Deputy Attorney General

Date _____

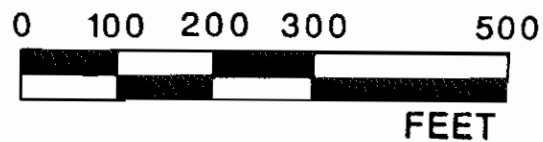
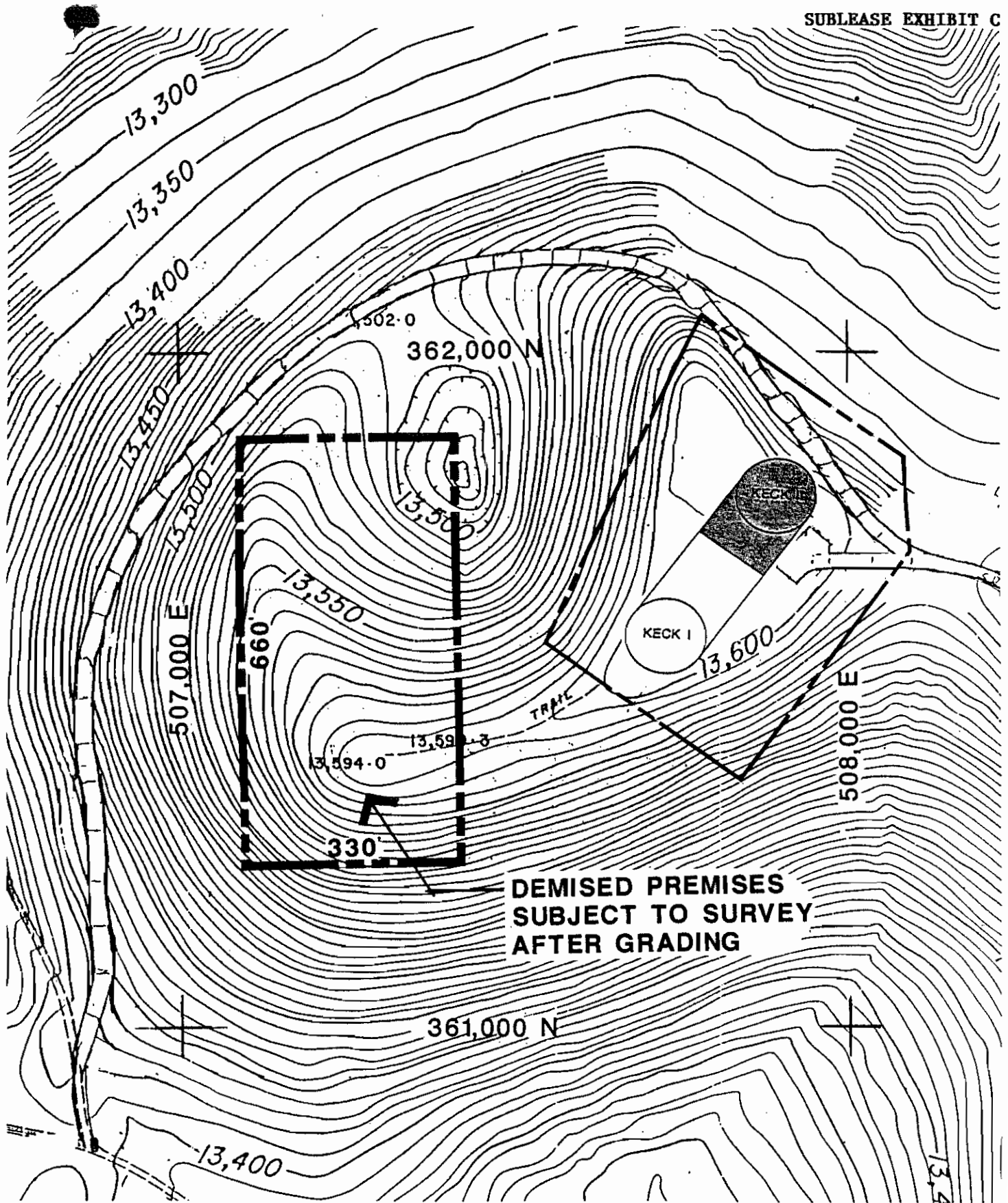


Exhibit D to OSDA Attachment A

SUBLEASE AND NON-EXCLUSIVE AGREEMENT BETWEEN THE NATIONAL ASTRONOMICAL OBSERVATORY OF JAPAN AND THE UNIVERSITY OF HAWAII

DESCRIPTION OF THE CONSTRUCTION

THE FACILITIES

The major components of the Facilities are: the 8-meter optical-infrared telescope; a rotatable steel telescope enclosure, 40 meters in diameter, supported on a cylindrical steel building housing a mirror aluminizing plant; and an attached support building housing control rooms, shops, and other supporting facilities.

SITE WORK

The site work consists of the following: construction of the spur road, approximately 800 feet in length, branching from the Mauna Kea Detour Road; grading and levelling the site, approximately 2 acres in area, to an elevation of approximately 13,580 feet.

TELESCOPE

The telescope primary mirror will be an 8-meter monolithic meniscus-type mirror of 20 cm thickness. The mirror will be supported on a steel structure on azimuth and elevation bearings to allow the telescope to be pointed to any point in the sky. The telescope structure is mounted on a cylindrical concrete pier. A computer control system will be provided to precisely point the telescope to allow accurate tracking of astronomical objects.

ENCLOSURE

The telescope enclosure is a steel semicylindrical structure approximately 40 meters in diameter housing the telescope and support equipment. The enclosure contains a movable shutter which opens to allow the telescope to view the sky. The enclosure rotates in azimuth on a circular rail mounted on a cylindrical steel base. The exterior of the enclosure will be aluminium and the interior will be insulated to minimize heat absorption during the day.

SUPPORT BUILDING

A support building of approximately 13,000 square feet is connected to the enclosure building by a covered pathway. The support building contains the control room, computer room, shops, mechanical equipment room, personnel lounge and other space necessary for operating the Facilities.

SCHEDULE

Site work will begin in the summer of 1992. Building construction will begin in the spring of 1993 and will be completed in 1994. Enclosure installation will be accomplished in 1996. Telescope installation will be started in 1996 and the Facilities will start operations in 1999.

Sublease Exhibits:

A-General Lease

B-Consent to Sublease

C-Demised Premises

D-Planned Construction

OSDA ATTACHMENT A

SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT

BETWEEN

**THE ASSOCIATED UNIVERSITIES, INC.
(NATIONAL RADIO ASTRONOMY OBSERVATORY)**

AND

THE UNIVERSITY OF HAWAII

Recordation Requested by:

After Recordation, Return to:

When completed: Mail ()

Pick up () Phone:

SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT

THIS Sublease and accompanying non-exclusive Easement is made this 28th day of September, 1990, by and between the UNIVERSITY OF HAWAII, hereinafter called "Sublessor," and the ASSOCIATED UNIVERSITIES, INC./NATIONAL RADIO ASTRONOMY OBSERVATORY, hereinafter called "Sublessee." This Sublease and Easement is approved pursuant to General Lease S-4191, dated June 21, 1968, between Sublessor and the State of Hawaii, Board of Land and Natural Resources, hereinafter called "Lessor." A copy of said General Lease S-4191 and "Consent to Sublease of General Lease S-4191," are attached hereto as Exhibits A and B, respectively, and are incorporated herein by reference.

WITNESSETH THAT:

Sublessor, in consideration of the rent hereinafter reserved and upon the conditions, covenants and agreements hereinafter expressed, does hereby demise and let to Sublessee the parcel of land described in Exhibit C, attached hereto and incorporated herein by reference, and Sublessee does hereby sublease from Sublessor said parcel for the purpose of erecting an antenna facility to be constructed and operated by and at the expense of Sublessee through a contractual arrangement set forth in a separate "Operating and Site Development Agreement Between the Associated Universities, Inc./National Radio Astronomy Observatory and the University of Hawaii Concerning the Erection and Operation of a Very Long Baseline Array Antenna (hereinafter "VLBA") on Mauna Kea, Hawaii" (hereinafter "OSDA").

Construction will include the VLBA control buildings and antenna with related equipment and instrumentation and related support facilities and infrastructure improvements required on the demised premises to support the operations of the VLBA (collectively "Facilities").

I. GENERAL

A. Location/Area

The location/area comprises a portion of that certain land area, described in General Lease S-4191 and its Exhibit A, and more specifically identified in Exhibit C attached hereto.

B. Non-Exclusive Easement

Sublessee shall have the right of access to and egress from the Demised Premises over and across the Mauna Kea Science Reserve, utilizing the common entrances and rights of way, together with others entitled thereto under such rules and regulations as may be established by and amended from time to time by Sublessor. Sublessee shall also have the right to construct and utilize an unpaved spur road, the VLBA spur road, from the Mauna Kea access road to the Demised Premises, and to install and utilize power and communication conduits and lines from a handhole located near the 12,000 foot elevation to the Facilities, all of which shall be individually metered.

C. Survey/Specific Description

The site designated in Exhibit C is subject to survey by Sublessee within SIX (6) months from the date of this Sublease. The exact area covered by this Sublease, and the non-exclusive Easement for the spur road and power and communication conduits and lines granted to Sublessee, shall be more specifically described and agreed to by Sublessor and Sublessee after the aforesaid survey has been completed, and is subject to approval by the County of Hawaii. Such description shall be binding upon Sublessor, Sublessee and the State of Hawaii.

D. Term of Sublease

The term of this Sublease shall be from the date first above written and shall expire on December 21, 2033, unless sooner terminated or extended, as respectively provided for in IV.F. and II.C.

E. Rental Charge

Sublessee hereby covenants and agrees to pay rental for the Demised Premises at ONE DOLLAR (\$1.00) per year in legal tender of the United States of America for the duration of the Sublease. Such fee shall be paid to the University of Hawaii, Vice President for Finance & Operations, 2444 Dole Street, Honolulu, Hawaii 96822, U.S.A.

F. Fire or Destruction of the Facilities

If all three of the following events occur: (1) the Facilities are destroyed by fire or other causes rendering the same unsuitable for purposes of radio astronomy, (2) Sublessee elects not to restore the Facilities, and (3) this Sublease is terminated as provided for in IV.F.6., Sublessee shall have such unsuitable damaged property or debris removed within ONE (1) year, after written notice to remove, and shall restore the property or any portion affected thereby to even grade. In the event Sublessee fails to remove such damaged property or debris and restore the land within ONE (1) year, such property may be removed and the land affected thereby restored to even grade by Sublessor at the expense of Sublessee.

If the Facilities or a portion thereof are restored, such restoration shall be subject to approval by Sublessor, and shall be in keeping with III.H. Such approval by the Sublessor will not be unreasonably withheld.

G. Controlling Lease

Sublessee shall observe and comply with all terms and conditions of General Lease S-4191.

In the event that any term or condition contained herein is inconsistent with or contrary to General Lease S-4191, said General Lease shall be controlling.

H. Operation of the Facilities

Neither Sublessee nor its successor or assigns shall operate or permit to be operated the aforementioned Facilities for purposes of research without an effective OSDA. The Facilities may be operated by Sublessee in the absence of the aforesaid OSDA only when necessary to ensure the safety of personnel or of the Facilities.

I. Indemnity/Insurance

Sublessee shall indemnify, defend and hold harmless Lessor and Sublessor, their officers, agents, employees or any person acting on their behalf from and against any claim or demand for loss, liability or damages, including, but not limited to, claims for property damage, personal injury or death, based upon any accident, fire, or other incident on the Demised Premises and roadways adjacent thereto which arises from any act or omission of Sublessee, its officers, agents, employees, or invitees, or occasioned by any failure on the part of the Sublessee to maintain the Demised Premises in a safe condition or to observe or perform any of the terms and conditions herein or any regulations, ordinances and laws of the Federal, State, Municipal or County governments.

Additionally, Sublessee shall, at its own cost and expense, maintain liability insurance for personal injury or death and property damage in the minimum amounts of ONE MILLION DOLLARS (\$1,000,000.00) per person and FIVE MILLION DOLLARS (\$5,000,000.00) per occurrence for personal injury or death, and FIVE HUNDRED THOUSAND DOLLARS (\$500,000.00) 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 Lessor and Sublessor and shall name Lessor and Sublessor 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, 1400 Lower Campus Road, Room 15, Honolulu, Hawaii 96822, U.S.A.

II. SUBLESSOR HEREBY COVENANTS WITH SUBLESSEE AS FOLLOWS:

A. Peaceful Enjoyment

Upon provision to Sublessor of the rights (in lieu of rent) provided in the aforesaid OSDA and upon observance and performance of all the terms, covenants and conditions contained herein, Sublessee shall peaceably hold and enjoy the Demised Premises during the term hereof without hindrance or interruption. Any proposed use of the Demised Premises by Sublessor or Lessor, their successors or assigns, as contemplated in, but not limited to, those paragraphs entitled "Hunting Recreation Rights" and "Right to Use Demised Land" as set forth in General Lease S-4191, shall be subject to coordination with Lessor, Sublessor and Sublessee; such proposed use shall not interfere unreasonably with Sublessee's use of the demised premises.

B. Covenant Against Contingent Fees

Sublessee warrants that no person or selling agency has been employed or retained to solicit or secure this Sublease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by Sublessee for the purpose of securing business. For breach or violation of this warranty, Sublessor shall have the right to annul this Sublease without liability or, in its discretion, to deduct from said Sublease price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

C. Renewal

At least SIX (6) months prior to the expiration of the General Lease S-4191 on the 31st day of December 2033, Sublessor shall seek to negotiate a renewal of said General Lease with Lessor or its successor. In the event of renewal, Sublessor shall renew or extend this Sublease, or shall negotiate in good faith a new Sublease with Sublessee, if so desired by Sublessee, and under such terms and conditions as may then be mutually acceptable. Sublessor shall make every effort to ensure renewal, extension or renegotiation of said General Lease.

D. Faithful Performance

Sublessor and Sublessee recognize that in reliance upon the faithful performance by Sublessor of its obligations hereunder and under the terms of the General Lease S-4191, Sublessee has agreed to make a substantial commitment of financial and human resources. In view of this reliance and commitment by Sublessee, Sublessor agrees to perform faithfully its obligations under General Lease S-4191 and this Sublease so that neither of these agreements is terminated earlier than its natural expiration date.

III. SUBLESSEE HEREBY COVENANTS WITH SUBLESSOR AS FOLLOWS:

A. Right of Entry

Sublessee shall allow Sublessor or its agent(s) known to Sublessee or carrying suitable identification, free access at all reasonable times to the Demised Premises for the purpose of examining the same and determining whether the covenants herein are being fully observed and performed.

B. Janitorial and Other Services

Sublessee shall provide janitorial and custodial services to the Demised Premises, including sewerage and sanitation facilities and services.

C. Repairs and Maintenance

At all times during the term of this sublease, Sublessee shall, at Sublessee's own cost and expense, keep and maintain the Demised Premises and the Facilities in good order and repair and in a clean condition. This obligation shall include,

but not be limited to, the obligation to paint the Facilities as appropriate and to make any modification or alteration thereof when necessary.

D. Utilities and Other Charges

Except as may be agreed in the aforesaid OSDA, Sublessee shall pay for or shall cause to be paid when due all charges associated with the Facilities and all charges, duties and rates of every description, including electricity, water, communications, sewer, gas, refuse collection or any other similar charges, as to which said Demised Premises, or any part thereof, or any improvements thereon, or which Sublessor or Sublessee in respect thereof, may during said term become liable, whether assessed to or payable by Sublessor or Sublessee.

E. Taxes and Assessments

If, at any time in the future, government taxes or assessments are made, Sublessee shall pay or cause to be paid when due, the amount of all taxes, rates, assessments, and other outgoings of every description as to which said demised premises or any part thereof, or any improvements thereon, of Sublessor or Sublessee in respect thereof, are now or may be assessed or become liable by authority of law during the term of this Sublease.

F. Assignment and Subleasing

Neither Sublessee nor its successors or assigns shall, without the prior written consent of Lessor and Sublessor, assign, sublease or mortgage this Sublease or any interest therein, or sublet the Demised Premises, in whole or in part; provided, however, that such consent shall not be arbitrarily or capriciously withheld or delayed, and that this provision shall not operate to prevent Sublessee from making the Demised Premises available to invitees for the purposes permitted hereunder.

G. Use of Demised Premises

1. Sublessee shall use the Demised Premises exclusively for the Facilities, which are to be constructed and operated by and at the expense of Sublessee or others working in cooperation with Sublessee through the aforesaid OSDA and through any other agreements which may be agreed to by Sublessor and Sublessee.

2. All goods, wares, merchandise, equipment or other property of Sublessee shall be kept on the Demised Premises at the sole risk of Sublessee.

3. Sublessee shall not permit or make any waste or strip, or make any unlawful, improper or abusive use of the Demised Premises or any part thereof, and Sublessee shall be liable to Sublessor for all damages beyond reasonable wear and tear. As used in the Sublease, the term "reasonable wear and tear" shall include without limitation such grading, excavation and filling of the demised premises as may be reasonably required for the construction of the improvements contemplated by this Sublease. Such grading, excavation and filling shall not be deemed to constitute strip or waste. Sublessee shall make reasonable effort to minimize grading, excavation and filling.

H. Improvements and Alterations

Sublessee shall, at the Sublessee's sole cost and expense, construct the Facilities or cause them to be constructed on the Demised Premises.

In the event that Sublessee desires to make a substantive structural alteration of or addition to the Facilities, which will significantly alter the external appearance or structure of the Facilities, Sublessee must first seek and obtain written approval of Sublessor prior to commencing work on such structural alteration or addition.

Sublessor shall use its best efforts to secure Lessor's consent and to provide its own approval or objection within SIXTY (60) days after receipt by Sublessor or any request for approval for such structural alteration or addition.

I. Laws, Rules and Regulations, etc.

The Sublessee shall observe and comply with Regulation 4 of the Department of Land and Natural Resources and with all other laws, ordinances, rules and demised lands or improvements.

IV. AND THE PARTIES MUTUALLY COVENANT AS FOLLOWS:

A. Service of Process

Sublessee shall designate a representative within the State of Hawaii duly authorized to accept service of process on its behalf. In the event that Sublessee fails to so designate such a representative or such designated representative is unavailable, Sublessee consents that service of any notice or process issued against it may be served upon it by filing the same with the Director of Commerce and Consumer Affairs, State of Hawaii or, in his/her absence, with the Deputy Director. Sublessor shall forward by certified mail to Sublessee a copy of any such notice or process served on the Director of Commerce and Consumer Affairs.

B. Governing Law; Severability

The validity, construction and performance of this Sublease, and the legal relations among the parties to this Sublease shall be governed by and construed in accordance with the laws of the State of Hawaii, excluding the body of law applicable to choice of law. Should any provision of this Sublease be held by a court of competent jurisdiction to be either invalid, void, or unenforceable, the remaining provisions of the Sublease shall remain in full force and effect.

C. Binding on Successors

This Sublease shall be binding on and inure to the benefit of the successors of the parties hereto.

D. Final Agreement

This Sublease constitutes the final agreement between Sublessor and Sublessor regarding the Sublease of the Demised Premises and the grant of Easement to Sublessee for purposes of Sublessee's construction of the Facilities. All prior discussions and/or agreements among the parties concerning the subject matter addressed in this Sublease shall have no force and effect.

E. Notices

All notices required or permitted to be given hereunder by Sublessor to Sublessee, or Sublessee to Sublessor, shall be in writing and sent to the following address:

If to Sublessor: University of Hawaii
2444 Dole Street
Honolulu, HI 96822
Attn: Vice President for Finance & Operations

If to Sublessee: National Radio Astronomy Observatory
520 Edgemont Road
Charlottesville, VA 22903
Attn: J. L. Desmond

Sublessor and Sublessee may change the address of the recipient of notices by sending a written notice of each such change to the last designated address or the addressee.

F. Termination

This Sublease shall terminate upon the occurrence of any of the following events:

1. If the planned construction of the Facilities described in Exhibit D is not substantially completed by the 31st of December 1994, unless otherwise agreed to in writing between Sublessor and Sublessee.

2. Termination of the aforesaid OSDA unless a new OSDA between UH and another party or parties is executed and Lessor, Sublessor, and Sublessee agree to in writing to a continuation of this Sublease.

3. The expiration of General Lease No. S-4191 on December 31, 2033 without renewal, extension or renegotiation. If said General Lease is renewed, extended or renegotiated, then this Sublease shall be renewed, extended or renegotiated at that time in accordance with II.C.

4. If Sublessee fails to observe or comply with any of the terms or conditions herein within SIXTY (60) days after being notified in writing by Sublessor of such failure. In the event that more than SIXTY (60) days are reasonably required to observe or perform, Sublessee shall in good faith and within said SIXTY (60) days, initiate action and provide a plan for observance or performance, and shall diligently prosecute the same to completion.

5. If Sublessee peaceably surrenders or abandons the Demised Premises.

6. Destruction of the Facilities by fire or other causes rendering the same unsuitable for purposes of radio astronomy, unless Sublessee notifies Sublessor in writing within SIX (6) months of the date of casualty of its intention to restore the Facilities to their prior condition as specified in I.F.

7. By Sublessee upon SIX (6) months' notice in writing, in the event Sublessee's contemplated sources of funding become unavailable and, after diligent effort, Sublessee is unable to procure alternate sources of funding which, in Sublessee's good faith judgment, are adequate.

8. By Sublessee, if Sublessee gives Sublessor ONE (1) years' prior written notice.

9. Mutual agreement in writing between Sublessor and Sublessee.

G. Title to the Facilities, Alterations, Additions, and Improvements, and Disposition in Event of Termination or Expiration

1. Title to the Facilities, alterations, additions, and improvements (collectively referred to herein as "Property") on, affixed or installed in, or placed on the Demised Premises by Sublessee are the property of the U.S. Government (specifically, the National Science Foundation) for use by the Sublessee.

2. If this Sublease terminates or expires, and Sublessor has neither voluntarily terminated General Lease S-4191, nor defaulted on either this Sublease nor on General Lease S-4191, Sublessee shall be responsible for removal of the Property from the Demised Premises within ONE (1) year of the termination or expiration of this Sublease, unless agreed to in writing between Sublessor and Sublessee. If Lessor and Sublessor grant written approval, which approval shall not be arbitrarily or capriciously withheld, said Property can be sold, abandoned, or surrendered in whole or in part and the following conditions shall apply:

a. **Sale.** Sublessee may sell the Property to Sublessor and/or to a third party acceptable to Sublessor. Such sale by Sublessee to a party other than Sublessor shall be contingent upon the execution of a new Sublease and Operating and Site Development Agreement between the new party and Sublessor.

b. **Surrender.** Sublessee may peaceably surrender all or part of the Property in place and good repair, order, and clean condition, reasonable wear and tear excepted.

3. Unless otherwise agreed in writing by Sublessor, the following conditions shall apply if all or part of the Property is removed under this Section IV.G:

a. Said removal will be at the expense of Sublessee;

b. Sublessee shall restore the Demised Premises, or any portion affected thereby, to even grade to the extent that Property is removed, and shall repair any damage done to the Property not removed in the event that equipment is removed.

c. In the event that Sublessee fails to remove such Property or debris and restore the Demised Premises within TWELVE (12) months, such Property may be removed and the land restored as described above by Sublessor at the expense of Sublessee.

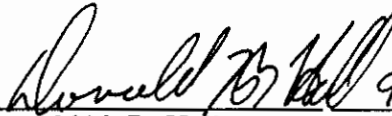
4. If this Sublease terminates or expires, and Sublessor has either voluntarily surrendered General Lease S-4191, or defaulted on either this Sublease or General Lease S-4191, and if Sublessee is allowed its continued right to quiet enjoyment of the Property and the Demised Premises under the terms of the Consent to Sublease as stated in Exhibit B, then Sublessee agrees to honor the terms of this Sublease.

If said surrender or default results in Sublessor's rights of General Lease S-4191 being (a) returned to Lessor, then Sublessee agrees to negotiate in good faith a new Operating Agreement with Lessor on the terms and conditions of Sublessee's continued use of the Demised Premises; or (b) transferred to an organization other than Sublessor, then Sublessee agrees to negotiate in good faith a new Operating Agreement with the new sublessor of the Demised Premises, and to honor the terms and conditions of said superseding Operating Agreement with said new sublessor. Continued right to quiet enjoyment of the Property and the Demised Premises is contingent upon satisfactory negotiation of an Operating Agreement with Lessor or said new sublessor.

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

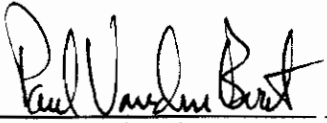
SUBLESSOR:

FOR THE UNIVERSITY OF HAWAII:

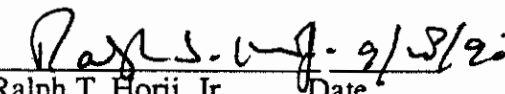
By  9/28/90
Donald N. B. Hall Date
Its Director, Institute
for Astronomy

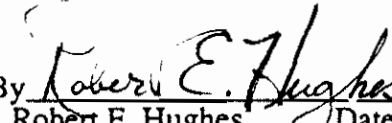
SUBLESSEE:


THE NATIONAL RADIO
ASTRONOMY OBSERVATORY

By  9/21/90
Paul Vanden Bout Date
Its Director

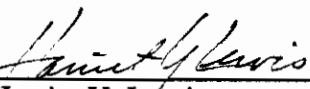
ASSOCIATED UNIVERSITIES,
INC.

By  9/18/90
Ralph T. Horii, Jr. Date
Its Vice President for
Finance and Operations


By  9/25/90
Robert E. Hughes Date
Its President

By 
Albert J. Simone Date
Its President

APPROVED AS TO FORM:

By  9/17/90
Harriet Y. Lewis Date
Deputy Attorney General
University of Hawaii

APPROVED AS TO FORM:

By  9/25/90
Michael M. Goldman Date
Deputy General Counsel
Associated Universities, Inc.

STATE OF VIRGINIA }
COUNTY OF ALBEMARLE } ss.

On this 21 day of September, 1990, before me appeared Paul A. Vanden Bout, personally known to me, who, being by me duly sworn, did say that he is Director of Associated Universities, Inc.\National Radio Astronomy Observatory, a non-profit, public-benefit corporation; that the seal affixed to the foregoing instrument is the corporate seal of said corporation, that said instrument was signed and sealed on behalf of said corporation; and said Paul A. Vanden Bout acknowledged the instrument to be the free act and deed of said corporation.

Phyllis A. Jackson
Notary Public

My commission expires:
November 4, 1990

STATE OF NEW YORK)
) ss.:
COUNTY OF SUFFOLK)

On this 25th day of September, 1990, before me appeared Robert E. Hughes, personally known to me, who, being by me duly sworn, did say that he is President of Associated Universities, Inc., a non-profit, public-benefit corporation; that the seal affixed to the foregoing instrument is the corporate seal of said corporation; that said instrument was signed and sealed on behalf of said corporation; and said Robert E. Hughes acknowledged the instrument to be the free act and deed of said corporation.



Notary Public

My commission expires: _____

MICHAEL M. GOLDMAN
Notary Public, State of New York
No. 52-4625416
Qualified in Suffolk County
Term Expires December 31, 19**90**

STATE OF HAWAII)
) ss.
CITY AND COUNTY OF HONOLULU)

On this 21st day of March 1991, before me appeared Donald N. B. Hall, personally known to me, who, being by me duly sworn, did say that he is the Director of the Institute for Astronomy, University of Hawaii, a Hawaii corporation; that the seal affixed to the foregoing instrument is the corporate seal of said corporation; that said instrument was signed and sealed on behalf of said corporation by the authority of its Board of Regents; and said Donald N. B. Hall acknowledged the instrument to be the free act and deed of said corporation.

Nancy L. Lytle
Notary Public, First Circuit
State of Hawaii

My commission expires: 4/4/92

STATE OF HAWAII)
) ss.
CITY AND COUNTY OF HONOLULU)

On this 21st day of March 1991, before me appeared Albert J. Simone and Ralph T. Horii, Jr., personally known to me, who, being by me duly sworn, did say that they are the President and Vice President for Finance and Operations, respectively, of the University of Hawaii, a Hawaii corporation; that the seal affixed to the foregoing instrument is the corporate seal of said corporation; that said instrument was signed and sealed on behalf of said corporation by the authority of its Board of Regents; and said Albert J. Simone and Ralph T. Horii, Jr. acknowledged the instrument to be the free act and deed of said corporation.

Helen I. Nakamura
Notary Public, First Circuit
State of Hawaii

My commission expires: 3/27/94

THIS INDENTURE OF LEASE, made this 21st day of January, 1968, by and between the STATE OF HAWAII, by its Board of Land and Natural Resources, pursuant to the provisions of Section 103A-90(b), Revised Laws of Hawaii 1955, as amended, hereinafter referred to as the "LESSOR", and the UNIVERSITY OF HAWAII, a body corporate, whose post office address is 2444 Dole Street, Honolulu, City and County of Honolulu, State of Hawaii, hereinafter referred to as the "LESSEE",

WITNESSETH THAT:

FOR and in consideration of the mutual promises and agreements contained herein, the Lessor does hereby demise and lease unto the said Lessee and the said Lessee does hereby rent and lease from the Lessor, all of that certain parcel of land situate at Kahe, Hamakua, County and Island of Hawaii, State of Hawaii, and more particularly described in Exhibit "A", hereto attached and made a part hereof.

TO HAVE AND TO HOLD, all and singular the said premises, herein mentioned and described, unto the said Lessee, for and during the term of sixty-five (65) years, to commence from the 1st day of January, 1968, and to terminate on the 31st day of December, 2033.

1. Water Rights. All surface and ground waters appurtenant to the demised premises, together with the right to enter and to capture, divert or impound water; provided, that the Lessor shall exercise such rights in such manner as not to interfere unreasonably with the Lessee's use of the demised premises; provided, further, that the Lessee shall have the right to use the waters of Lake Waiau for any purpose necessary or incidental to the use permitted by this lease on the following conditions:

a. No drilling or disturbance of Lake Waiau's bottom, banks or areas adjacent thereto shall be permitted;

b. No activity shall be permitted which will result in the pollution of the waters of Lake Waiau;

c. Lessee shall not take or divert any of the waters arising from springs which furnish the water supply for Pohakuloa, and no alterations to said springs shall be made by Lessee.

2. Access. All rights to cross the demised premises for inspection or for any government purposes.

3. Hunting and Recreation Rights. All hunting and recreation rights on the demised lands, to be implemented pursuant to rules and regulations issued by said Board in discharging its fish and game or state parks responsibilities; provided, however, that such hunting and recreation activities shall be coordinated with the activities of the Lessee on the demised lands; and provided, further, that such hunting and recreation activities shall be limited to day-light hours only.

and its successors lessees, grantees and permittees, to use any portion of the lands demised and the right to grant to others rights and privileges affecting said land; provided, however, that, except as otherwise provided herein, no such use shall be permitted or rights and privileges granted affecting said lands, except upon mutual determination by the parties hereto that such use or grant will not unreasonably interfere with the Lessee's use of the demised premises; provided, further, that such agreement shall not be arbitrarily or capriciously withheld.

THE LESSEE, IN CONSIDERATION OF THE PREMISES, COVENANTS WITH THE LESSOR AS FOLLOWS:

1. Surrender. The Lessee shall, at the expiration or sooner termination of this lease, peaceably and quietly surrender and deliver possession of the demised premises to the Lessor in good order and condition, reasonable wear and tear excepted.

2. Maintenance of the Premises. The Lessee shall keep the demised premises and improvements in a clean, sanitary and orderly condition.

3. Waste. The Lessee shall not make, permit or suffer, any waste, strip, spoil, nuisance or unlawful, improper or offensive use of the demised premises.

4. Specified Use. The land hereby leased shall be used by the Lessee as a scientific complex, including without limitation thereof an observatory, and as a scientific reserve being more specifically a buffer zone to prevent the intrusion of activities inimical to said scientific complex.

Activities inimical to said scientific complex shall include light and dust interference to observatory operation

~~during hours of darkness~~ and certain types of electric or electronic installation on the demised lands, but shall not necessarily be limited to the foregoing.

5. Assignments. The Lessee shall not sublease, subrent, assign or transfer this lease or any rights thereunder without the prior written approval of the Board of Land and Natural Resources.

6. Improvements. The Lessee shall have the right during the existence of this lease to construct and erect buildings, structures and other improvements upon the demised premises; provided, that plans for construction and plot plans of improvements shall be submitted to the Chairman of the Board of Land and Natural Resources for review and approval prior to commencement of construction. The improvements shall be and remain the property of the Lessee, and shall be removed or disposed of by the Lessee at the expiration or sooner termination of this lease; provided, that with the approval of the Chairman such improvements may be abandoned in place. The Lessee shall, during the term of this lease, properly maintain, repair and keep all improvements in good condition.

7. Termination by the Lessee. The Lessee may terminate this lease at any time by giving thirty (30) days' notice in writing to the Lessor.

8. Termination by the Lessor. In the event that (1) the Lessee fails to comply with any of the terms and conditions of this lease, or (2) the lessee abandons or fails to use the demised lands for the use specified under paragraph 4 of these covenants for a period of two years, the Lessor may terminate this lease by giving six months' notice in writing to the Lessee.

9. Non-Discrimination. The Lessee covenants that the use and enjoyment of the premises shall not be in support of any

policy which discriminates against anyone based upon race, creed, color or national origin.

10. General Liability. The Lessee shall at all times, with respect to the demised premises, use due care for safety, and the Lessee shall 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 the Lessee on or in connection with the demised premises, subject to the laws of the State of Hawaii governing such liability.

11. Laws, Rules and Regulations, etc. The Lessee shall observe and comply with Regulation 4 of the Department of Land and Natural Resources and with all other laws, ordinances, rules and regulations of the federal, state, municipal or county governments affecting the demised lands or improvements.

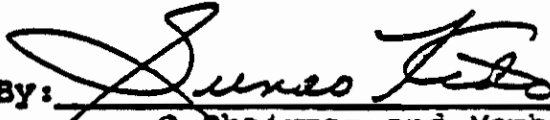
12. Objects of Antiquity. The Lessee shall not appropriate, damage, remove, excavate, disfigure, deface or destroy any object of antiquity, prehistoric ruin or monument of historical value.

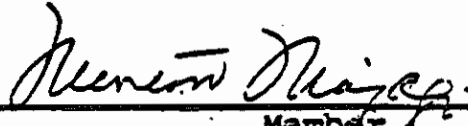
13. Undesirable Plants. In order to prevent the introduction of undesirable plant species in the area, the Lessee shall not plant any trees, shrubs, flowers or other plants in the leased area except those approved for such planting by the Chairman.

IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 2/1/6

day of June, 1968, and the UNIVERSITY OF
HAWAII, by its Attorney General and 11th Hawaii
has caused these presents to be duly executed this 17th
day of June, 1968, effective as of the day and
year first above written.

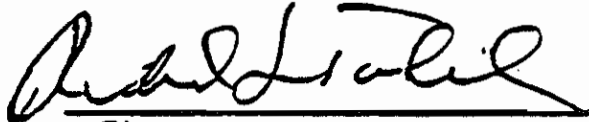
STATE OF HAWAII

By: 
Acting Chairman and Member
Board of Land and
Natural Resources

And By: 
Member
Board of Land and
Natural Resources

UNIVERSITY OF HAWAII

By: 
Its Acting President

And By: 
Its

APPROVED AS TO FORM: 

Deputy Attorney General
Dated: June 17, 1968

mm
Proofed by: 1

EXHIBIT "A"

MAUNA KEA SCIENCE RESERVE

Kahe, Hamakua, Island of Hawaii, Hawaii

Being a portion of the Government Land of Kahe

Beginning at a point on the south boundary of this parcel of land, the coordinates of said point of beginning referred to Government Survey Triangulation Station "SUMMIT 1955" being 12,325.95 feet South and 471.84 feet West, as shown on Government Survey Registered Map 2789, thence running by azimuths measured clockwise from True South:-

1. Along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 135° 00' 18,667.62 feet;
2. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 225° 00' 18,667.62 feet;
3. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 281° 18' 04.6" 5173.56 feet;
4. 207° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
5. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1200.00 feet, the chord azimuth and distance being: 297° 49' 06.5" 2400.00 feet;

6. 27° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
7. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 306° 59' 47.4" 1824.16 feet;
8. 227° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
9. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1500.00 feet, the chord azimuth and distance being: 317° 29' 00.9" 3000.00 feet;
10. 47° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
11. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13200.00 feet, the chord azimuth and distance being: 325° 31' 55.2" 701.87 feet;
12. 245° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
13. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 2000.00 feet, the chord azimuth and distance being: 335° 46' 12.7" 4000.00 feet;
14. 65° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
15. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 352° 14' 32.9" 3563.50 feet;

on a curve to the right with a radius of 1,200.00 feet, the chord azimuth and distance being: 45' 00' 18,667.62 feet to the point of beginning and containing an AREA OF 13,321.054 ACRES.

EXCEPTING and RESERVING to the State of Hawaii and to all others entitled thereto, the Mauna Kea-Humuula and Mauna Kea-Umikoia Trails, and all other existing trails within the above-described parcel of land, together with rights of access over and across said trails.

ALSO, EXCEPTING and RESERVING to the State of Hawaii, its successors and assigns, the waters and all riparian and other rights in and to all the streams within the above-described parcel of land.

EXHIBIT B TO OSDA ATTACHMENT A
SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT
BETWEEN
THE ASSOCIATED UNIVERSITIES, INC./
NATIONAL RADIO ASTRONOMY OBSERVATORY
AND
THE UNIVERSITY OF HAWAII

CONSENT TO SUBLEASE OF
GENERAL LEASE NO. S-4191

CONSENT is hereby given by the STATE OF HAWAII, by its Board of Land and Natural Resources, Lessor under General Lease No. S-4191, dated June 21, 1968, to the attached Sublease of General Lease No. S-4191, dated _____, by and between the UNIVERSITY OF HAWAII, as Sublessor, and the ASSOCIATED UNIVERSITIES, INC./NATIONAL RADIO ASTRONOMY OBSERVATORY, as Sublessee;

PROVIDED, HOWEVER, that this consent shall not in any manner be construed as varying in any respect the terms and conditions of said General Lease No. S-4191; and PROVIDED, FURTHER, that no further assignment or sublease of any interest under said General Lease No. S-4191 shall be made without the written consent of the Board of Land and Natural Resources, State of Hawaii, being first obtained and endorsed thereon.

IT IS UNDERSTOOD that should there be any conflict between the terms and conditions of said General Lease No. S-4191, dated June 21, 1968, and the terms and conditions of the attached Sublease Agreement, dated _____, the former shall control.

IT IS FURTHER UNDERSTOOD AND AGREED by the STATE OF HAWAII, by its Board of Land and Natural Resources, that in the event said General Lease No. S-4191 is surrendered or defaulted upon by the Lessee, UNIVERSITY OF HAWAII, prior to the expiration of the term thereof, the attached Sublease Agreement, dated _____, shall remain in full force and effect for the remainder of the term thereof, and Sublessee ASSOCIATED UNIVERSITIES, INC./NATIONAL RADIO ASTRONOMY OBSERVATORY shall be allowed its continued right to quiet enjoyment of the demised premises, upon and subject to the terms, conditions and covenants of General Lease No. S-4191, including, but not limited to, the payment of all lease rentals, taxes, rates, assessments, duties, charges and other outgoings of every description as to which the premises under said Sublease Agreement or any improvements thereon, now or may be assessed or become liable by authority of law during the remainder of the term of said Sublease Agreement.

CONSENT TO SUBLEASE OF GENERAL LEASE NO. S-4191 - page 2

IN WITNESS WHEREOF, the STATE OF HAWAII by its Board of Land and Natural Resources has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this _____ day of _____, 19____.

STATE OF HAWAII

By _____
Chairman and Member
Board of Land and
Natural Resources

And By _____
Member
Board of Land and
Natural Resources

Approved by the Board
of Land and Natural
Resources at its meeting
held on _____

APPROVED AS TO FORM:

By _____
Deputy Attorney General
Department of Land and
Natural Resources

Dated: _____

Exhibit C to OSDA Attachment A

NRAO Site—Demised Premises

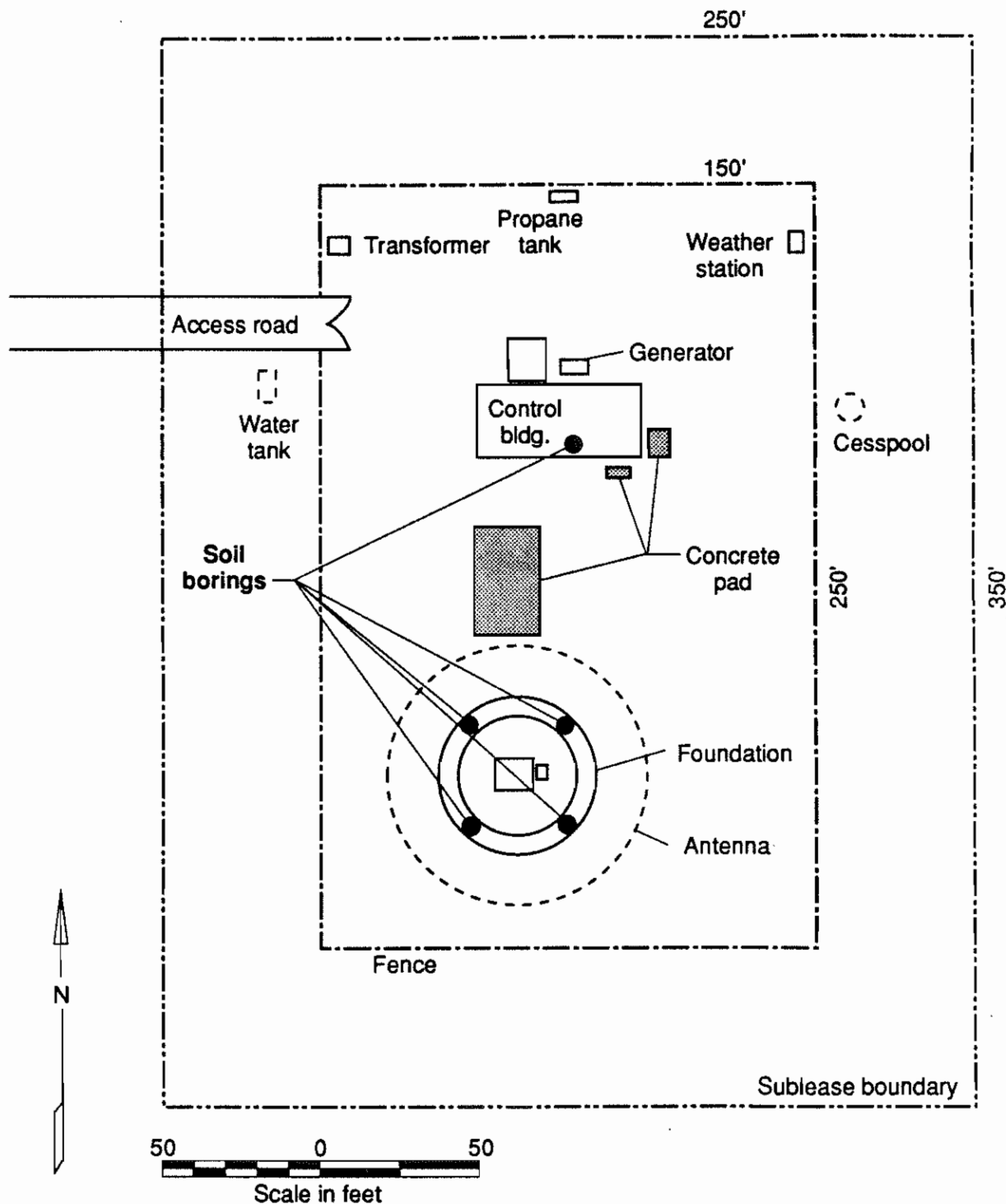


EXHIBIT D

to

OSDA Attachment A

DESCRIPTION OF CONSTRUCTION

The purpose of the Very Long Baseline Array (VLBA) is to provide high-quality radio images of remote astronomical objects at the highest angular resolution that can be achieved by a ground-based instrument. The site is located 12,200 feet above sea level. The fenced area around the site measures 150 feet by 250 feet. The control building has a floor area of 1400 square feet. The Very Long Baseline Array (VLBA) antenna is 25 meters in diameter, carried on a fully-steerable mounting which permits it to be pointed to any direction above the horizon. Construction of the Mauna Kea facility is scheduled to begin in the Spring of 1990, with full operation starting in 1992.

Site preparation, which includes grading, road building, installation of the buried power line, construction of the antenna foundation and control building, and fence erection, will be done by local contractors; specifically:

1. Site Work: Development of a 150 ft. x 250 ft. site including grading, fencing, placement of gravel cover; access road, water tank, cess pool, transformer pad, trench, backfill and conduit system for the primary electric service; and a conduit system for underground telephone service.
2. Antenna Foundation: Excavation, grading and backfill and construction of an approximately 350 cubic yard reinforced concrete antenna foundation including drainage system, electrical conduits to the building, and a grounding system and counterpoise around the foundation.
3. Site Control Building: Construction of an approximately 1400 square foot masonry block building including excavation, grading, backfill; water, electric, telephone, septic systems and sanitary connections; conduits, electrical connections to the antenna foundation and grounding system.
4. Other:
 - a. Scheduling of Construction Work: All work, utility connections, etc., shall be planned and scheduled with the other installations and tenants within the Mauna Kea Science Reserve so as not to interfere with operations within the Science Reserve and other subcontractors who may be on the site including moving of heavy loads and other traffic up and down the mountain.
 - b. Disposal of Debris: All debris and litter will be hauled away to an approved disposal site. The construction site will be kept free of litter at all times and litter will not be allowed on adjacent areas.
 - c. Excess Excavation: Any excess excavation will be disposed of outside the fenced area or hauled away to an approved fill. It shall be spread uniformly, graded free of large rocks and left in a neat and clean manner.

- d. Erosion and Silt Control: Plastic barriers and/or bales of straw shall be provided to minimize erosion and prevent silt and soil being carried away.
- e. Dust Control: Dust control will be maintained during construction by exposing the smallest area possible at any time and halting construction during high winds and storms. Strict adherence to county regulations concerning excavating and grading is required. Dust control will conform to State health and environmental rules.
- f. Blasting: Controlled blasting for excavating and removing boulders will only be used if maximum safety precautions are taken to protect people and property and is scheduled with other installations within the Science Reserve.
- g. Construction Activities: All subcontractors will be advised that all construction activities must remain within the NRAO/AUI subleased area and access road easement boundaries. The surrounding terrain will not be driven over, used or disturbed.
- h. Archaeological Finds: There are four archaeological sites in the vicinity of the construction site. The sites are well marked with visual barriers. Subcontractors will ensure that these barriers are not disturbed and the sites are protected. When all construction is complete the subcontractors will remove the barriers and make the sites look undisturbed.
- i. Cut and Fill: It is the intent of the access road and site design to balance out, cut and fill as there are no borrow pits or disposal sites on Mauna Kea. Since the construction area is strewn with cobble and small boulders, with the likely possibility of more being uncovered in excavating, a portable crusher might be used to minimize the problem by making the cobble and boulders usable as fill, 6 inches and smaller.

The estimated cost of this work is 1.3 million dollars.

The antenna fabrication will be done by the same contractor as the other nine antennas in the array. Installation of electronics and control systems will be performed by National Radio Astronomy Observatory (NRAO) technicians.

The antenna will be controlled remotely from the NRAO Operations Center in Socorro, New Mexico. A staff of two to four technicians to perform maintenance and other routine duties will be hired locally.

EXHIBIT “13”

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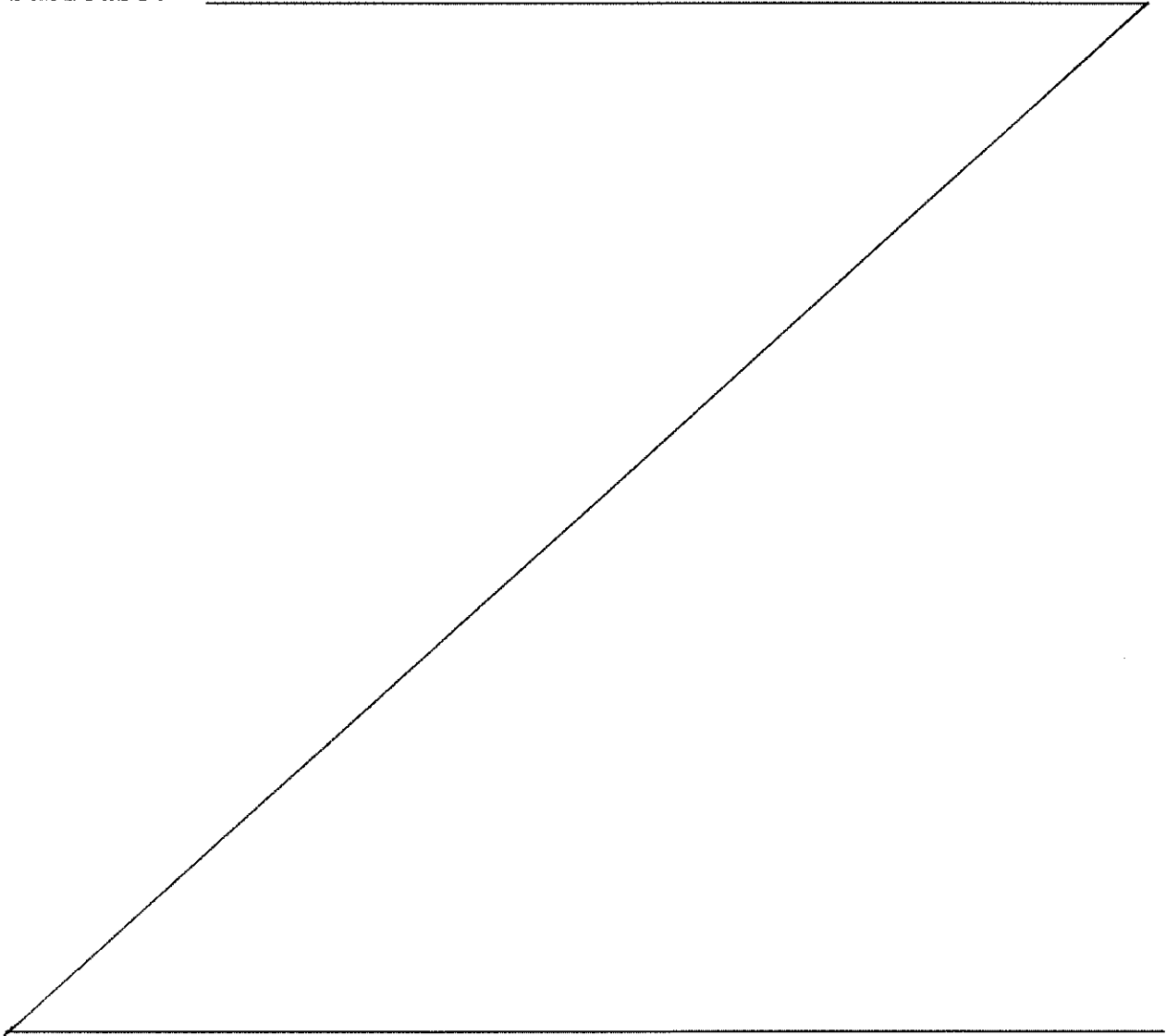
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PRELIM. APPR'D.
Department of the
Attorney General

EXHIBIT "13"

IT IS UNDERSTOOD that except as provided herein, should there be any conflict between the terms of General Lease No. S-4191 and the terms of the Sublease, the former shall control; and that no further sublease or assignment of any interest of the premises or any portion thereof shall be made without the prior written consent of the Board of Land and Natural Resources.

FURTHERMORE, Lessee hereby acknowledges that the Lessor's consent to sublease under General Lease No. S-4191, does not release the Lessee of any and all responsibilities, obligations, liabilities, and claims respecting or arising under or out of said General Lease prior to the effective date of this sublease.



IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 20th day of July, 1999.

STATE OF HAWAII

Approved by the Board of Land and Natural Resources at its meeting held on August 21, 1997.

By [Signature]
Chairperson and Member
Board of Land and Natural Resources

LESSOR

UNIVERSITY OF HAWAII, a body corporate

By [Signature]
Eugene S. Imai
Its Senior Vice President for Administration

By _____
Its _____

APPROVED AS TO FORM:

[Signature]
Deputy Attorney General

Dated: 7/13/99

By [Signature]
Kenneth P. Mortimer
Its President, University of Hawaii and
Chancellor, University of Hawaii at
Manoa
LESSEE

2692(5)
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STATE OF HAWAII)
) SS.
CITY AND COUNTY OF HONOLULU)

On this 19th day of April, 1999,
before me appeared KENNETH P. MORTIMER and
EUGENE S. IMAI, to me personally
known, who, being by me duly sworn, did say that they are the
President, University of Hawai'i and Chancellor, University of
Hawai'i at Mānoa and Senior Vice President for
Administration, respectively, of the UNIVERSITY OF HAWAI'I, a
body corporate, and that seal affixed to the foregoing instrument
is the corporate seal of said University and that the foregoing
instrument was signed and sealed in behalf of said University by
authority of its Board of Regents, and the said KENNETH P.
MORTIMER and EUGENE S. IMAI acknowledged said instrument to
be the free act and deed of said University.

Helen T. Nakamura
Notary Public, State of Hawai'i
HELEN T. NAKAMURA

My Commission expires: 3-27-200✓

STATE OF HAWAII)
) SS.
CITY AND COUNTY OF HONOLULU)

On this _____ day of _____, 19_____,
before me appeared _____ and
_____, to me personally
known, who, being by me duly sworn, did say that they are the
_____ and _____, respectively,
of the UNIVERSITY OF HAWAII, a body corporate, and that seal
affixed to the foregoing instrument is the corporate seal of said
University and that the foregoing instrument was signed and
sealed in behalf of said University by authority of its Board of
Regents, and the said _____
and _____ acknowledged said instrument to be
the free act and deed of said University.

Notary Public, State of Hawaii

My commission expires: _____

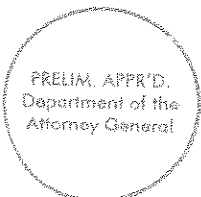


EXHIBIT “14”

COPY

OSDA ATTACHMENT A

SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT

BETWEEN

THE NATIONAL SCIENCE FOUNDATION

AND

THE UNIVERSITY OF HAWAII

EXHIBIT "14"

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SUBLEASE EXHIBITS

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

SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT

This Sublease and accompanying non-exclusive Easement is made this 26th day of September, 1994 by and between the UNIVERSITY OF HAWAII, hereinafter called "Sublessor," and the NATIONAL SCIENCE FOUNDATION, hereinafter called "Sublessee." This Sublease and Easement is approved pursuant to General Lease S-4191, dated June 21, 1968, between Sublessor and the State of Hawaii, Board of Land and Natural Resources, hereinafter called "Lessor." A copy of said General Lease S-4191 and "Consent to Sublease of General Lease S-4191," are attached hereto as Exhibits A and B, respectively, and are incorporated herein by reference.

WITNESSETH THAT:

Sublessor, in consideration of the rent hereinafter reserved and upon the conditions, covenants and agreements hereinafter expressed, does hereby demise and let to Sublessee the parcel of land described in Exhibit C, attached hereto and incorporated herein by reference, and Sublessee does hereby sublease from Sublessor said parcel for the purpose of erecting a telescope facility to be constructed and operated by and at the expense of Sublessee through a contractual arrangement set forth in a separate "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" (hereinafter "OSDA").

Construction will include the Gemini 8-Meter Telescope (hereinafter "Gemini Mauna Kea") enclosure and support building, its optical/infrared telescope having an effective diameter of approximately 8 meters, related equipment and instrumentation and related support facilities and infrastructure improvements required on the Demised Premises to support the operations of Gemini Mauna Kea (collectively "Facilities").

I. GENERAL

A. Location/Area

The location/area comprises a portion of that certain land area, described in General Lease S-4191 and its Exhibit A, and more specifically identified in Exhibit C attached hereto.

B. Non-Exclusive Easement

Sublessee shall have the right of access to and egress from the Demised Premises over and across the Mauna Kea Science Reserve, utilizing the common entrances and rights of way, together with others entitled thereto under such rules and regulations as may be established by and amended from time to time by Sublessor.

C. Survey/Specific Description

The site designated in Exhibit C is subject to survey by Sublessee or by its designee within SIX (6) months from the date of this Sublease. The exact area covered by this Sublease shall be more specifically described and agreed to by Sublessor and Sublessee after the aforesaid survey has been completed, and is subject to approval by the County of Hawaii. Such description shall be binding upon Sublessor, Sublessee and the State of Hawaii.

D. Term of Sublease

The term of this Sublease shall be from the date first above written and shall expire on December 31, 2033, unless sooner terminated or extended, as respectively provided for in IV.F and II.B.

E. Rental Charge

Sublessee hereby covenants and agrees to pay rental for the Demised Premises at ONE DOLLAR (\$1.00) per year in legal tender of the United States of America for the duration of the Sublease. Said fee shall be paid to the University of Hawaii, Senior Vice President for Administration, 2444 Dole Street, Honolulu, Hawaii 96822, U.S.A.

F. Fire or Destruction of Facilities

If all three of the following events occur: (1) the Facilities are destroyed by fire or other causes rendering the same unsuitable for purposes of optical and infrared astronomy, (2) Sublessee elects not to restore the Facilities, and (3) this Sublease is terminated as provided for in IV.F.6., Sublessee shall have such unsuitable damaged property or debris removed within ONE (1) year, after written notice to remove, and shall restore the property or any portion affected thereby to even grade. In the event Sublessee fails to remove such damaged property or debris and restore the land within ONE (1) year, such property may be removed and the land affected thereby restored to even grade by Sublessor at the expense of Sublessee.

If the Facilities or a portion thereof are restored, such restoration shall be subject to approval by Sublessor, and shall be in keeping with III.H. Such approval by the Sublessor will not be unreasonably withheld.

G. Controlling Lease

Sublessee shall observe and comply with all terms and conditions of General Lease S-4191.

In the event that any term or condition contained herein is inconsistent with or contrary to General Lease S-4191, said General Lease shall be controlling.

H. Operation of the Facilities

Neither Sublessee nor its successor or assigns shall operate or permit to be operated the aforementioned Facilities for purposes of research without an effective OSDA. The Facilities may be operated by Sublessee in the absence of the aforesaid OSDA only when necessary to ensure the safety of personnel or of the Facilities.

I. General Liability and Insurance

Sublessee and its Managing Organization (as defined in the OSDA) 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 the Sublessee 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, Sublessee, through its 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.

II. SUBLESSOR HEREBY COVENANTS WITH SUBLESSEE AS FOLLOWS:

A. Peaceful Enjoyment

Upon provision to Sublessor of the rights (in lieu of rent) provided in the aforesaid OSDA and upon observance and performance of all the terms, covenants and conditions contained herein, Sublessee shall peaceably hold and enjoy the Demised Premises during the term hereof without hindrance or interruption. Any proposed use of the Demised Premises by Sublessor or Lessor, their successors or assigns, as contemplated in, but not limited to, those paragraphs entitled "Hunting and Recreation Rights" and "Right to Use Demised Land" as set forth in General Lease S-4191, shall be subject to coordination with Lessor, Sublessor and Sublessee; such proposed use shall not interfere unreasonably with Sublessee's use of the Demised Premises.

B. Renewal

At least SIX (6) months prior to the expiration of the General Lease S-4191 on the 31st day of December 2033, Sublessor shall seek to negotiate a renewal of said General Lease with Lessor or its successor. In the event of renewal, Sublessor shall renew or extend this Sublease, or shall negotiate in good faith a new Sublease with Sublessee, if so desired by Sublessee, and under such terms and conditions as may then be mutually acceptable. Sublessor shall make every effort to ensure renewal, extension, or renegotiation of said General Lease.

C. Faithful Performance

Sublessor and Sublessee recognize that in reliance upon the faithful performance by Sublessor of its obligations hereunder and under the terms of the General Lease S-4191, Sublessee has agreed to make a substantial commitment of financial and human resources. In view of this reliance and commitment by Sublessee, Sublessor agrees to perform faithfully its obligations under General Lease S-4191 and this Sublease so that neither of these agreements is terminated earlier than its natural expiration date.

III. SUBLESSEE HEREBY COVENANTS WITH SUBLESSOR AS FOLLOWS:

A. Right of Entry

Sublessee shall allow Sublessor or its designee(s), known to Sublessee or carrying suitable identification, free access at all reasonable times to the Demised Premises for the purpose of examining the same and determining whether the covenants herein are being fully observed and performed.

B. Janitorial and Other Services

Sublessee shall provide for janitorial, custodial, and security services to the Demised Premises, including sewerage and sanitation facilities and services.

C. Repairs and Maintenance

At all times during the term of this Sublease, Sublessee shall, at Sublessee's own cost and expense, keep and maintain the Demised Premises and the Facilities in good order and repair and in a clean condition. This obligation shall include, but not be limited to, the obligation to paint the Facilities as appropriate and to make any modification or alteration thereof when necessary.

D. Utilities and Other Charges

Except as may be agreed in the aforesaid OSDA, Sublessee shall pay for or shall cause to be paid when due all charges associated with the Facilities and all charges, duties and rates of every description, including electricity, water, communications, sewer, gas, refuse collection or any other similar charges, as to which said Demised Premises, or any part thereof, or any improvements thereon, or which Sublessor or Sublessee in respect thereof, may during said term become liable, whether assessed to or payable by Sublessor or Sublessee.

E. Taxes and Assessments

If, at any time in the future, government taxes or assessments are made, Sublessee shall pay or cause to be paid when due, the amount of all taxes, rates, assessments, and other outgoings of every description as to which said Demised Premises or any part thereof, or any improvements thereon, or Sublessor or Sublessee in respect thereof, are now or may be assessed or become liable by authority of law during the term of this Sublease

F. Assignment and Subleasing

Neither Sublessee nor its successors or assigns shall, without the prior written consent of Lessor and Sublessor, assign, sublease or mortgage this Sublease or any interest therein, or sublet the Demised Premises, in whole or in part; provided, however, that such consent shall not be arbitrarily or capriciously withheld or delayed, and that this provision shall not operate to prevent Sublessee from making the Demised Premises available to invitees for the purposes permitted hereunder.

G. Use of Demised Premises

1. Sublessee shall use the Demised Premises exclusively for the Facilities, which are to be constructed and operated by and at the expense of Sublessee or others working in cooperation with Sublessee through the aforesaid OSDA and through any other agreements which may be agreed to by Sublessor and Sublessee.

2. All goods, wares, merchandise, equipment or other property of Sublessee shall be kept on the Demised Premises at the sole risk of Sublessee.

3. Sublessee shall not permit or make any waste or strip, or make any unlawful, improper or abusive use of the Demised Premises or any part thereof, and Sublessee shall be liable to Sublessor for all damages beyond reasonable wear and tear. As used in this Sublease, the term "reasonable wear and tear" shall include without limitation such grading, excavation and filling of the Demised Premises as may be reasonably required for the construction of the improvements contemplated by this Sublease. Such grading, excavation and filling shall not be deemed to constitute strip or waste. Sublessee shall make reasonable effort to minimize grading, excavation and filling.

H. Improvements and Alterations

Sublessee shall, at the Sublessee's sole cost and expense, construct the Facilities or cause them to be constructed on the Demised Premises.

In the event that Sublessee desires to make a substantive structural alteration of or addition to the Facilities, which will significantly alter the external appearance or structure of the Facilities, Sublessee first must seek and obtain written approval of Sublessor prior to commencing work on such structural alteration or addition, which approval shall not be withheld unreasonably.

Sublessor shall use its best efforts to secure Lessor's consent and to provide its own approval or objection within SIXTY (60) days after receipt by Sublessor of any request for approval for such structural alteration or addition.

I. Laws, Rules and Regulations, etc.

Sublessee shall observe and comply with Chapter 2 of Title 13, Administrative Rules of the Department of Land and Natural Resources (formerly Regulation 4), and with all other laws, ordinances, rules and regulations of the Federal, State, Municipal or County governments affecting the Demised Premises or the Facilities.

J. Covenant Against Contingent Fees

Sublessee warrants that no person or selling agency has been employed or retained to solicit or secure this Sublease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bonafide employees or bonafide established commercial or selling agencies maintained by Sublessee for the purpose of securing business. For breach or violation of this warranty, Sublessor shall have the right to annul this Sublease without liability or, in its discretion, to recover the full amount of such commission, percentage, brokerage, or contingent fee.

IV. AND THE PARTIES MUTUALLY COVENANT AS FOLLOWS:

A. Service Of Process

Sublessee shall designate a representative within the State of Hawaii duly authorized to accept service of process on its behalf. In the event that Sublessee fails to so designate such a representative or such designated representative is unavailable, Sublessee consents that service of any notice or process issued against it may be served upon it by filing the same with the Director of Commerce and Consumer Affairs, State of Hawaii or, in his/her absence, with the Deputy Director. Sublessor shall forward by certified mail to Sublessee a copy of any such notice or process served on the Director of Commerce and Consumer Affairs.

B. Governing Law: Severability

The validity, construction and performance of this Sublease, and the legal relations among the parties to this Sublease shall be governed by and construed in accordance with the laws of the State of Hawaii, excluding the body of law applicable to choice of law. Should any provision of this Sublease be held by a court of competent jurisdiction to be either invalid, void, or unenforceable, the remaining provisions of this Sublease shall remain in full force and effect

C. Binding on Successors

This Sublease shall be binding on and inure to the benefit of the successors of the parties hereto.

D. Final Agreement

This Sublease constitutes the final agreement between Sublessor and Sublessee regarding the Sublease of the Demised Premises and the grant of Easement to Sublessee for purposes of Sublessee's construction of the Facilities. All prior discussions and/or agreements among the parties concerning the subject matter addressed in this Sublease shall have no force and effect.

E. Notices

All notices required or permitted to be given hereunder by Sublessor to Sublessee, or Sublessee to Sublessor, shall be in writing and sent to the following addresses:

If to Sublessor: University of Hawaii
 Attn: Senior Vice President for Administration
 2444 Dole Street
 Honolulu, Hawaii 96822

If to Sublessee: Division of Grants and Agreements
 National Science Foundation
 4201 Wilson Blvd.
 Arlington, VA 22230

Each party (Sublessor or Sublessee) may change the address of the recipient of notices by sending a written notice of each such change to the last designated address of the other party.

F. Termination

This Sublease shall terminate upon the occurrence of any of the following events:

1. If the planned construction of the Facilities as described in Exhibit D is not substantially completed by the 31st of December 1999, unless otherwise agree to in writing between Sublessor and Sublessee.
2. Termination of the aforesaid OSDA unless a new OSDA between UH and another party or parties is executed and Lessor, Sublessor, and Sublessee agree in writing to a continuation of this Sublease.
3. The expiration of General Lease S-4191 on December 31, 2033 without renewal, extension or renegotiation. If said General Lease is renewed, extended or renegotiated, then this Sublease shall be renewed, extended or renegotiated at that time in accordance with II.B.
4. If Sublessee fails to observe or comply with any of the terms or conditions herein within SIXTY (60) days after being notified in writing by Sublessor of such failure. In the event that more than SIXTY (60) days are reasonably required to observe or perform, Sublessee shall in good faith and within said SIXTY (60) days, initiate action and provide a plan for observance or performance, and shall diligently prosecute the same to completion.
5. If Sublessee peaceably surrenders or abandons the Demised Premises.
6. Destruction of the Facilities by fire or other causes rendering the same unsuitable for purposes of optical and infrared astronomy, unless Sublessee notifies Sublessor in writing within SIX (6) months of the date of casualty of its intention to restore the Facilities to their prior condition as specified in I.F.
7. By Sublessee upon SIX (6) months' notice in writing, in the event Sublessee's contemplated sources of funding become unavailable and, after diligent effort, Sublessee is unable to procure alternate sources of funding which, in Sublessee's good faith judgment, are adequate.
8. By Sublessee, if Sublessee gives Sublessor TWO (2) years' prior written notice
9. Mutual agreement in writing between Sublessor and Sublessee

G. Title to the Facilities, Alterations, Additions, and Improvements, and Disposition in Event of Termination or Expiration

1. Title to the Facilities, alterations, additions, and improvements (collectively referred to herein as "Property") on, affixed or installed in, or placed on the Demised Premises by Sublessee shall, at all times, remain in the name of Sublessee.

2. If this Sublease terminates or expires, and Sublessor has neither voluntarily terminated General Lease S-4191, nor defaulted on either this Sublease nor on General Lease S-4191, Sublessee shall be responsible for removal of the Property from the Demised Premises within ONE (1) year of the termination or expiration of this Sublease, unless agreed to in writing between Sublessor and Sublessee. If Lessor and Sublessor grant written approval, which approval shall not be arbitrarily or capriciously withheld, said Property can be sold, abandoned, or surrendered in whole or in part and the following conditions shall apply:

a. Sale. Sublessee may sell the Property to Sublessor and/or to a third party acceptable to Sublessor. Such sale by Sublessee to a party other than Sublessor shall be contingent upon the execution of a new Sublease and Operating and Site Development Agreement between the new party and Sublessor.

b. Surrender. Sublessee may peaceably surrender all or part of the Property in place and good repair, order, and clean condition, reasonable wear and tear excepted.

3. Unless otherwise agreed in writing by Sublessor, the following conditions shall apply if all or part of the Property is removed under this Section IV.G:

a. Said removal will be at the expense of Sublessee;

b. Sublessee shall restore the Demised Premises, or any portion affected thereby, to even grade to the extent that Property is removed, and shall repair any damage done to the Property not removed in the event that equipment is removed.

c. In the event that Sublessee fails to remove such Property or debris and restore the Demised Premises within TWELVE (12) months, such Property may be removed and the land restored as described above by Sublessor at the expense of Sublessee.

4. If this Sublease terminates or expires, and Sublessor has either voluntarily surrendered General Lease S-4191, or defaulted on either this Sublease or General Lease S-4191, and if Sublessee is allowed its continued right to quiet enjoyment of the Property and the Demised Premises under the terms of the Consent to Sublease as stated in Exhibit B, then Sublessee agrees to honor the terms of this Sublease.

If said surrender or default results in Sublessor's rights of General Lease S-4191 being: (a) returned to Lessor, then Sublessee agrees to negotiate in good faith a new Operating Agreement with Lessor on the terms and conditions of Sublessee's continued use of the Demised Premises; or (b) transferred to an organization other than Sublessor, then Sublessee agrees to negotiate in good faith a new Operating Agreement with the new sublessor of the Demised Premises, and to honor the terms and conditions of said superseding Operating Agreement with said new sublessor. Continued right to quiet enjoyment of the Property and the Demised Premises is contingent upon satisfactory negotiation of an Operating Agreement with Lessor or said new sublessor, the terms of which shall be substantially equivalent to those of the OSDA.

V. FEDERALLY REQUIRED PROVISIONS

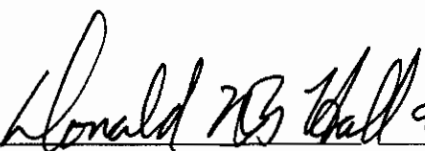
The following provisions are hereby incorporated into this Sublease reference:

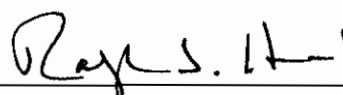
Officials Not to Benefit (APR 1984) at FAR 52.203-1
Covenant Against Contingent Fees (APR 1984) at FAR 52.203-5
Assignment of Claims (JAN 1986) at FAR 52.232-23
Equal Opportunity (APR 1984) at FAR 52.222-26

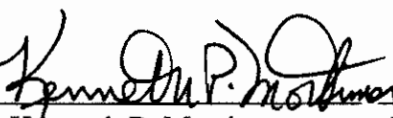
IN WITNESS WHEREOF, the parties hereto have executed these presents the day and year first written above.

SUBLESSOR:

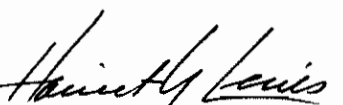
FOR THE UNIVERSITY OF HAWAII:

By  9/26/94
Donald N. B. Hall Date
Its Director, Institute
for Astronomy

By  SEP 26 1994
Ralph T. Horii, Jr. Date
Its Senior Vice President for
Administration

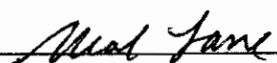
By  9/26/94
Kenneth P. Mortimer Date
Its President


APPROVED AS TO FORM:

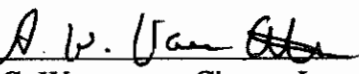
By  9/2/94
Harriet Y. Lewis Date
Deputy Attorney General
State of Hawaii

SUBLESSEE:

**FOR THE NATIONAL SCIENCE
FOUNDATION:**

By  9/12/94
Neal F. Lane Date
Its Director

By  9/12/94
Aaron R. Asrael Date
Its Grants and Agreements Officer
Division of Grants and Agreements

By  9/12/94
G. Wayne van Citters, Jr. Date
Its Staff Associate for Gemini
Division of Astronomical Sciences

STATE OF HAWAII

CITY AND COUNTY OF HONOLULU

)
) ss.
)

On this 26th day of September, 1994, before me appeared
Donald N.B. Hall, Ralph T. Horii, Jr. and
Kenneth P. Mortimer, personally known to me, who, being by me duly sworn, did
say that they are Director, Institute for Astronomy, Senior VP for Administration and
President, respectively, of the University of Hawaii, a public body
corporate; that the seal affixed to the foregoing instrument is the corporate seal of said
corporation; that said instrument was signed and sealed on behalf of said corporation by the
authority of its Board of Regents; and said Donald N.B. Hall,
Ralph T. Horii, Jr. and Kenneth P. Mortimer acknowledged the
instrument to be the free act and deed of said corporation.

Wileen I. Nakamura
Notary Public, First Circuit
State of Hawaii

My commission expires: 3-27-98

COUNTY OF ARLINGTON)
COMMONWEALTH OF VIRGINIA) ss.

On this 12th day of September, 1994, before me appeared Neal F. Lane, Aaron R. Asrael and G. Wayne van Citters, Jr., personally known to me, who, being by me duly sworn, did say that they are the Director, Grants and Agreements Officer, Staff Associate for Gemini, respectively, of the National Science Foundation, an agency of the United States Federal Government; that the foregoing instrument was signed on behalf of said agency; and said Neal F. Lane, Aaron R. Asrael and G. Wayne van Citters, Jr. acknowledged the instrument to be the free act and deed of said agency.



Notary Public
Arlington County, Virginia

My commission expires: May 31, 1998

Embossed Hereon Is My
Commonwealth of Virginia Notary Public Seal
My Commission Expires May 31, 1998
MY-PHUONG VO

Exhibit A to OSDA Attachment A
GENERAL LEASE NO. S-4191

THIS INDENTURE OF LEASE, made this 21st day of June, 1968, by and between the STATE OF HAWAII, by its Board of Land and Natural Resources, pursuant to the provisions of Section 103A-90(b), Revised Laws of Hawaii 1955, as amended, hereinafter referred to as the "LESSOR", and the UNIVERSITY OF HAWAII, a body corporate, whose post office address is 2444 Dole Street, Honolulu, City and County of Honolulu, State of Hawaii, hereinafter referred to as the "LESSEE",

WITNESSETH THAT:

FOR and in consideration of the mutual promises and agreements contained herein, the Lessor does hereby demise and lease unto the said Lessee and the said Lessee does hereby rent and lease from the Lessor, all of that certain parcel of land situate at Kaohe, Hamakua, County and Island of Hawaii, State of Hawaii, and more particularly described in Exhibit "A", hereto attached and made a part hereof.

TO HAVE AND TO HOLD, all and singular the said premises, herein mentioned and described, unto the said Lessee, for and during the term of sixty-five (65) years, to commence from the 1st day of January, 1968, and to terminate on the 31st day of December, 2033.

DEPARTMENT OF LAND AND NATURAL RESOURCES
HONOLULU, HAWAII

RESERVING UNTO THE LESSOR THE FOLLOWING:

1. Water Rights. All surface and ground waters appurtenant to the demised premises, together with the right to enter and to capture, divert or impound water; provided, that the Lessor shall exercise such rights in such manner as not to interfere unreasonably with the Lessee's use of the demised premises; provided, further, that the Lessee shall have the right to use the waters of Lake Waiau for any purpose necessary or incidental to the use permitted by this lease on the following conditions:

a. No drilling or disturbance of Lake Waiau's bottom, banks or areas adjacent thereto shall be permitted;

b. No activity shall be permitted which will result in the pollution of the waters of Lake Waiau;

c. Lessee shall not take or divert any of the waters arising from springs which furnish the water supply for Pohakuloa, and no alterations to said springs shall be made by Lessee.

2. Access. All rights to cross the demised premises for inspection or for any government purposes.

3. Hunting and Recreation Rights. All hunting and recreation rights on the demised lands, to be implemented pursuant to rules and regulations issued by said Board in discharging its fish and game or state parks responsibilities; provided, however, that such hunting and recreation activities shall be coordinated with the activities of the Lessee on the demised lands; and provided, further, that such hunting and recreation activities shall be limited to day-light hours only.

4. Right to use Demised Lands. The right for itself, and its successors, lessees, grantees and permittees, to use any portion of the lands demised and the right to grant to others rights and privileges affecting said land; provided, however, that, except as otherwise provided herein, no such use shall be permitted or rights and privileges granted affecting said lands, except upon mutual determination by the parties hereto that such use or grant will not unreasonably interfere with the Lessee's use of the demised premises; provided, further, that such agreement shall not be arbitrarily or capriciously withheld.

THE LESSEE, IN CONSIDERATION OF THE PREMISES, COVENANTS WITH THE LESSOR AS FOLLOWS:

1. Surrender. The Lessee shall, at the expiration or sooner termination of this lease, peaceably and quietly surrender and deliver possession of the demised premises to the Lessor in good order and condition, reasonable wear and tear excepted.

2. Maintenance of the Premises. The Lessee shall keep the demised premises and improvements in a clean, sanitary and orderly condition.

3. Waste. The Lessee shall not make, permit or suffer, any waste, strip, spoil, nuisance or unlawful, improper or offensive use of the demised premises.

4. Specified Use. The land hereby leased shall be used by the Lessee as a scientific complex, including without limitation thereof an observatory, and as a scientific reserve being more specifically a buffer zone to prevent the intrusion of activities inimical to said scientific complex.

Activities inimical to said scientific complex shall include light and dust interference to observatory operation

REV#
PS ~~during hours of darkness~~ and certain types of electric or electronic installation on the demised lands, but shall not necessarily be limited to the foregoing.

5. Assignments. The Lessee shall not sublease, sub-rent, assign or transfer this lease or any rights thereunder without the prior written approval of the Board of Land and Natural Resources.

6. Improvements. The Lessee shall have the right during the existence of this lease to construct and erect buildings, structures and other improvements upon the demised premises; provided, that plans for construction and plot plans of improvements shall be submitted to the Chairman of the Board of Land and Natural Resources for review and approval prior to commencement of construction. The improvements shall be and remain the property of the Lessee, and shall be removed or disposed of by the Lessee at the expiration or sooner termination of this lease; provided, that with the approval of the Chairman such improvements may be abandoned in place. The Lessee shall, during the term of this lease, properly maintain, repair and keep all improvements in good condition.

7. Termination by the Lessee. The Lessee may terminate this lease at any time by giving thirty (30) days' notice in writing to the Lessor.

8. Termination by the Lessor. In the event that (1) the Lessee fails to comply with any of the terms and conditions of this lease, or (2) the lessee abandons or fails to use the demised lands for the use specified under paragraph 4 of these covenants for a period of two years, the Lessor may terminate this lease by giving six months' notice in writing to the Lessee.

9. Non-Discrimination. The Lessee covenants that the use and enjoyment of the premises shall not be in support of any

policy which discriminates against anyone based upon race, creed, color or national origin.

10. General Liability. The Lessee shall at all times, with respect to the demised premises, use due care for safety, and the Lessee shall 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 the Lessee on or in connection with the demised premises, subject to the laws of the State of Hawaii governing such liability.

11. Laws, Rules and Regulations, etc. The Lessee shall observe and comply with Regulation 4 of the Department of Land and Natural Resources and with all other laws, ordinances, rules and regulations of the federal, state, municipal or county governments affecting the demised lands or improvements.

12. Objects of Antiquity. The Lessee shall not appropriate, damage, remove, excavate, disfigure, deface or destroy any object of antiquity, prehistoric ruin or monument of historical value.

13. Undesirable Plants. In order to prevent the introduction of undesirable plant species in the area, the Lessee shall not plant any trees, shrubs, flowers or other plants in the leased area except those approved for such planting by the Chairman.

IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 21st

day of June, 1968, and the UNIVERSITY OF
HAWAII, by its Acting President and VP for Business Affairs
has caused these presents to be duly executed this 17th
day of June, 1968, effective as of the day and
year first above written.

STATE OF HAWAII

By: *James T. Fido*
Acting Chairman and Member
Board of Land and
Natural Resources

And By: *Memoranda M. M. M.*
Member
Board of Land and
Natural Resources

UNIVERSITY OF HAWAII

By: *Robert W. Shiohara*
Its Acting President

And By: *Robert W. Shiohara*
Its

APPROVED AS TO FORM:

Deputy Attorney General
Dated: 5-8-68

mm
Proofed by: 1

EXHIBIT "A"

MAUNA KEA SCIENCE RESERVE

Kaohē, Hamakua, Island of Hawaii, Hawaii

Being a portion of the Government Land of Kaohē

Beginning at a point on the south boundary of this parcel of land, the coordinates of said point of beginning referred to Government Survey Triangulation Station "SUMMIT 1955" being 12,325.95 feet South and 471.84 feet West, as shown on Government Survey Registered Map 2789, thence running by azimuths measured clockwise from True South:-

1. Along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 135° 00' 18,667.62 feet;
2. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 225° 00' 18,667.62 feet;
3. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 281° 18' 04.6" 5173.56 feet;
4. 207° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
5. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1200.00 feet, the chord azimuth and distance being: 297° 49' 06.5" 2400.00 feet;

6. 27° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
7. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 306° 59' 47.4" 1824.16 feet;
8. 227° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
9. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1500.00 feet, the chord azimuth and distance being: 317° 29' 00.9" 3000.00 feet;
10. 47° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
11. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13200.00 feet, the chord azimuth and distance being: 325° 31' 55.2" 701.87 feet;
12. 245° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
13. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 2000.00 feet, the chord azimuth and distance being: 335° 46' 12.7" 4000.00 feet;
14. 65° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
15. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 352° 14' 32.9" 3563.50 feet;

16. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 45' 00' 18,667.62 feet to the point of beginning and containing an AREA OF 13,321.054 ACRES.

EXCEPTING and RESERVING to the State of Hawaii and to all others entitled thereto, the Mauna Kea-Humuula and Mauna Kea-Umikoia Trails, and all other existing trails within the above-described parcel of land, together with rights of access over and across said trails.

ALSO, EXCEPTING and RESERVING to the State of Hawaii, its successors and assigns, the waters and all riparian and other rights in and to all the streams within the above-described parcel of land.

Exhibit B to OSDA Attachment A

**SUBLEASE AND NON EXCLUSIVE EASEMENT AGREEMENT
BETWEEN
THE NATIONAL SCIENCE FOUNDATION
AND
THE UNIVERSITY OF HAWAII**

**CONSENT TO SUBLEASE OF
GENERAL LEASE NO. S-4191**

CONSENT is hereby given by the STATE OF HAWAII, by its Board of Land and Natural Resources, LESSOR under General Lease No. S-4191, dated June 21, 1968, to the attached SUBLEASE of General No. S-4191, dated _____, by and between the UNIVERSITY OF HAWAII, as SUBLESSOR, and THE NATIONAL SCIENCE FOUNDATION, as SUBLESSEE;

PROVIDED HOWEVER, that this consent shall not in any manner be construed as varying in any respect the terms and conditions of said General Lease No. S-4191; and PROVIDED FURTHER, that no further assignment or sublease of any interest under said General Lease No. S-4191 shall be made without the written consent of the Board of Land and Natural Resources, State of Hawaii, being first obtained and endorsed therein.

IT IS UNDERSTOOD that should there be any conflict between the terms and conditions of said General Lease No. S-4191, dated June 21, 1968, and the terms and conditions of the attached SUBLEASE dated _____, the former shall control.

IT IS FURTHER UNDERSTOOD AND AGREED by the STATE OF HAWAII, by its Board of Land and Natural Resources, that in the event said General Lease No. S-4191 is surrendered or defaulted upon by LESSEE, UNIVERSITY OF HAWAII, prior to the expiration of the term thereof, the attached SUBLEASE dated _____, shall remain in full force and effect for the remainder of the term thereof, and SUBLESSEE, THE NATIONAL SCIENCE FOUNDATION, shall be allowed its continued right to quiet enjoyment of the Demised Premises, upon and subject to the terms, conditions and covenants of General Lease No. S-4191, including, but not limited to, the payment of all lease rentals, taxes, rates, assessments, duties, charges and other outgoings of every description as to which the

Exhibit B to OSDA Attachment A
CONSENT TO SUBLEASE OF GENERAL LEASE NO. S-4191- page 2

premises under said SUBLEASE or any improvements thereon, now or may be assessed or become liable by authority of law during the remainder of the term of said SUBLEASE.

IN WITNESS WHEREOF, the STATE OF HAWAII by its Board of Land and Natural Resources has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this _____ day of _____, 19__.

STATE OF HAWAII

By _____
Chairman and Member
Board of Land and Natural Resources

And By _____
Member
Board of Land and Natural Resources

Approved by the Board of Land and Resources
at its meeting held on _____

APPROVED AS TO FORM:

Deputy Attorney General
State of Hawaii

Date _____

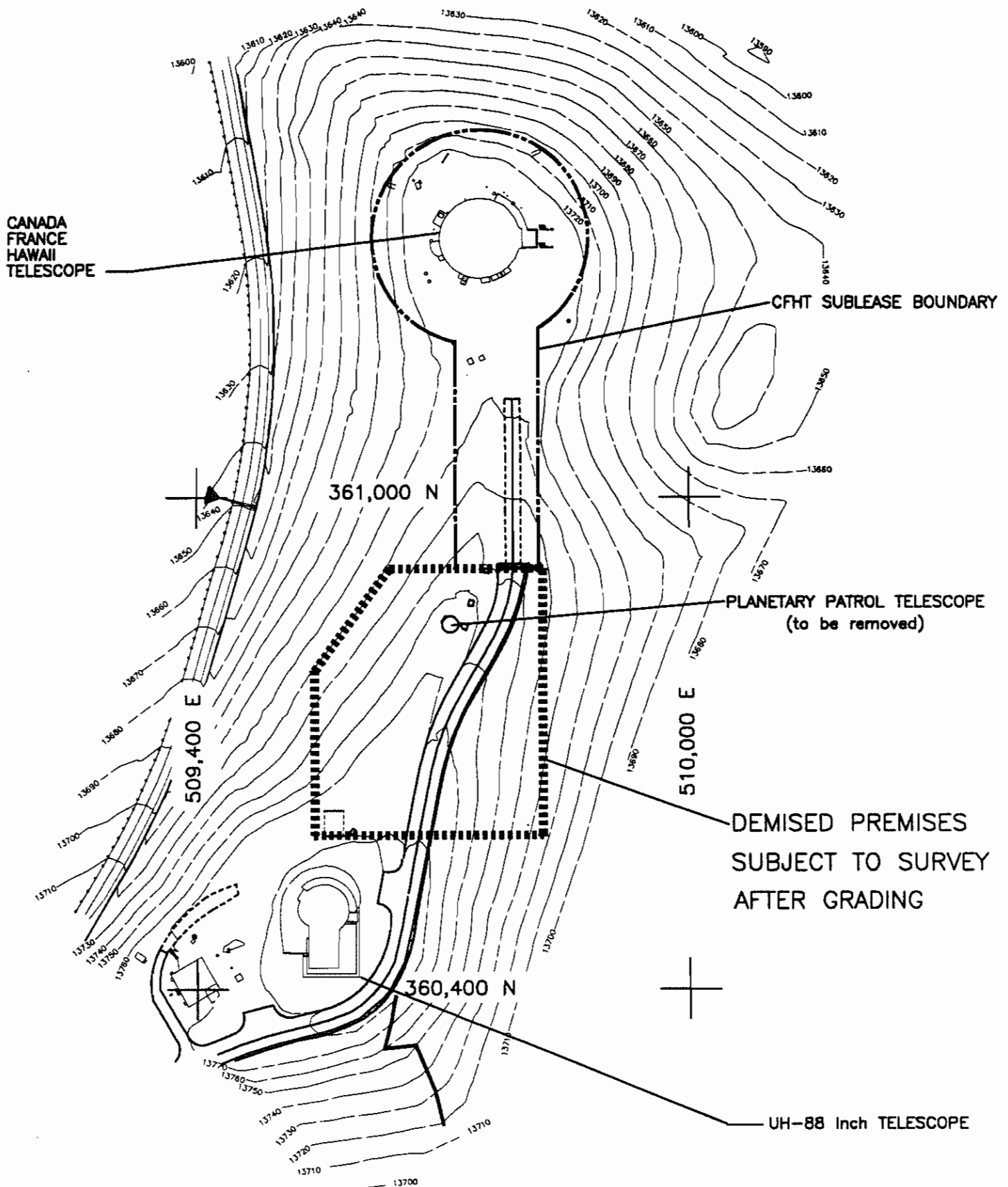


Exhibit D to OSDA Attachment A

SUBLEASE AND NON-EXCLUSIVE AGREEMENT BETWEEN THE NATIONAL SCIENCE FOUNDATION AND THE UNIVERSITY OF HAWAII

DESCRIPTION OF THE CONSTRUCTION

THE FACILITIES

The major components of the Facilities are: the 8-meter optical-infrared telescope; a rotatable steel telescope enclosure, 122 feet in diameter, supported on a cylindrical steel building housing a mirror coating plant; and an attached support building housing control rooms, shops, and other supporting facilities.

SITE WORK

The site work consists of the following: removal of the 24-inch Planetary Patrol Telescope and associated structures; relocation of the existing access road and utility lines to the east of the telescope site; grading and leveling the site, approximately 2 acres in area, to an elevation of approximately 13,760 feet.

TELESCOPE

The telescope primary mirror will be an 8-meter monolithic meniscus-type mirror of 20 cm thickness. The mirror will be supported on a steel structure on azimuth and elevation bearings to allow the telescope to be pointed to any point in the sky. The telescope structure is mounted on a cylindrical concrete pier. A computer control system will be provided to precisely point the telescope to allow accurate tracking of astronomical objects.

ENCLOSURE

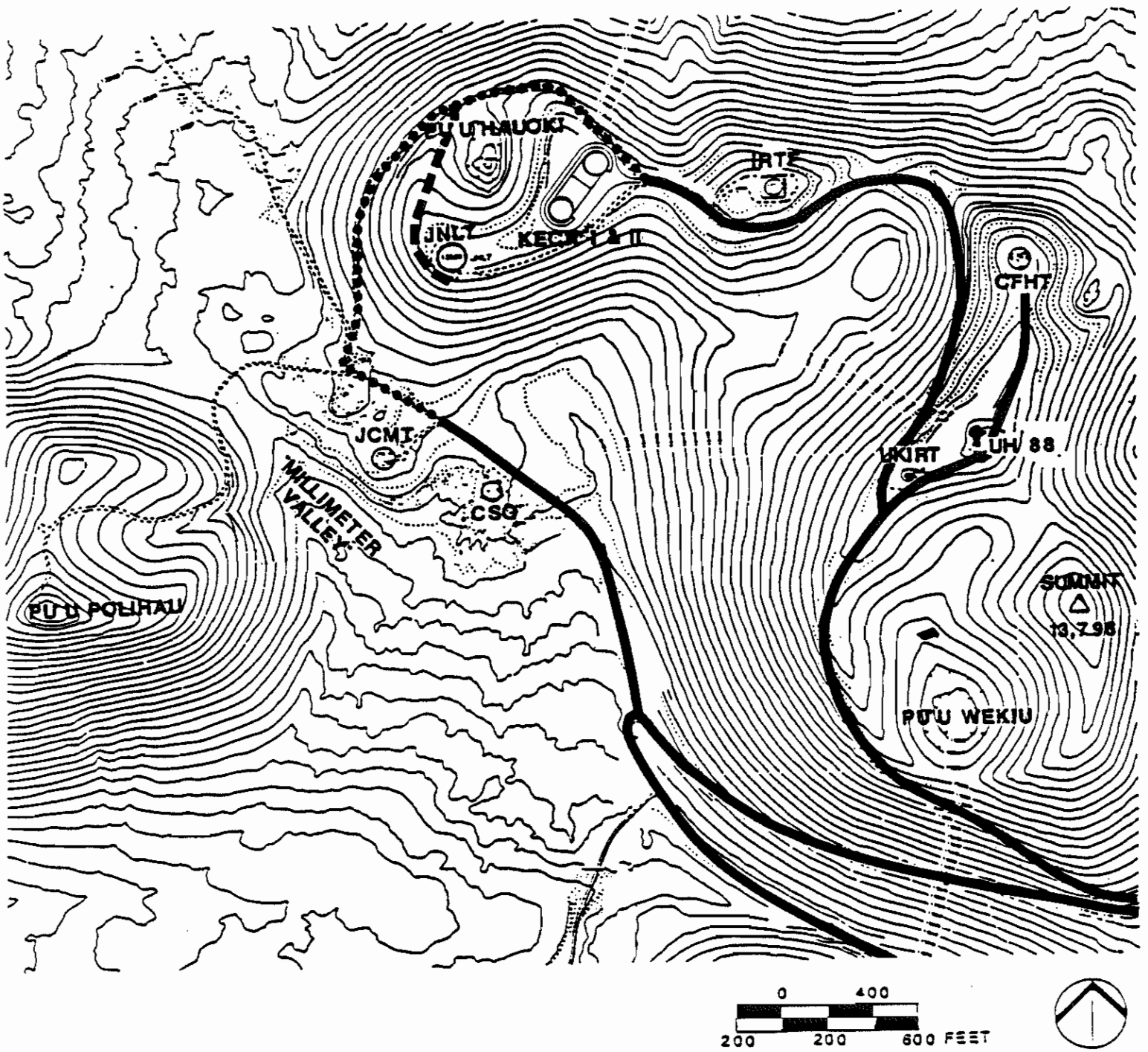
The telescope enclosure is a steel spherical/cylindrical structure approximately 122 feet in diameter housing the telescope and support equipment. The enclosure contains a movable shutter which opens to allow the telescope to view the sky. The upper portion of the enclosure rotates in azimuth on a circular rail mounted on a cylindrical steel base. The exterior of the rotating portion will be finished with a diffuse metallic coating resembling aluminum. The exterior of the enclosure stationary base will be finished with white paint.

SUPPORT BUILDING

A two-story support building of approximately 11,000 square feet is connected to the enclosure building. The support building contains the control room, computer room, shops, mechanical equipment room, personnel lounge and other space necessary for operating the Facilities.

SCHEDULE

Site work will begin in the fall of 1994. Building construction will begin in the spring of 1995 and will be completed in spring 1996. Enclosure installation will be accomplished prior to spring 1997. Telescope installation is scheduled to start in January 1997, and the final acceptance of the Facilities will occur in late 1999.



- EXISTING PAVED ROADS
- MAUNA KEA DETOUR ROAD
- - - - - JNLT SPUR ROAD

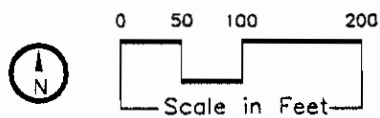
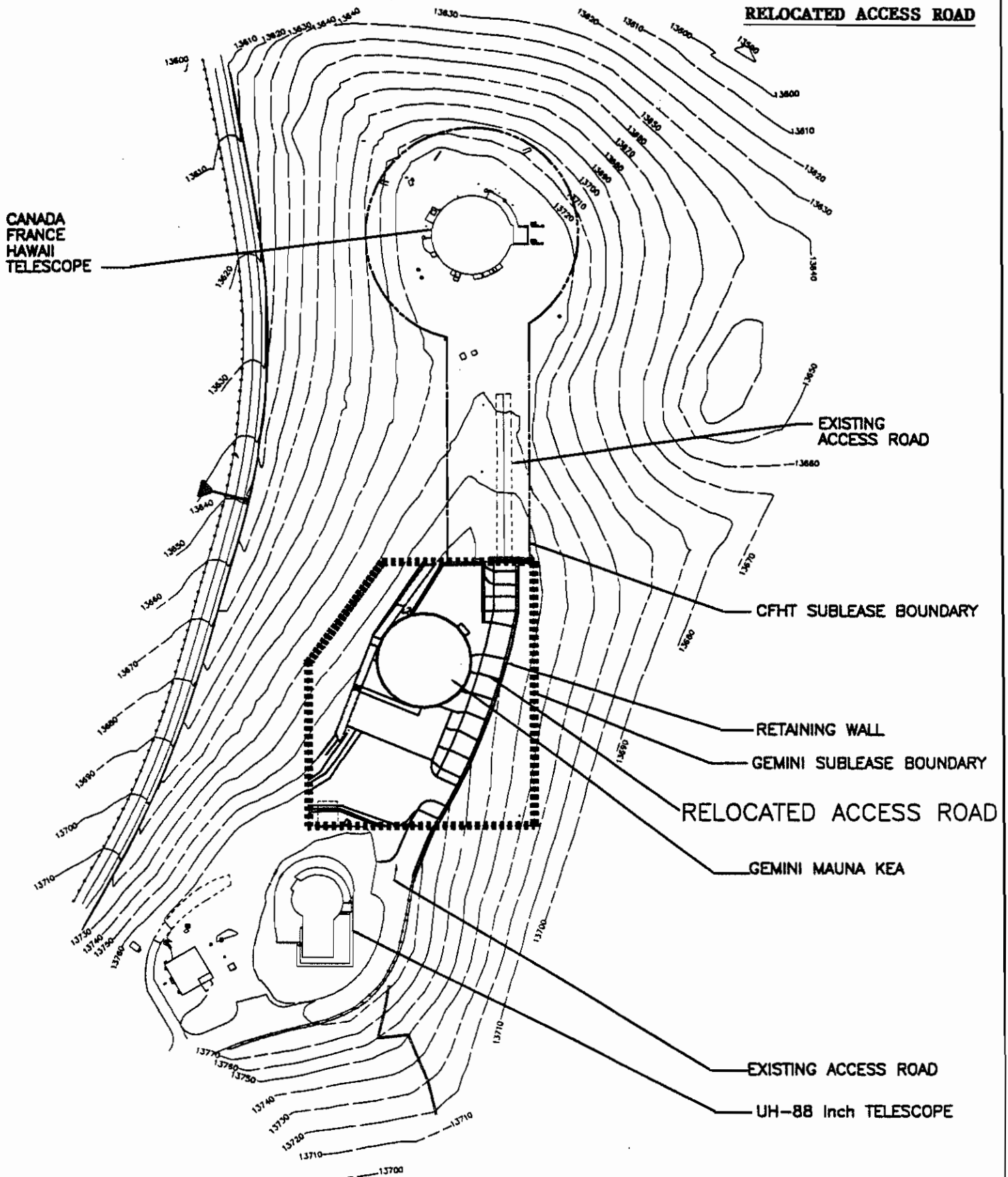
RELOCATED ACCESS ROAD

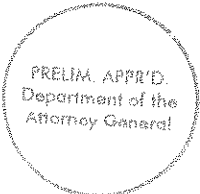
EXHIBIT “15”

Total Number of Pages:

Tax Map Key No. (3)4-4-15:09

CONSENT TO SUBLEASE OF GENERAL LEASE NO. S-4191

CONSENT is hereby given by the STATE OF HAWAII, by its Board of Land and Natural Resources, Lessor under unrecorded General Lease No. S-4191 dated June 21, 1968 leased to the University of Hawaii, a body corporate, as Lessee, to the attached Sublease and Non-Exclusive Easement Agreement ("Sublease") dated September 26, 1994 from the UNIVERSITY OF HAWAII, a body corporate, as "Sublessor," to the NATIONAL SCIENCE FOUNDATION, Division of Grants and Agreements, an agency of the United States Federal Government, whose address is 4201 Wilson Boulevard, Arlington, Virginia 22230, recorded in the Bureau of Conveyances of the State of Hawaii as Document No. _____, as "Sublessee"; SUBJECT, HOWEVER, to the provisions of Section 171-21, Hawaii Revised Statutes, as amended, relating to the rights of holder of security interests, PROVIDED, FURTHER that nothing contained herein shall change, modify, waive or amend the provisions, terms, conditions and covenants or the duties and obligations of the Lessee or Sublessee under General Lease No. S-4191.



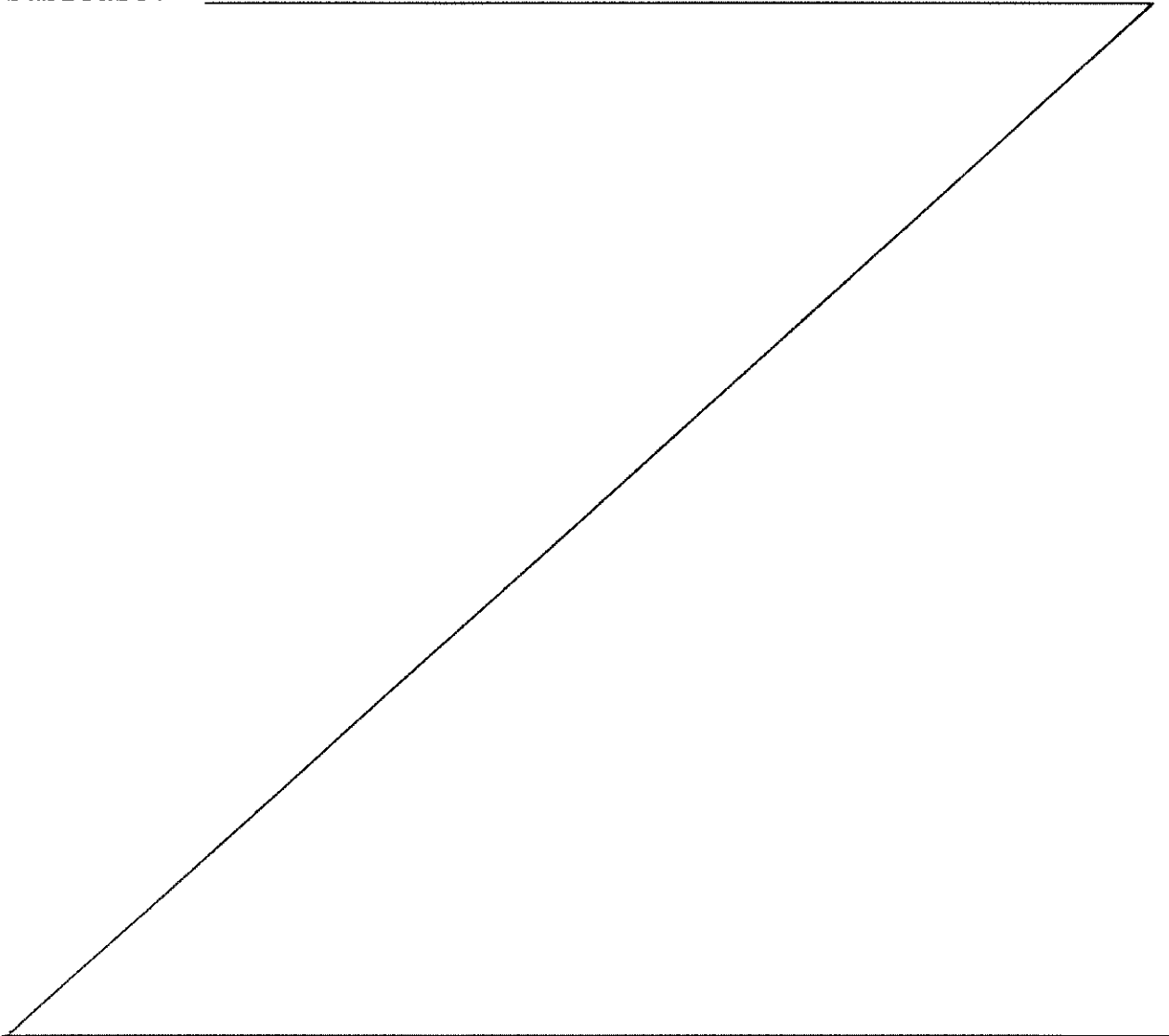
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

EXHIBIT "15"

10003888

IT IS UNDERSTOOD that except as provided herein, should there be any conflict between the terms of General Lease No. S-4191 and the terms of the Sublease, the former shall control; and that no further sublease or assignment of any interest of the premises or any portion thereof shall be made without the prior written consent of the Board of Land and Natural Resources.

FURTHERMORE, Lessee hereby acknowledges that the Lessor's consent to sublease under General Lease No. S-4191, does not release the Lessee of any and all responsibilities, obligations, liabilities, and claims respecting or arising under or out of said General Lease prior to the effective date of this sublease.



IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 20th day of July, 1999.

STATE OF HAWAII

Approved by the Board of Land and Natural Resources at its meeting held on August 21, 1997.

By *Maui K. Kawilo*
Chairperson and Member
Board of Land and Natural Resources

LESSOR

UNIVERSITY OF HAWAII, a body corporate

By *Eugene S. Imai*
Eugene S. Imai
Its Senior Vice President for Administration

By _____
Its _____

APPROVED AS TO FORM:

DNA
Deputy Attorney General

Dated: 7/13/99

By *Kenneth P. Mortimer*
Kenneth P. Mortimer
Its President, University of Hawaii and
Chancellor, University of Hawaii at
Manoa

LESSEE

2692(3)
gls-4191conssublse\tnk(3)4-4-15:09kaohu\h.\natlsci.dc

STATE OF HAWAII)
) SS.
CITY AND COUNTY OF HONOLULU)

On this 19th day of April, 1999,
before me appeared KENNETH P. MORTIMER and
EUGENE S. IMAI, to me personally
known, who, being by me duly sworn, did say that they are the
President, University of Hawai'i and Chancellor, University of
Hawai'i at Mānoa and Senior Vice President for
Administration, respectively, of the UNIVERSITY OF HAWAI'I, a
body corporate, and that seal affixed to the foregoing instrument
is the corporate seal of said University and that the foregoing
instrument was signed and sealed in behalf of said University by
authority of its Board of Regents, and the said KENNETH P.
MORTIMER and EUGENE S. IMAI acknowledged said instrument to
be the free act and deed of said University.

Helen T. Nakamura
Notary Public, State of Hawai'i
HELEN T. NAKAMURA

My Commission expires: 3.27.2002

CITY AND COUNTY OF HONOLULU)

the free act and deed of said University.

Notary Public, State of Hawaii

My commission expires:_____

PRELIM. APPR'D.
Department of the
Attorney General

4

DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

10003892

EXHIBIT “16”

COPY

OSDA ATTACHMENT A

SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT

BETWEEN

**THE SMITHSONIAN INSTITUTION
FOR ITS
SMITHSONIAN ASTROPHYSICAL OBSERVATORY**

AND

THE UNIVERSITY OF HAWAII

EXHIBIT "16"

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**G. Title to the Facilities, Alterations, Additions, and
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Termination or Expiration**

9

SUBLEASE EXHIBITS

Exhibit A - General Lease S-4191

Exhibit B - Consent to Sublease

Exhibit C - Demised Premises

Exhibit D - Description of Construction

SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT

This Sublease and accompanying non-exclusive Easement is made this 15th day of May, 1995 by and between the UNIVERSITY OF HAWAII, hereinafter called "Sublessor," and the SMITHSONIAN INSTITUTION for its SMITHSONIAN ASTROPHYSICAL OBSERVATORY, hereinafter called "Sublessee." This Sublease and Easement is approved pursuant to General Lease S-4191, dated June 21, 1968, between Sublessor and the State of Hawaii, Board of Land and Natural Resources, hereinafter called "Lessor." A copy of said General Lease S-4191 and "Consent to Sublease of General Lease S-4191," are attached hereto as Exhibits A and B, respectively, and are incorporated herein by reference.

WITNESSETH THAT:

Sublessor, in consideration of the rent hereinafter reserved and upon the conditions, covenants and agreements hereinafter expressed, does hereby demise and let to Sublessee the parcel of land described in Exhibit C, attached hereto and incorporated herein by reference, and Sublessee does hereby sublease from Sublessor said parcel for the purpose of erecting a telescope facility to be constructed and operated by and at the expense of Sublessee through a contractual arrangement set forth in a separate "Operating and Site Development Agreement Between the Smithsonian Institution for its Smithsonian Astrophysical Observatory and the University of Hawaii Concerning the Design, Construction and Operation of the Smithsonian Submillimeter Array Telescope on Mauna Kea, Hawaii" (hereinafter "OSDA").

Construction on the Demised Premises will include a control building, an antenna maintenance building, observing pads, antennas, related support facilities and infrastructure improvements, and related equipment and instrumentation required to support the operation of the Smithsonian Submillimeter Array Telescope (hereinafter "SMA"). Said improvements, together with additional improvements to be constructed outside the Demised Premises as described in I.C. below shall be referred to hereinafter as the "Facilities".

I. GENERAL

A. Location/Area

The location/area comprises a portion of that certain land area, described in General Lease S-4191 and its Exhibit A, and more specifically identified as parcels A and B in Exhibit C attached hereto.

B. Non-Exclusive Easement for Access

Sublessee shall have the right of access to and egress from the Demised Premises over and across the Mauna Kea Science Reserve, utilizing the common entrances and rights of way,

together with others entitled thereto under such rules and regulations as may be established by and amended from time to time by Sublessor.

C. Non-Exclusive Easement for Outlying Observing Pads

Sublessee shall have the right to install within the areas denoted C and D in Exhibit C, observing pads, travelways, underground communications and power lines, and other infrastructure improvements which are needed to support temporary location of antennas in these areas as part of SMA operations. The foregoing notwithstanding, Sublessor shall retain its right to use said areas C and D for other purposes, provided such use does not create a significant adverse impact on the operation of the SMA. Sublessee shall not interfere with or otherwise restrict traffic on those portions of said parcels C and D which are common access roads, as indicated in Exhibit C.

D. Survey/Specific Description

The areas designated A, B, C, and D in Exhibit C are subject to survey by Sublessee or by its designee within TWELVE (12) months from the date of this Sublease. The exact area covered by this Sublease shall be more specifically described and agreed to by Sublessor and Sublessee after the aforesaid survey has been completed, and is subject to approval by the County of Hawaii. Such description shall be binding upon Sublessor, Sublessee and the State of Hawaii.

E. Term of Sublease

The term of this Sublease shall be from the date first above written and shall expire on December 31, 2033, unless sooner terminated or extended, as respectively provided for in IV.F and II.B.

F. Rental Charge

Sublessee hereby covenants and agrees to pay rental for the Demised Premises at ONE DOLLAR (\$1.00) per year in legal tender of the United States of America for the duration of the Sublease. Said fee shall be paid to the University of Hawaii, Senior Vice President for Administration, 2444 Dole Street, Honolulu, Hawaii 96822, U.S.A.

G. Fire or Destruction of Facilities

If all three of the following events occur: (1) the Facilities are destroyed by fire or other causes rendering the same unsuitable for purposes of submillimeter astronomy, (2) Sublessee elects not to restore the Facilities, and (3) this Sublease is terminated as provided for in IV.F.6., Sublessee shall have such unsuitable damaged property or debris removed within ONE (1) year, after written notice to remove, and shall restore the property or any portion affected thereby to even grade. In the event Sublessee fails to remove such damaged property or debris and restore the land within ONE (1) year, such property may be removed and the land affected thereby restored to even grade by Sublessor at the expense of Sublessee.

If the Facilities or a portion thereof are restored, such restoration shall be subject to approval by Sublessor, and shall be in keeping with III.H. Such approval by the Sublessor will not be unreasonably withheld.

H. Controlling Lease

Sublessee shall observe and comply with all terms and conditions of General Lease S-4191.

In the event that any term or condition contained herein is inconsistent with or contrary to General Lease S-4191, said General Lease shall be controlling.

I. Operation of the Facilities

Neither Sublessee nor its successor or assigns shall operate or permit to be operated the aforementioned Facilities for purposes of research without an effective OSDA. The Facilities may be operated by Sublessee in the absence of the aforesaid OSDA only when necessary to ensure the safety of personnel or of the Facilities.

J. General Liability and Insurance

Sublessee shall, at all times, exercise 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 Sublessee, its officers, employees, agents, or invitees, on or in connection with the Demised Premises subject to Federal law, including, the Federal Tort Claims Act, as amended, and where not inconsistent therewith, to applicable laws of the State of Hawaii governing liability.

Additionally, Sublessee shall maintain Commercial General Liability Insurance for personal injury or death and property damage in a minimum amount of FIVE MILLION DOLLARS/U.S. (\$5,000,000/U.S.) per occurrence. Such insurance shall name Sublessor and the State of Hawaii as additional insureds. Sublessor shall retain the right at any time to review the coverage, form, and amount of the insurance required hereby. If, in the opinion of Sublessor, after discussion with Sublessee, the insurance provisions in this Sublease do not provide adequate protection for Sublessor, Sublessor may require Sublessee to obtain insurance sufficient in coverage, form, and amount to provide adequate protection. The requirements of Sublessor shall be reasonable but shall be designed to assure protection from and against the kind and extent of the risks which exist at the time a change in insurance is required. 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.

II. SUBLESSOR HEREBY COVENANTS WITH SUBLESSEE AS FOLLOWS:

A. Peaceful Enjoyment

Upon provision to Sublessor of the rights (in lieu of rent) provided in the aforesaid OSDA and upon observance and performance of all the terms, covenants and conditions contained herein, Sublessee shall peaceably hold and enjoy the Demised Premises during the term hereof without hindrance or interruption. Any proposed use of the Demised Premises by Sublessor or Lessor, their successors or assigns, as contemplated in, but not limited to, those paragraphs entitled "Hunting and Recreation Rights" and "Right to Use Demised Land" as set forth in General Lease S-4191, shall be subject to coordination with Lessor, Sublessor and Sublessee; such proposed use shall not interfere unreasonably with Sublessee's use of the Demised Premises.

B. Renewal

At least SIX (6) months prior to the expiration of the General Lease S-4191 on the 31st day of December 2033, Sublessor shall seek to negotiate a renewal of said General Lease with Lessor or its successor. In the event of renewal, Sublessor shall renew or extend this Sublease, or shall negotiate in good faith a new Sublease with Sublessee, if so desired by Sublessee, and under such terms and conditions as may then be mutually acceptable. Sublessor shall make every effort to ensure renewal, extension, or renegotiation of said General Lease.

C. Faithful Performance

Sublessor and Sublessee recognize that in reliance upon the faithful performance by Sublessor of its obligations hereunder and under the terms of the General Lease S-4191, Sublessee has agreed to make a substantial commitment of financial and human resources. In view of this reliance and commitment by Sublessee, Sublessor agrees to perform faithfully its obligations under General Lease S-4191 and this Sublease so that neither of these agreements is terminated earlier than its natural expiration date.

III. SUBLESSEE HEREBY COVENANTS WITH SUBLESSOR AS FOLLOWS:

A. Right of Entry

Sublessee shall allow Sublessor or its designee(s), known to Sublessee or carrying suitable identification, free access at all reasonable times to the Demised Premises for the purpose of examining the same and determining whether the covenants herein are being fully observed and performed.

B. Janitorial and Other Services

Sublessee shall provide for janitorial, custodial, and security services to the Demised Premises, including sewerage and sanitation facilities and services.

C. Repairs and Maintenance

At all times during the term of this Sublease, Sublessee shall, at Sublessee's own cost and expense, keep and maintain the Demised Premises and the Facilities in good order and repair and in a clean condition. This obligation shall include, but not be limited to, the obligation to paint the Facilities as appropriate and to make any modification or alteration thereof when necessary.

D. Utilities and Other Charges

Except as may be agreed in the aforesaid OSDA, Sublessee shall pay for or shall cause to be paid when due all charges associated with the Facilities and all charges, duties and rates of every description, including electricity, water, communications, sewer, gas, refuse collection or any other similar charges, as to which said Demised Premises and Non-Exclusive Easement for Outlying Observing Pads, or any part thereof, or any improvements thereon, or which Sublessor or Sublessee in respect thereof, may during said term become liable, whether assessed to or payable by Sublessor or Sublessee.

E. Taxes and Assessments

If, at any time in the future, government taxes or assessments are made, Sublessee shall pay or cause to be paid when due, the amount of all taxes, rates, assessments, and other outgoings of every description as to which said Demised Premises and Non-Exclusive Easement for Outlying Observing Pads or any part thereof, or any improvements thereon, or Sublessor or Sublessee in respect thereof, are now or may be assessed or become liable by authority of law during the term of this Sublease

F. Assignment and Subleasing

Neither Sublessee nor its successors or assigns shall, without the prior written consent of Lessor and Sublessor, assign, sublease or mortgage this Sublease or any interest therein, or sublet the Demised Premises, in whole or in part; provided, however, that such consent shall not be arbitrarily or capriciously withheld or delayed, and that this provision shall not operate to prevent Sublessee from making the Demised Premises available to invitees for the purposes permitted hereunder.

G. Use of Demised Premises

1. Sublessee shall use the Demised Premises and Non-Exclusive Easement for Outlying Observing Pads exclusively for the Facilities, which are to be constructed and operated

by and at the expense of Sublessee or others working in cooperation with Sublessee through the aforesaid OSDA and through any other agreements which may be agreed to by Sublessor and Sublessee.

2. All goods, wares, merchandise, equipment or other property of Sublessee shall be kept either on the Demised Premises or on the Non-Exclusive Easement for Outlying Observing Pads at the sole risk of Sublessee.

3. Sublessee shall not permit or make any waste or strip, or make any unlawful, improper or abusive use of the Demised Premises and Non-Exclusive Easement for Outlying Observing Pads or any part thereof, and Sublessee shall be liable to Sublessor for all damages beyond reasonable wear and tear. As used in this Sublease, the term "reasonable wear and tear" shall include without limitation such grading, excavation and filling of the Demised Premises and Non-Exclusive Easement for Outlying Observing Pads as may be reasonably required for the construction of the improvements contemplated by this Sublease. Such grading, excavation and filling shall not be deemed to constitute strip or waste. Sublessee shall make reasonable effort to minimize grading, excavation and filling.

H. Improvements and Alterations

Sublessee shall, at the Sublessee's sole cost and expense, construct the Facilities or cause them to be constructed on the Demised Premises and on the Non-Exclusive Easement for Outlying Observing Pads.

In the event that Sublessee desires to make a substantive structural alteration of or addition to the Facilities, which will significantly alter the external appearance or structure of the Facilities, Sublessee first must seek and obtain written approval of Sublessor prior to commencing work on such structural alteration or addition, which approval shall not be withheld unreasonably.

Sublessor shall use its best efforts to secure Lessor's consent and to provide its own approval or objection within SIXTY (60) days after receipt by Sublessor of any request for approval for such structural alteration or addition.

I. Laws, Rules and Regulations, etc.

Sublessee shall observe and comply with Title 13, Chapter 5, Hawaii Administrative Rules, Department of Land and Natural Resources, and with all other laws, ordinances, rules and regulations of the Federal, State, Municipal or County governments affecting the Demised Premises or the Facilities.

J. Covenant Against Contingent Fees

Sublessee warrants that no person or selling agency has been employed or retained to solicit or secure this Sublease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bonafide employees or bonafide established commercial or

selling agencies maintained by Sublessee for the purpose of securing business. For breach or violation of this warranty, Sublessor shall have the right to annul this Sublease without liability or, in its discretion, to recover the full amount of such commission, percentage, brokerage, or contingent fee.

IV. AND THE PARTIES MUTUALLY COVENANT AS FOLLOWS:

A. Service Of Process

Sublessee shall designate a representative within the State of Hawaii duly authorized to accept service of process on its behalf. In the event that Sublessee fails to so designate such a representative or such designated representative is unavailable, Sublessee consents that service of any notice or process issued against it may be served upon it by filing the same with the Director of Commerce and Consumer Affairs, State of Hawaii or, in his/her absence, with the Deputy Director. Sublessor shall forward by certified mail to Sublessee a copy of any such notice or process served on the Director of Commerce and Consumer Affairs.

B. Governing Law: Severability

The validity, construction and performance of this Sublease, and the legal relations among the parties to this Sublease shall be governed by and construed in accordance with the laws of the State of Hawaii, excluding the body of law applicable to choice of law. Should any provision of this Sublease be held by a court of competent jurisdiction to be either invalid, void, or unenforceable, the remaining provisions of this Sublease shall remain in full force and effect

C. Binding on Successors

This Sublease shall be binding on and inure to the benefit of the successors of the parties hereto.

D. Final Agreement

This Sublease constitutes the final agreement between Sublessor and Sublessee regarding the Sublease of the Demised Premises and the grant of Easement to Sublessee for purposes of Sublessee's construction of the Facilities. All prior discussions and/or agreements among the parties concerning the subject matter addressed in this Sublease shall have no force and effect.

E. Notices

All notices required or permitted to be given hereunder by Sublessor to Sublessee, or Sublessee to Sublessor, shall be in writing and sent to the following addresses:

If to Sublessor: University of Hawaii
Attn: Senior Vice President for Finance and Operations
2444 Dole Street
Honolulu, Hawaii 96822

If to Sublessee: Smithsonian Astrophysical Observatory
Attn: Manager, Contracts and Procurement
60 Garden Street
Cambridge, MA 02138

Each party (Sublessor or Sublessee) may change the address of the recipient of notices by sending a written notice of each such change to the last designated address of the other party.

F. Termination

This Sublease shall terminate upon the occurrence of any of the following events:

1. If the planned construction of the Facilities as described in Exhibit D is not substantially completed by the 31st of December 1999, unless otherwise agree to in writing between Sublessor and Sublessee.
2. Termination of the aforesaid OSDA unless a new OSDA between UH and another party or parties is executed and Lessor, Sublessor, and Sublessee agree in writing to a continuation of this Sublease.
3. The expiration of General Lease S-4191 on December 31, 2033 without renewal, extension or renegotiation. If said General Lease is renewed, extended or renegotiated, then this Sublease shall be renewed, extended or renegotiated at that time in accordance with II.B.
4. If Sublessee fails to observe or comply with any of the terms or conditions herein within SIXTY (60) days after being notified in writing by Sublessor of such failure. In the event that more than SIXTY (60) days are reasonably required to observe or perform, Sublessee shall in good faith and within said SIXTY (60) days, initiate action and provide a plan for observance or performance, and shall diligently prosecute the same to completion.
5. If Sublessee peaceably surrenders or abandons the Demised Premises.
6. Destruction of the Facilities by fire or other causes rendering the same unsuitable for purposes of submillimeter astronomy, unless Sublessee notifies Sublessor in writing within SIX (6) months of the date of casualty of its intention to restore the Facilities to their prior condition as specified in I.G.
7. By Sublessee upon SIX (6) months' notice in writing, in the event Sublessee's contemplated sources of funding become unavailable and, after diligent effort, Sublessee is unable to procure alternate sources of funding which, in Sublessee's good faith judgment, are adequate.

8. By Sublessee, if Sublessee gives Sublessor TWO (2) years' prior written notice
9. Mutual agreement in writing between Sublessor and Sublessee

G. Title to the Facilities, Alterations, Additions, and Improvements, and Disposition in Event of Termination or Expiration

1. Title to the Facilities, alterations, additions, and improvements (collectively referred to herein as "Property") on, affixed or installed in, or placed either on the Demised Premises or on the Non-Exclusive Easement for Outlying Observing Pads by Sublessee shall, at all times, remain in the name of Sublessee.

2. If this Sublease terminates or expires, and Sublessor has neither voluntarily terminated General Lease S-4191, nor defaulted on either this Sublease nor on General Lease S-4191, Sublessee shall be responsible for removal of the Property from the Demised Premises and Non-Exclusive Easement for Outlying Observing Pads within ONE (1) year of the termination or expiration of this Sublease, unless agreed to in writing between Sublessor and Sublessee. If Lessor and Sublessor grant written approval, which approval shall not be arbitrarily or capriciously withheld, said Property can be sold, abandoned, or surrendered in whole or in part and the following conditions shall apply:

a. Sale. Sublessee may sell the Property to Sublessor and/or to a third party acceptable to Sublessor. Such sale by Sublessee to a party other than Sublessor shall be contingent upon the execution of a new Sublease and Operating and Site Development Agreement between the new party and Sublessor.

b. Surrender. Sublessee may peaceably surrender all or part of the Property in place and good repair, order, and clean condition, reasonable wear and tear excepted.

3. Unless otherwise agreed in writing by Sublessor, the following conditions shall apply if all or part of the Property is removed under this Section IV.G:

a. Said removal will be at the expense of Sublessee;

b. Sublessee shall restore the Demised Premises and Non-Exclusive Easement for Outlying Observing Pads, or any portion affected thereby, to even grade to the extent that Property is removed, and shall repair any damage done to the Property not removed in the event that equipment is removed.

c. In the event that Sublessee fails to remove such Property or debris and restore the Demised Premises and Non-Exclusive Easement for Outlying Observing Pads within TWELVE (12) months, such Property may be removed and the land restored as described above by Sublessor at the expense of Sublessee.

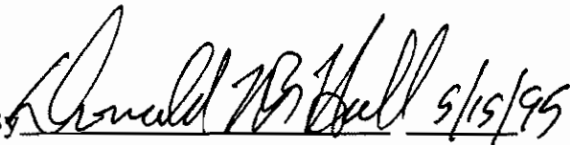
4. If this Sublease terminates or expires, and Sublessor has either voluntarily surrendered General Lease S-4191, or defaulted on either this Sublease or General Lease S-4191, and if Sublessee is allowed its continued right to quiet enjoyment of the Property and the Demised Premises under the terms of the Consent to Sublease as stated in Exhibit B, then Sublessee agrees to honor the terms of this Sublease.

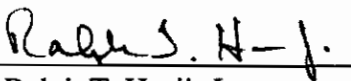
If said surrender or default results in Sublessor's rights of General Lease S-4191 being: (a) returned to Lessor, then Sublessee agrees to negotiate in good faith a new Operating Agreement with Lessor on the terms and conditions of Sublessee's continued use of the Demised Premises; or (b) transferred to an organization other than Sublessor, then Sublessee agrees to negotiate in good faith a new Operating Agreement with the new sublessor of the Demised Premises, and to honor the terms and conditions of said superseding Operating Agreement with said new sublessor. Continued right to quiet enjoyment of the Property and the Demised Premises is contingent upon satisfactory negotiation of an Operating Agreement with Lessor or said new sublessor, the terms of which shall be substantially equivalent to those of the OSDA.

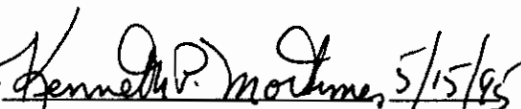
IN WITNESS WHEREOF, the parties hereto have executed these presents the day and year first written above.

SUBLESSOR:

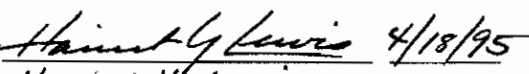
FOR THE UNIVERSITY OF HAWAII:

By  5/15/95
Donald N. B. Hall Date
Director, Institute
for Astronomy

By  5/15/95
Ralph T. Horii, Jr. Date
Senior Vice President for
Administration

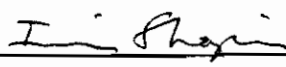
By  5/15/95
Kenneth P. Mortimer Date
President

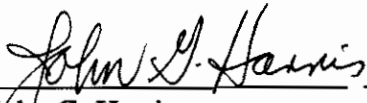
Approved as to form:

By  4/18/95
Harriet Y. Lewis Date
Deputy Attorney General
State of Hawaii

SUBLEESSEE:

FOR THE SMITHSONIAN INSTITUTION:

By  4/28/95
Irwin Shapiro Date
Director, Smithsonian
Astrophysical Observatory

By  4/28/95
John G. Harris Date
Contracting Officer,
Smithsonian Astrophysical
Observatory

STATE OF HAWAII

CITY AND COUNTY OF HONOLULU

)
) ss.
)

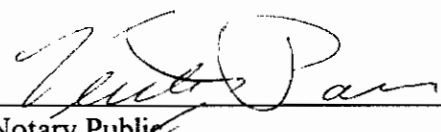
On this 15th day of May, 1995, before me appeared
Donald N. B. Hall, Ralph T. Horii, Jr. and
Kenneth P. Mortimer, personally known to me, who, being by me duly sworn, did
say that they are Director, Institute for Astronomy, Sr VP for Administration and
President, respectively, of the University of Hawaii, a public body
corporate; that the seal affixed to the foregoing instrument is the corporate seal of said
corporation; that said instrument was signed and sealed on behalf of said corporation by the
authority of its Board of Regents; and said Donald N. B. Hall,
Ralph T. Horii, Jr. and Kenneth P. Mortimer acknowledged the
instrument to be the free act and deed of said corporation.

Helen T. Nakamura
Notary Public, First Circuit
State of Hawaii

My commission expires: 3/27/98

COMMONWEALTH OF MASSACHUSETTS)
) ss.
COUNTY OF MIDDLESEX)

On this 28th day of April, 1995, before me appeared
Irwin Shapiro, _____ and
John G. Harris, personally known to me, who, being by me duly sworn, did
say that they are Director, _____ and
Contracting Officer, respectively, of the Smithsonian Astrophysical Observatory; a
Bureau of the Smithsonian Institution, a Trust Instrumentality of the United States; that said
instrument was signed and sealed by the authority of its Secretary and Board of Regents; and said
Irwin Shapiro, _____, and John G. Harris
acknowledged the instrument to be the free act and deed of said corporation.



Notary Public,
Commonwealth of Massachusetts

My commission expires: March 7, 1997

Exhibit A to OSDA Attachment A
GENERAL LEASE NO. S-4191

THIS INDENTURE OF LEASE, made this 21st day of June, 1968, by and between the STATE OF HAWAII, by its Board of Land and Natural Resources, pursuant to the provisions of Section 103A-90(b), Revised Laws of Hawaii 1955, as amended, hereinafter referred to as the "LESSOR", and the UNIVERSITY OF HAWAII, a body corporate, whose post office address is 2444 Dole Street, Honolulu, City and County of Honolulu, State of Hawaii, hereinafter referred to as the "LESSEE",

WITNESSETH THAT:

FOR and in consideration of the mutual promises and agreements contained herein, the Lessor does hereby demise and lease unto the said Lessee and the said Lessee does hereby rent and lease from the Lessor, all of that certain parcel of land situate at Ka'aohe, Hamakua, County and Island of Hawaii, State of Hawaii, and more particularly described in Exhibit "A", hereto attached and made a part hereof.

TO HAVE AND TO HOLD, all and singular the said premises, herein mentioned and described, unto the said Lessee, for and during the term of sixty-five (65) years, to commence from the 1st day of January, 1968, and to terminate on the 31st day of December, 2033.

RESERVING UNTO THE LESSOR THE FOLLOWING:

1. Water Rights. All surface and ground waters appurtenant to the demised premises, together with the right to enter and to capture, divert or impound water; provided, that the Lessor shall exercise such rights in such manner as not to interfere unreasonably with the Lessee's use of the demised premises; provided, further, that the Lessee shall have the right to use the waters of Lake Waiau for any purpose necessary or incidental to the use permitted by this lease on the following conditions:

a. No drilling or disturbance of Lake Waiau's bottom, banks or areas adjacent thereto shall be permitted;

b. No activity shall be permitted which will result in the pollution of the waters of Lake Waiau;

c. Lessee shall not take or divert any of the waters arising from springs which furnish the water supply for Pohakuloa, and no alterations to said springs shall be made by Lessee.

2. Access. All rights to cross the demised premises for inspection or for any government purposes.

3. Hunting and Recreation Rights. All hunting and recreation rights on the demised lands, to be implemented pursuant to rules and regulations issued by said Board in discharging its fish and game or state parks responsibilities; provided, however, that such hunting and recreation activities shall be coordinated with the activities of the Lessee on the demised lands; and provided, further, that such hunting and recreation activities shall be limited to day-light hours only.

4. Right to use Demised Lands. The right for itself, and its successors, lessees, grantees and permittees, to use any portion of the lands demised and the right to grant to others rights and privileges affecting said land; provided, however, that, except as otherwise provided herein, no such use shall be permitted or rights and privileges granted affecting said lands, except upon mutual determination by the parties hereto that such use or grant will not unreasonably interfere with the Lessee's use of the demised premises; provided, further, that such agreement shall not be arbitrarily or capriciously withheld.

THE LESSEE, IN CONSIDERATION OF THE PREMISES, COVENANTS WITH THE LESSOR AS FOLLOWS:

1. Surrender. The Lessee shall, at the expiration or sooner termination of this lease, peaceably and quietly surrender and deliver possession of the demised premises to the Lessor in good order and condition, reasonable wear and tear excepted.

2. Maintenance of the Premises. The Lessee shall keep the demised premises and improvements in a clean, sanitary and orderly condition.

3. Waste. The Lessee shall not make, permit or suffer, any waste, strip, spoil, nuisance or unlawful, improper or offensive use of the demised premises.

4. Specified Use. The land hereby leased shall be used by the Lessee as a scientific complex, including without limitation thereof an observatory, and as a scientific reserve being more specifically a buffer zone to prevent the intrusion of activities inimical to said scientific complex.

Activities inimical to said scientific complex shall include light and dust interference to observatory operation

Rev 11
~~during hours of darkness~~ and certain types of electric or electronic installation on the demised lands, but shall not necessarily be limited to the foregoing.

5. Assignments. The Lessee shall not sublease, sub-rent, assign or transfer this lease or any rights thereunder without the prior written approval of the Board of Land and Natural Resources.

6. Improvements. The Lessee shall have the right during the existence of this lease to construct and erect buildings, structures and other improvements upon the demised premises; provided, that plans for construction and plot plans of improvements shall be submitted to the Chairman of the Board of Land and Natural Resources for review and approval prior to commencement of construction. The improvements shall be and remain the property of the Lessee, and shall be removed or disposed of by the Lessee at the expiration or sooner termination of this lease; provided, that with the approval of the Chairman such improvements may be abandoned in place. The Lessee shall, during the term of this lease, properly maintain, repair and keep all improvements in good condition.

7. Termination by the Lessee. The Lessee may terminate this lease at any time by giving thirty (30) days' notice in writing to the Lessor.

8. Termination by the Lessor. In the event that (1) the Lessee fails to comply with any of the terms and conditions of this lease, or (2) the lessee abandons or fails to use the demised lands for the use specified under paragraph 4 of these covenants for a period of two years, the Lessor may terminate this lease by giving six months' notice in writing to the Lessee.

9. Non-Discrimination. The Lessee covenants that the use and enjoyment of the premises shall not be in support of any

policy which discriminates against anyone based upon race, creed, color or national origin.

10. General Liability. The Lessee shall at all times, with respect to the demised premises, use due care for safety, and the Lessee shall 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 the Lessee on or in connection with the demised premises, subject to the laws of the State of Hawaii governing such liability.

11. Laws, Rules and Regulations, etc. The Lessee shall observe and comply with Regulation 4 of the Department of Land and Natural Resources and with all other laws, ordinances, rules and regulations of the federal, state, municipal or county governments affecting the demised lands or improvements.

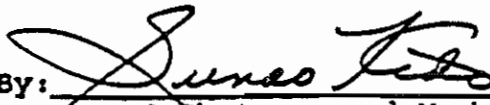
12. Objects of Antiquity. The Lessee shall not appropriate, damage, remove, excavate, disfigure, deface or destroy any object of antiquity, prehistoric ruin or monument of historical value.

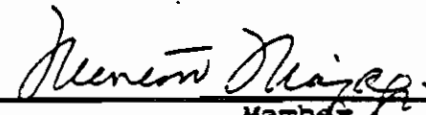
13. Undesirable Plants. In order to prevent the introduction of undesirable plant species in the area, the Lessee shall not plant any trees, shrubs, flowers or other plants in the leased area except those approved for such planting by the Chairman.

IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 21st

day of June, 1968, and the UNIVERSITY OF
HAWAII, by its Acting President and VP for Business Affairs
has caused these presents to be duly executed this 17th
day of June, 1968, effective as of the day and
year first above written.


STATE OF HAWAII

By: 
Chairman and Member
Board of Land and
Natural Resources

And By: 
Member
Board of Land and
Natural Resources

UNIVERSITY OF HAWAII

By: 
Its ACTING President

And By: 
Its

APPROVED AS TO FORM:

Deputy Attorney General
Dated: 5-8-68

REB

Proofed by: 1

EXHIBIT "A"

MAUNA KEA SCIENCE RESERVE

Kaohē, Hamakua, Island of Hawaii, Hawaii

Being a portion of the Government Land of Kaohē

Beginning at a point on the south boundary of this parcel of land, the coordinates of said point of beginning referred to Government Survey Triangulation Station "SUMMIT 1955" being 12,325.95 feet South and 471.84 feet West, as shown on Government Survey Registered Map 2789, thence running by azimuths measured clockwise from True South:-

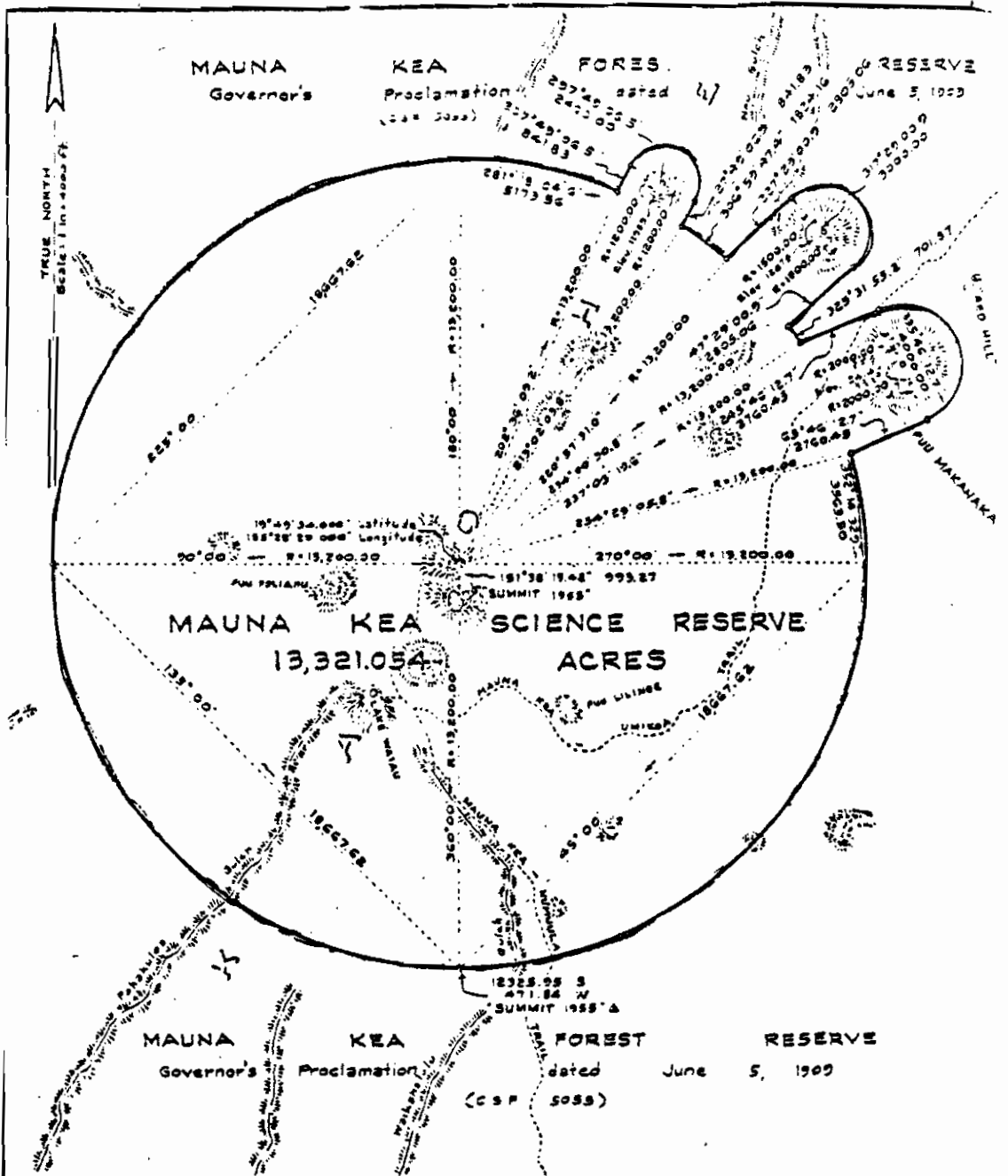
1. Along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 135° 00' 18,667.62 feet;
2. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 225° 00' 18,667.62 feet;
3. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 281° 18' 04.6" 5173.56 feet;
4. 207° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
5. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1200.00 feet, the chord azimuth and distance being: 297° 49' 06.5" 2400.00 feet;

6. 27° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
7. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 306° 59' 47.4" 1824.16 feet;
8. 227° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
9. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1500.00 feet, the chord azimuth and distance being: 317° 29' 00.9" 3000.00 feet;
10. 47° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
11. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13200.00 feet, the chord azimuth and distance being: 325° 31' 55.2" 701.87 feet;
12. 245° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
13. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 2000.00 feet, the chord azimuth and distance being: 335° 46' 12.7" 4000.00 feet;
14. 65° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
15. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 352° 14' 32.9" 3563.50 feet;

16. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 45' 00' 18,667.62 feet to the point of beginning and containing an AREA OF 13,321.054 ACRES.

EXCEPTING and RESERVING to the State of Hawaii and to all others entitled thereto, the Mauna Kea-Humuula and Mauna Kea-Umikoia Trails, and all other existing trails within the above-described parcel of land, together with rights of access over and across said trails.

ALSO, EXCEPTING and RESERVING to the State of Hawaii, its successors and assigns, the waters and all riparian and other rights in and to all the streams within the above-described parcel of land.



MAUNA KEA SCIENCE RESERVE

Kahe, Hamakua, Island of Hawaii, Hawaii

Scale: 1 inch = 4000 feet

JOB 4-3878

C. BK 1511-1512, 1513, 1514

TAX MAP 4-4-15

SURVEY DIVISION
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
STATE OF HAWAII

C. S. P. 1511-1512, 1513, 1514

1511-1512, 1513, 1514

Exhibit B to OSDA Attachment A

**SUBLEASE AND NON EXCLUSIVE EASEMENT AGREEMENT
BETWEEN
THE SMITHSONIAN INSTITUTION
FOR ITS
SMITHSONIAN ASTROPHYSICAL OBSERVATORY
AND
THE UNIVERSITY OF HAWAII**

**CONSENT TO SUBLEASE OF
GENERAL LEASE NO. S-4191**

CONSENT is hereby given by the **STATE OF HAWAII**, by its Board of Land and Natural Resources, **LESSOR** under General Lease No. S-4191, dated June 21, 1968, to the attached **SUBLEASE** of General No. S-4191, dated _____, by and between the **UNIVERSITY OF HAWAII**, as **SUBLESSOR**, and the **SMITHSONIAN INSTITUTION FOR ITS SMITHSONIAN ASTROPHYSICAL OBSERVATORY**, as **SUBLESSEE**;

PROVIDED HOWEVER, that this consent shall not in any manner be construed as varying in any respect the terms and conditions of said General Lease No. S-4191; and **PROVIDED FURTHER**, that no further assignment or sublease of any interest under said General Lease No. S-4191 shall be made without the written consent of the Board of Land and Natural Resources, State of Hawaii, being first obtained and endorsed therein.

IT IS UNDERSTOOD that should there be any conflict between the terms and conditions of said General Lease No. S-4191, dated June 21, 1968, and the terms and conditions of the attached **SUBLEASE** dated _____, the former shall control.

IT IS FURTHER UNDERSTOOD AND AGREED by the **STATE OF HAWAII**, by its Board of Land and Natural Resources, that in the event said General Lease No. S-4191 is surrendered or defaulted upon by **LESSEE, UNIVERSITY OF HAWAII**, prior to the expiration of the term thereof, the attached **SUBLEASE** dated _____, shall remain in full force and effect for the remainder of the term thereof, and **SUBLESSEE, THE SMITHSONIAN INSTITUTION FOR ITS SMITHSONIAN ASTROPHYSICAL OBSERVATORY**, shall be allowed its continued right to quiet enjoyment of the Demised Premises, upon and subject to the terms, conditions and covenants of General Lease No. S-4191, including, but not limited to, the payment of all lease rentals, taxes, rates, assessments, duties,

Exhibit B to OSDA Attachment A
CONSENT TO SUBLEASE OF GENERAL LEASE NO. S-4191- page 2

charges and other outgoings of every description as to which the premises under said
SUBLEASE or any improvements thereon, now or may be assessed or become liable by authority
of law during the remainder of the term of said **SUBLEASE**.

IN WITNESS WHEREOF, the STATE OF HAWAII by its Board of Land and
Natural Resources has caused the seal of the Department of Land and Natural Resources to be
hereunto affixed and these presents to be duly executed this _____ day of
_____, 19__.

STATE OF HAWAII

By _____
Chairman and Member
Board of Land and Natural Resources

And By _____
Member
Board of Land and Natural Resources

Approved by the Board of Land and Resources
at its meeting held on _____

APPROVED AS TO FORM:

Deputy Attorney General
State of Hawaii

Date _____

LEGEND



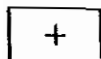
DEMISED PREMISES
SUBJECT TO SURVEY



NON-EXCLUSIVE EASEMENT
FOR OUTLYING OBSERVING PADS
SUBJECT TO SURVEY



COMMON ACCESS ROADS



HAWAII STATE PLANE COORDINATES

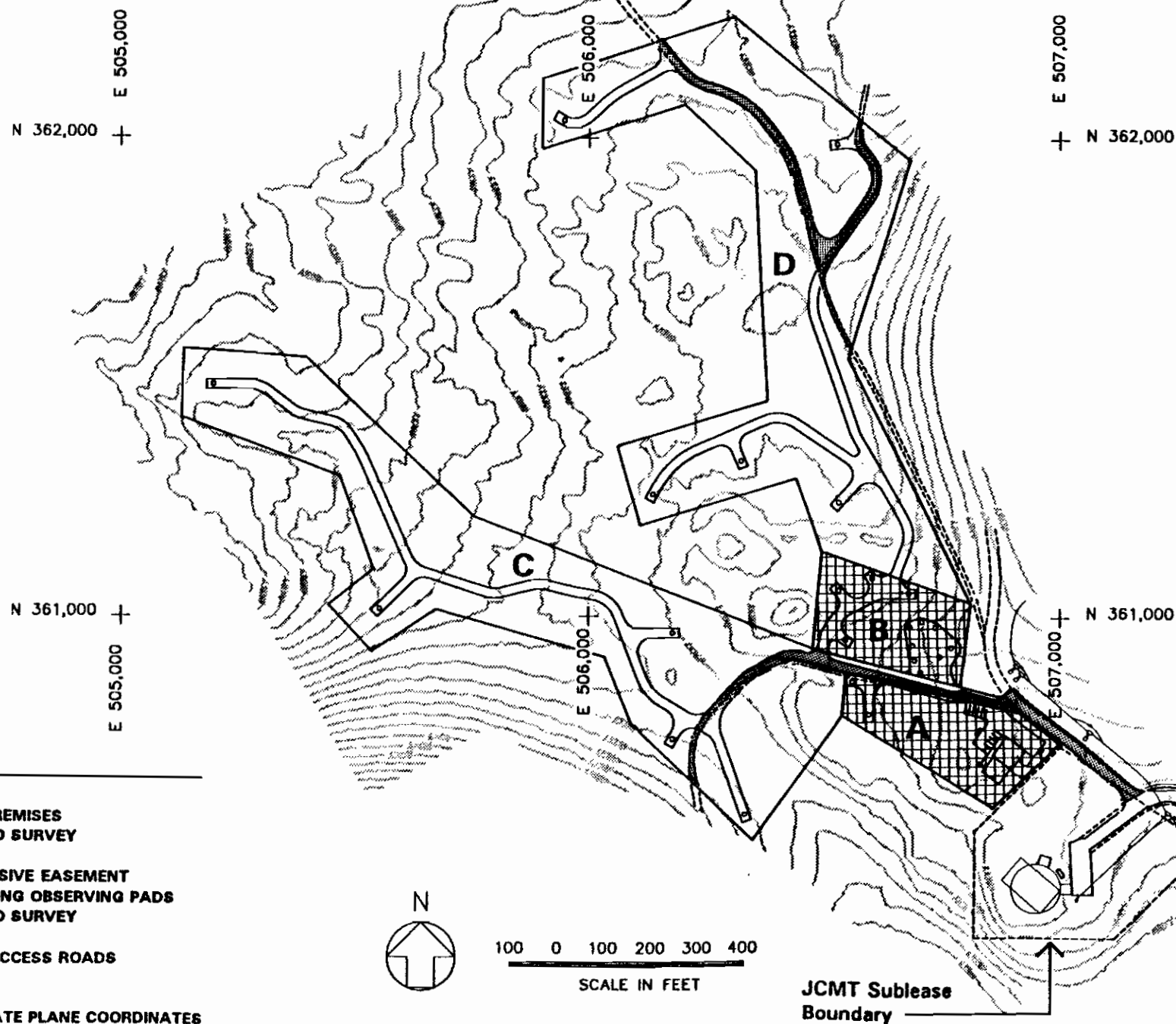


Exhibit D to OSDA Attachment A

SUBLEASE AND NON-EXCLUSIVE AGREEMENT BETWEEN THE SMITHSONIAN INSTITUTION FOR ITS SMITHSONIAN ASTROPHYSICAL OBSERVATORY AND THE UNIVERSITY OF HAWAII DESCRIPTION OF THE CONSTRUCTION

THE FACILITIES

The major components of the Facilities are: six 6-meter diameter parabolic antennas placed in predetermined configurations on six (out of a total of not more than 24) 3-meter diameter concrete observing pads (two more antennas may be added); a two-story, 370 square meter Control Building, connected to a 230 square meter Antenna Maintenance Building; a 50 square meter auxiliary power generator building; and related infrastructure improvements.

SITE WORK

The site work consists of the following: a maximum of 24 concrete observing pads; about 1800 meters of service roads which will be graded and excavated to provide a 6-meter wide unpaved travelway to the observing pads (an additional 1-meter width will be excavated along the travelway to bury power cables and signal and communications conduits); paved parking for ten vehicles; and water storage, sewage disposal, and fuel storage facilities. Approximately 5 acres of the site will be graded and leveled.

TELESCOPE

Using aperture synthesis, the telescope is an interferometer composed of up to eight 6-meter antennas, each of which is a part of an array where signals will be electronically combined and analyzed to achieve the resolution of a larger diameter antenna.

CONTROL BUILDING

The Control Building will house, on the first floor, an electronics laboratory and shop, receiver assembly laboratory, correlator rooms, an office, and toilet facilities; and on the second floor, a control room, offices, and a small kitchen area. The building will be neutral-colored, modular in construction, and will be immediately adjacent to the Antenna Maintenance Building.

ANTENNA MAINTENANCE BUILDING

The Antenna Maintenance building will be a one-story, high-bay pre-engineered steel building with roll-up door. It will contain a 30-tonne double girder, top-running interior crane that will cover the full area of the building. The crane will facilitate assembly and repair of the antennas at the summit site.

SCHEDULE

Site work will begin in the summer of 1995. Site preparation and construction of the two buildings will be substantially completed by the summer of 1996, when work on inner service roads and the first 11 observing pads will begin. Delivery of the antennas and on-site assembly will commence in the fall of 1996. After testing and commissioning of the antennas, final acceptance of the Facilities will occur in late 1997.

EXHIBIT “17”

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CONSENT TO SUBLEASE OF GENERAL LEASE NO. S-4191

CONSENT is hereby given by the STATE OF HAWAII, by its Board of Land and Natural Resources, Lessor under unrecorded General Lease No. S-4191 dated June 21, 1968 leased to the University of Hawaii, a body corporate, as Lessee, to the attached Sublease and Non-Exclusive Easement Agreement ("Sublease") dated May 15, 1995 from the UNIVERSITY OF HAWAII, a body corporate, as "Sublessor," to the SMITHSONIAN INSTITUTION for its SMITHSONIAN ASTROPHYSICAL OBSERVATORY, a Trust Instrumentality of the United States, whose address is 60 Garden Street, Cambridge, Massachusetts 02138, recorded in the Bureau of Conveyances of the State of Hawaii as Document No. _____, as "Sublessee"; SUBJECT, HOWEVER, to the provisions of Section 171-21, Hawaii Revised Statutes, as amended, relating to the rights of holder of security interests, PROVIDED, FURTHER, that nothing contained herein shall change, modify, waive or amend the provisions, terms, conditions and covenants or the

PRELIM. APPR'D.
Department of the
Attorney General

DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

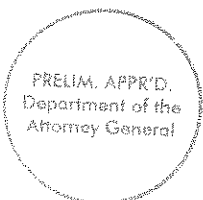
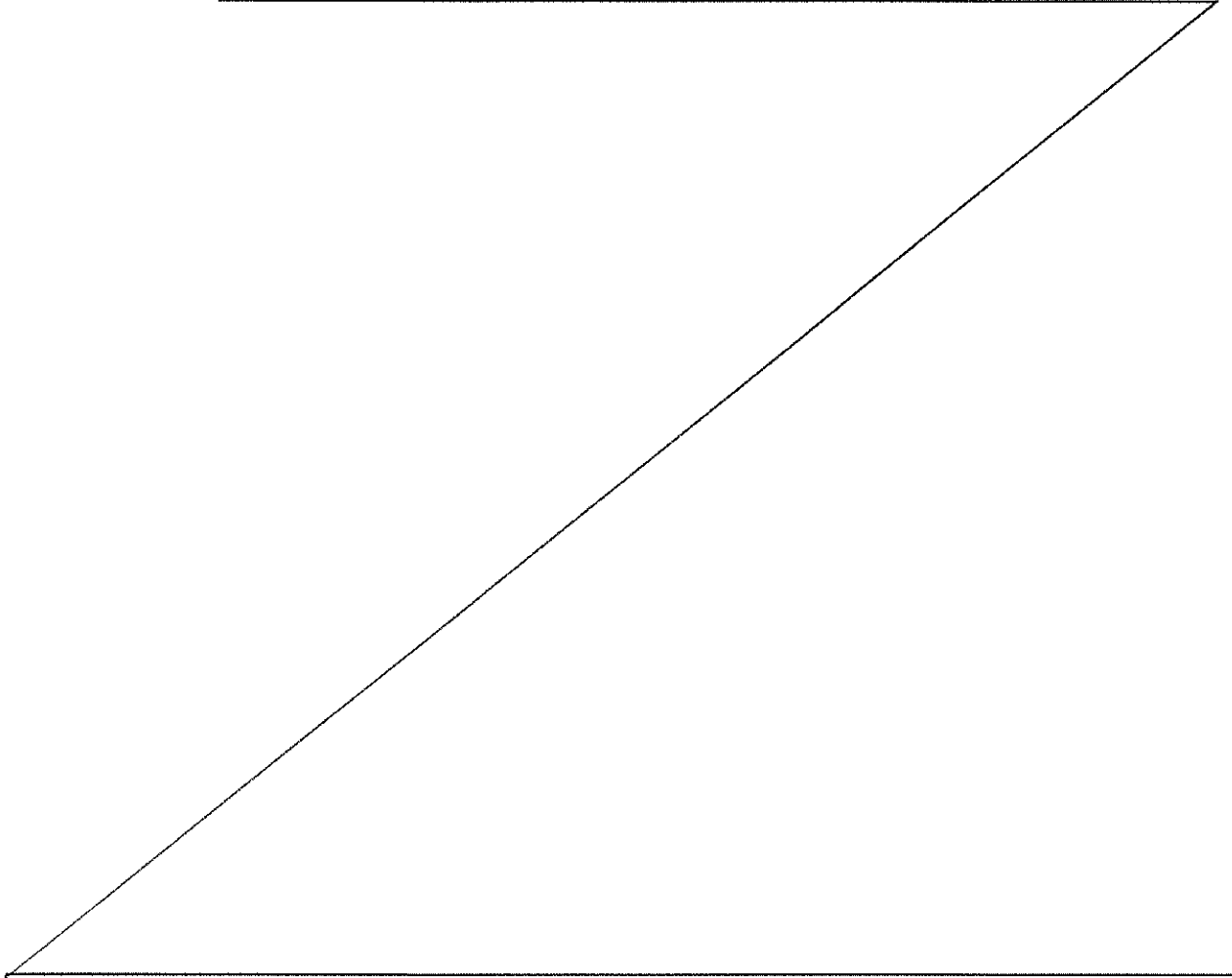
EXHIBIT "17"

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duties and obligations of the Lessee or Sublessee under General Lease No. S-4191.

IT IS UNDERSTOOD that except as provided herein, should there be any conflict between the terms of General Lease No. S-4191 and the terms of the Sublease, the former shall control; and that no further sublease or assignment of any interest of the premises or any portion thereof shall be made without the prior written consent of the Board of Land and Natural Resources.

FURTHERMORE, Lessee hereby acknowledges that the Lessor's consent to sublease under General Lease No. S-4191, does not release the Lessee of any and all responsibilities, obligations, liabilities, and claims respecting or arising under or out of said General Lease prior to the effective date of this sublease.



IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 20th day of July, 1999.

STATE OF HAWAII

Approved by the Board of Land and Natural Resources at its meeting held on August 21, 1997.

By [Signature]
Chairperson and Member
Board of Land and
Natural Resources

LESSOR

UNIVERSITY OF HAWAII, a body corporate

By [Signature]
Eugene S. Imai
Its Senior Vice President for
Administration

By _____
Its _____

APPROVED AS TO FORM:

[Signature]
Deputy Attorney General
Dated: 7/13/99

By [Signature]
Kenneth P. Mortimer
Its President, University of Hawaii and
Chancellor, University of Hawaii at
Manoa
LESSEE

2692(6)
gls-4191conssublse\tnk(3)4-4-15:09kaohu\smithsonian.dc

STATE OF HAWAII)
) SS.
CITY AND COUNTY OF HONOLULU)

On this 19th day of April, 1999,
before me appeared KENNETH P. MORTIMER and EUGENE S. IMAI, to me personally
known, who, being by me duly sworn, did say that they are the
President, University of Hawai'i and Chancellor, University of
Hawai'i at Mānoa and Senior Vice President for
Administration, respectively, of the UNIVERSITY OF HAWAI'I, a
body corporate, and that seal affixed to the foregoing instrument
is the corporate seal of said University and that the foregoing
instrument was signed and sealed in behalf of said University by
authority of its Board of Regents, and the said KENNETH P.
MORTIMER and EUGENE S. IMAI acknowledged said instrument to
be the free act and deed of said University.

Helen T. Nakamura
Notary Public, State of Hawai'i
HELEN T. NAKAMURA

My Commission expires: 3-27-2000

STATE OF HAWAII)
) SS.
CITY AND COUNTY OF HONOLULU)

On this _____ day of _____, 19_____,
before me appeared _____ and
_____, to me personally
known, who, being by me duly sworn, did say that they are the
_____ and _____, respectively,
of the UNIVERSITY OF HAWAII, a body corporate, and that seal
affixed to the foregoing instrument is the corporate seal of said
University and that the foregoing instrument was signed and
sealed in behalf of said University by authority of its Board of
Regents and the said _____
and _____ acknowledged said instrument to be
the free act and deed of said University.

Notary Public, State of Hawaii

My commission expires:_____

EXHIBIT “18”

**SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT
BETWEEN
TMT INTERNATIONAL OBSERVATORY LLC
AND
THE UNIVERSITY OF HAWAII**

THIS SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT (this "Sublease") is made and entered into on this 28 day of July, 2014, effective as of July 28, 2014 (the "Effective Date"), by and between TMT International Observatory LLC, a Delaware limited liability company ("Sublessee"), and the University of Hawaii, a public body corporate and the public university of the State of Hawaii ("Sublessor").

RECITALS

This Sublease is entered into with reference to the following:

A. Sublessor leases certain lands located on and around the summit of Mauna Kea, Island of Hawaii from the State of Hawaii, Board of Land and Natural Resources ("Lessor") pursuant to General Lease No. S-4191, dated June 21, 1968 (the "Master Lease"), a copy of which is attached hereto as **Exhibit A** and incorporated herein by reference.

B. Sublessee desires to sublease a portion of said lands, as more fully described below, for the purpose of constructing and operating an optical/infrared telescope facility known as the Thirty Meter Telescope ("TMT") in the manner described in, and accordance with, this Sublease and that certain Scientific Cooperation Agreement Between Sublessee and Sublessor Concerning the Design, Construction and Operation of the Thirty Meter Telescope on Mauna Kea, Hawaii (the "Scientific Cooperation Agreement") executed simultaneously herewith and to be effective on the same Effective Date indicated above. The TMT facilities will include, but are not limited to, the TMT 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 Subleased Premises (as defined in Section 1 below) ("TMT Facilities"). "TMT Facilities" does not include any facilities outside the Subleased Premises.

C. The Master Lease provides that Sublessor may not enter into a sublease without the prior written consent of the Lessor. Prior written consent to this Sublease has been obtained pursuant to that certain Consent to Sublease Under General Lease No. S-4191 dated _____, 2014, a copy of which is attached hereto as **Exhibit B** and incorporated herein by reference.

D. In 2000, Sublessor adopted the Mauna Kea Science Reserve Master Plan, which establishes the management structures for Sublessor's stewardship of the areas it

manages on Mauna Kea. In 2009 and 2010, Sublessor adopted, and Lessor approved, the Mauna Kea Comprehensive Management Plan ("CMP") and its subplans: the Cultural Resources Plan, Natural Resources Management Plan, Public Access Plan, and Decommissioning Plan. These plans commit Sublessor to exercise responsible stewardship of Mauna Kea and to ensure that astronomical activities are conducted in a manner that respects the cultural significance of Mauna Kea, protects the environment, and is responsive to the needs and concerns of Native Hawaiians and the public.

E. In May 2010, Sublessor completed an Environmental Impact Statement for the TMT. In September 2010, Sublessor filed an Application for a Conservation District Use Permit to construct the TMT. The permit was approved in April 2013. Sublessee is now seeking a long term sublease to build and operate the TMT.

F. Sublessor has submitted a request to the Lessor for the mutual cancellation of the current Master Lease and issuance of a new master lease for a term of sixty-five (65) years from issuance. Sublessee desires to continue operation of the TMT Facilities beyond 2033. It is desirable for management and planning purposes, including appropriate stewardship of Mauna Kea, to address the potential continued operation of the TMT Facilities beyond 2033 in this Sublease.

AGREEMENT

Now, therefore, in consideration of the foregoing and of the mutual promises and agreements set forth herein, Sublessor and Sublessee agree as follows:

1. Subleased Premises. Sublessor does hereby sublease to Sublessee, and Sublessee does hereby sublease from Sublessor, the parcel of land shown and described in Exhibits C-1 and C-2 attached hereto and incorporated herein by reference (the "Subleased Premises"), constituting a portion of the land leased by Sublessor under the Master Lease.

2. Non-Exclusive Easements. Sublessee shall have the right of access to and egress from the Subleased Premises over and across the Mauna Kea Science Reserve, utilizing the common entrances and rights of way, together with others entitled thereto, under such rules and regulations as may be established by and amended from time to time by Sublessor. Sublessee shall also have the rights to (i) utilize and construct in, grade, fill, and perform work approved by Lessor and Sublessor in the easement area shown and described in Exhibits C-1 and C-3 attached hereto and incorporated herein by reference (the "Easement Area"), (ii) utilize and construct in and perform work approved by Lessor and Sublessor and consistent with the TMT Access Way Agreement dated September 13, 2012, by and among Sublessor, the Smithsonian Institution Astrophysical Observatory, and the TMT Observatory Corporation, in the spur road from the Mauna Kea Observatory Access Road to the Subleased Premises, (iii) install and utilize power and communications conduits and lines from a central handhole or handholes in the Mauna Kea summit area to the Subleased Premises, and (iv) utilize and access the Batch Plant staging area as authorized by the TMT CDUP (as defined in Section 4 below).

3. Survey/Site Specific Description. The site shown in Exhibit C-1 hereto has been surveyed. The area covered by the Subleased Premises is specifically described in the metes and bounds description in Exhibit C-2 hereto. The area covered by the Easement Area is specifically described in the metes and bounds description in Exhibit C-3 hereto.

4. Use of Subleased Premises. Sublessee shall use the Subleased Premises solely to construct and operate the TMT Facilities in accordance with this Sublease and the Scientific Cooperation Agreement. The construction and operation of the Subleased Premises shall be conducted in strict compliance with the terms and conditions of Conservation District Use Permit HA-3568 approved by the Lessor on April 12, 2013 (the "TMT CDUP"), including performance of all mitigation conditions set forth therein, and any amended or subsequent Conservation District Use Permit. Sublessee shall not at any time during the term of this Sublease construct, place, maintain, or install on the Subleased Premises any other building, structure, or improvement without the prior written approval of Sublessor and Lessor and upon such conditions as Sublessor or Lessor may impose. For purposes of the foregoing sentence, any other "improvement" means improvements that are not specified in or contemplated by the TMT CDUP and not contained within the building envelop of TMT observatory plans approved in accordance with Section 37 below. For the avoidance of doubt, the addition of any instruments, equipment or any other additions that are fully contained within the observatory structure or buildings shall not require the prior written approval of Sublessor or Lessor, provided that such additions are otherwise in compliance with the terms of this Sublease and the Master Lease.

5. Management and Stewardship Obligations. This Sublease shall be subject to the following:

a. The Subleased Premises are within the State Land Use Conservation District and all uses shall comply with the applicable rules and regulations of the State Conservation District, including but not limited to Hawaii Revised Statutes ("HRS") Chapter 183C and Hawaii Administrative Rules ("HAR") Chapter 13-5.

b. Sublessee shall comply with applicable State rules and regulations related to historic preservation including but not limited to HRS Chapter 6E, and HAR Chapters 13-197, 13-198, 13-275 through 13-284 and 13-300, and any applicable amendments of or supplements to such historic preservation regulations.

c. Sublessor shall exercise management jurisdiction over the Subleased Premises pursuant to management plans approved by the Lessor, including the CMP and its subplans, the Natural Resources Management Plan, Cultural Resources Management Plan, Decommissioning Plan, and Public Access Plan, the TMT Management Plan, and any amendments of or supplements to management plans approved by the Lessor for lands that include the Subleased Premises. Sublessee acknowledges that it has reviewed and is familiar with the CMP and subplans. Sublessor shall keep Sublessee informed regarding any future amendments or supplements thereto, and shall promptly provide copies of such documents to Sublessee.

d. All public and commercial activities in the areas of Mauna Kea managed by Sublessor, including recreational activities, shall be governed by administrative rules promulgated pursuant to the authority granted Sublessor by Act 132 (SLH 2009), following consultation with DLNR, the Office of Hawaiian Affairs, and the public in accordance therewith.

e. The Constitution of the State of Hawaii mandates the protection of recognized customary and traditional native Hawaiian rights subject to State regulation. This Sublease shall be subject to the right of Native Hawaiians to exercise protected traditional and customary practices as provided in the CMP and consistent with the laws of the State of Hawaii.

f. Sublessor has established a management structure to manage the lands of which the Subleased Premises are a part, which structure includes the Office of Mauna Kea Management at the University of Hawaii at Hilo, the volunteer community-based Mauna Kea Management Board and the Kahu Kū Mauna advisory council on Hawaiian cultural matters.

6. Operation of the TMT Facilities. Neither Sublessee nor any successor or assign shall operate the TMT Facilities for purposes of research without a valid and effective Scientific Cooperation Agreement with Sublessor. The TMT Facilities may be operated in the absence of a valid and effective Scientific Cooperation Agreement only when necessary to ensure the safety of personnel or of the TMT Facilities.

7. Rent. In consideration for the use of the Subleased Premises, Sublessee shall pay to Sublessor annual rents based on calendar years during the term of this Sublease as set forth below. The annual rent during the construction period is based on the incremental value of the major milestones achieved during the construction of the TMT Facilities. The milestones are set forth below and generally span approximately two (2) year periods. The annual rents shall be paid based upon the specified calendar years below regardless of whether the respective milestone is achieved.

<u>Year</u>	<u>Annual Rent</u>	<u>Milestone</u>
1-3	\$300,000	Civil construction
4-5	\$400,000	Enclosure
6-7	\$600,000	Telescope Structure
8-9	\$700,000	Instruments and Mirrors
10	\$900,000	Commissioning
11 and later	\$1,080,000	Operations

Rent shall be paid in advance, in equal semi-annual installments, on or before January 31 and July 31, of each calendar year during the term of this Sublease. The first installment of rent for the initial, partial year (which will be prorated) shall be due within 30 days of the date of execution of this Sublease. Beginning in January of 2015, and in January of each year thereafter, the annual rental amount for the year shall be based on the initial annual rental amount adjusted for the annual rate of inflation recorded for subsequent years in

accordance with the Consumer Price Index for all Urban Consumers, U.S. City Average (not seasonally adjusted) (base year 1982-1984 - 100) ("CPI"), published by the United States Department of Labor, Bureau of Labor Statistics. The calculation shall be made by comparing the CPI last published for the date nearest to the Effective Date (the "Base Index") with the CPI last published for the date nearest to the current anniversary date (the "Current Index"). If the Current Index has increased or decreased over the Base Index, then the amount subject to adjustment shall be set for the ensuing year by multiplying the initial annual rental amount by a fraction, the numerator of which is the Current Index and the denominator of which is the Base Index. If the base of the CPI changes from the 1982-84 base (100), the CPI shall, thereafter, be adjusted to the 1982-84 base (100) before the computation indicated above is made. If the CPI Index is at any time no longer published, a comparable index generally accepted and employed by the real estate profession shall be used.

Sublessor shall receive, deposit, and apply the rents received hereunder in accordance with the laws of the State of Hawaii, including, without limitation, Section 304A-2170 of the Hawaii Revised Statutes, as amended from time to time. Such deposit shall be net of the funds required by law to be transferred or paid to the Office of Hawaiian Affairs. Sublessor shall be responsible for paying over to the Office of Hawaiian Affairs its ratable share of the rents received in accordance with the laws of the State of Hawaii.

8. Master Lease: Order of Precedence. The rights granted to Sublessee pursuant to this Sublease are subject to the terms and conditions of the Master Lease, as the same may be amended. In the event of any conflict between the terms of this Sublease and the Master Lease, the Master Lease shall be controlling. In the event of any conflict between the terms of this Sublease and the Scientific Cooperation Agreement, this Sublease shall be controlling. Sublessee shall comply with the terms and conditions of the Master Lease at all times. If Sublessee causes a breach or default of any term, covenant, restriction, or condition of the Master Lease, and this breach or default shall continue for a period of more than forty-five (45) days after delivery by the Sublessor of a written notice of breach or default and demand for cure (plus any additional period as the Lessor may allow for good cause), then Sublessor may, subject to the provisions of Section 171-21 of the Hawaii Revised Statutes, at once re-enter the Subleased Premises, or any part, and upon or without the entry, at its option, terminate this Sublease without prejudice to any other remedy or right of action for arrears of rent or for any preceding or other breach of contract; and in the event of termination, at the option of the Sublessor, all buildings and improvements shall remain and become the property of the Sublessor or shall be removed by Sublessee in accordance with the Site Decommissioning Plan at Sublessee's sole cost and expense; furthermore, Sublessor shall retain all rent paid in advance to be applied to any damages.

9. Term and Termination. The term of this Sublease shall begin on the Effective Date and shall expire on December 31, 2033, unless extended or sooner terminated as provided herein.

a. Mutual Cancellation of Master Lease and Concurrent Issuance of New Master Lease.

(1) Sublessor shall use its best efforts to continue to and shall diligently pursue and take all actions necessary or advisable to complete the process currently underway with Lessor to obtain mutual cancellation of the current Master Lease subject to and concurrent with issuance of a new master lease (the "**New Master Lease**"), for a term of sixty-five (65) years and on terms and conditions materially consistent with the form of lease document submitted to the Lessor for consideration at its meeting of November 8, 2013. In the foregoing sentence, such "actions" shall include, without limitation, continuing to prepare and process an Environmental Impact Statement for the New Master Lease and such "terms and conditions" shall include, without limitation, that the New Master Lease shall include the provisions stating that "The lease shall be subject to all existing subleases entered into by the Lessee and approved by the Lessor pursuant to General Lease No. S-4191 dated June 21, 1968", and "Should this lease be rendered or declared invalid, illegal, or unenforceable by a court of competent jurisdiction, such invalidation shall cause, without further action, General Lease No. S-4191 dated June 21, 1968 to be revived in its entirety for the duration of the term therein, unless and until the parties subsequently agree otherwise".

(2) If the New Master Lease is approved and duly executed by Lessor and Sublessor, Sublessor shall promptly provide a copy of the New Master Lease to Sublessee. Effective as of the effective date of the New Master Lease, the following shall apply:

i) The provisions of this Sublease shall continue, whether by extension, issuance of a new sublease, or otherwise, provided that any continuance shall be in accordance with the terms herein as a sublease under the New Master Lease (including, without limitation, the rents set forth herein);

ii) The New Master Lease shall become the Master Lease for all purposes of this Sublease or any new sublease, and all references to the Master Lease in this Sublease or any new sublease shall thereafter refer to the New Master Lease; and

iii) The term of this Sublease shall automatically be extended, and shall thereafter expire sixty-five (65) years after the Effective Date, or upon expiration or termination of the New Master Lease, whichever shall first occur.

(3) If the New Master Lease is approved, but the term is not for sixty-five (65) years or the terms and conditions thereof are not materially consistent with the form of lease document submitted to the Lessor for consideration at its meeting of November 8, 2013, Sections 9.a.(2)i), ii), and iii) above shall apply unless Sublessee, at its sole option, provides a notice of termination to Sublessor in accordance with Section 9.d. below within one hundred twenty (120) days after Sublessee's receipt of the New Master Lease from Sublessor. Sublessor further agrees to diligently negotiate in good faith with Sublessee regarding mutually acceptable amendments to this Sublease during such one hundred twenty (120) day period and to promptly and diligently pursue approval by the Lessor of such amendments.

(4) If the New Master Lease is approved on terms and conditions materially consistent with the form of lease document submitted to the Lessor for consideration at its meeting of November 8, 2013 or is otherwise acceptable to Sublessee in Sublessee's sole judgment, Sublessor agrees to execute an amendment to this Sublease to reflect compliance with Sections 9.a.(2)i, ii, and iii) above or a new sublease on the same material terms and conditions as set forth in this Sublease (including, without limitation, the rents set forth herein) and reflecting compliance with Sections 9.a.(2)i, ii, and iii) above.

(5) Sublessee acknowledges that the Lessor has sole authority to determine whether to approve and enter into the New Master Lease, pursuant to and in accordance with Hawaii law, that no such approval has been granted as of the date of this Sublease, and that no prior commitment to issue such approval has been or can be made.

b. Failure to Obtain New Master Lease. If the New Master Lease is not approved by Lessor or if Sublessor otherwise fails to obtain a New Master Lease that automatically extends the term of this Sublease in accordance with of Sections 9.a.(3) or 9.a.(4) above, Sublessor agrees to use its best efforts to and will immediately and diligently pursue another means of acquiring sufficient rights to continue to lease the Subleased Premises to Sublessee on substantially the same terms and conditions herein, but for an additional term extending to, on or about March 31, 2079. If a subsequent master lease is approved and duly executed by Lessor and Sublessor, Sublessor shall promptly provide a copy of such subsequent master lease to Sublessee and, at Sublessee's sole option: (I) the provisions of Sections 9.a.(2)i, ii, and iii) above shall apply as if the subsequent master lease is the "New Master Lease" referred to in Section 9.a. above and Sublessor shall execute an amendment to this Sublease to reflect compliance with Sections 9.a.(2)i, ii, and iii) above or a new sublease on the same material terms and conditions as set forth in this Sublease (including, without limitation, the rents set forth herein) and reflecting compliance with Sections 9.a.(2)i, ii, and iii) above, or (II) Sublessor shall diligently negotiate in good faith a new sublease with Sublessee, if so desired by Sublessee, on the same material terms and conditions as set forth in this Sublease (including, without limitation, the rents set forth herein and compliance with the Master Lease then in effect) or on such other terms and conditions as may be mutually agreeable to Sublessor and Sublessee, with a term ending on or after March 31, 2079.

c. Option to Extend Term. Notwithstanding the foregoing in Sections 9.a. and 9.b. above, Sublessee shall have an option to extend the term of this Sublease beyond December 31, 2033 if Sublessor acquires rights to sublease the Subleased Premises to Sublessee, whether under the New Master Lease or other master lease, and such extension shall be coterminous with such New Master Lease or other master lease, but in no event shall the term of this Sublease extend beyond March 31, 2079. Such option shall expire on December 31, 2033 and Sublessee shall have sole discretion regarding whether or not to exercise such option.

d. Termination Without Cause. Sublessee shall have the right to terminate this Sublease at any time upon six (6) months prior written notice to Sublessor.

e. Termination for Breach. This Sublease may be terminated for breach as provided in, and in accordance with, Sections 8 above or 25 below.

f. Non-use and Abandonment. If the Sublessee shall, at any time for a continuous period of eleven (11) months, fail or cease to use, or abandon the Subleased Premises, this Sublease shall cease and terminate. Sublessor shall provide written notice to Sublessee within thirty (30) days after the sixth (6th) month of such eleven (11) month period and shall allow Sublessee three (3) months to cure any such purported abandonment.

10. Effect of Termination or Expiration: Decommissioning. Upon termination or expiration of this Sublease, Sublessee shall, at Sublessor's sole option and at Sublessee's sole cost and expense either (a) surrender the Subleased Premises with all improvements existing or constructed thereon, or (b) decommission and remove the TMT Facilities and restore the land in accordance with the CMP and the Decommissioning Plan for Mauna Kea Observatories, A Sub-Plan of the Mauna Kea Comprehensive Management Plan (dated January, 2010 and approved by Lessor in March, 2010) ("**Decommissioning Plan**"), and any amended, supplemental, or successor plans adopted by Sublessor with the approval of the Lessor.

a. Decommissioning Funding Plan. Sublessee shall develop and periodically update a Decommissioning Funding Plan as described in, and in accordance with, the Decommissioning Plan, to provide assurance to Sublessor that sufficient funds will be available to carry out deconstruction and site restoration activities upon termination or expiration of this Sublease. The Decommissioning Funding Plan shall include one or more financial assurance mechanisms as described in the Decommissioning Plan. Sublessee shall provide the initial Decommissioning Funding Plan on or before the execution date of this Sublease as set forth above. Sublessee shall submit an updated Decommissioning Funding Plan to Sublessor for Sublessor's review and approval as provided in the CMP, and shall provide such information and documents as Sublessor may reasonably request from time to time to verify the availability and adequacy of funding to meet Sublessee's decommissioning and restoration obligations. If, at any time during the term of this Sublease, Sublessor reasonably determines that the Decommissioning Funding Plan is insufficient, Sublessee shall consult with Sublessor and shall negotiate in good faith to determine the amount of such additional funding and provide such additional funding assurance mechanisms.

b. Site Decommissioning Plan. Upon expiration or termination of this Sublease or any extended sublease, decommissioning, including site restoration, shall be carried out in strict compliance with a Site Decommissioning Plan developed and approved in accordance with the Decommissioning Plan ("**Decommissioning Obligations**").

c. Delivery of Possession. Except as otherwise provided herein, upon expiration or termination of this Sublease or any extended sublease and completion of Sublessee's Decommissioning Obligations, Sublessee shall peaceably deliver to Sublessor possession of the Subleased Premises in a clean and orderly condition.

d. Payment of Decommissioning Costs of Sublessor or Lessor. Sublessee shall promptly pay on demand any reasonable and necessary costs incurred by Sublessor or Lessor to remedy any failure on the part of Sublessee to fully and timely perform its Decommissioning Obligations.

e. Survival. The obligations of Sublessee under this Section 10, the rights and obligations of Sublessor and Sublessee under Sections 9.a., 9.b., and 9.c. above, and the obligations of Sublessee under Section 11 below shall survive expiration or termination of this Sublease.

f. Termination Without Decommissioning: Assumption of Decommissioning Obligations by Sublessor. If this Sublease expires or is terminated prior to the expiration of the Master Lease and at a time when the TMT Facilities have remaining useful life, at Sublessor's sole option Sublessee shall be relieved of its Decommissioning Obligations and permitted to surrender its subleasehold interest in the Subleased Premises without removal of the TMT Facilities on such terms as may be mutually agreed in writing by Sublessor and Sublessee, which may include payment to Sublessor of an amount to be held in reserve for future decommissioning in exchange for Sublessor's assumption of the Decommissioning Obligations.

11. Indemnity. Sublessee shall indemnify, defend, and hold harmless Lessor, Sublessor, and their officers, agents, employees, and other persons acting on their behalf, from and against any claim or demand for loss, liability, or damages (including, but not limited to, reasonable attorneys' fees and claims for property damage, personal injury, or death, based upon any accident, fire, or other incident on or about the Subleased Premises) to the extent arising or resulting from: (1) any act or omission on the part of Sublessee relating to Sublessee's use, occupancy, maintenance, or enjoyment of the Subleased Premises; (2) any failure on the part of Sublessee to properly maintain the Subleased Premises, and areas adjacent thereto in Sublessee's use and control, including any accident, fire, or nuisance, arising from or caused by any failure on the part of Sublessee to maintain the Subleased Premises in a safe condition; or (3) Sublessee's non-observance or non-performance of any of the terms, covenants, and conditions of this Sublease or the Master Lease or the rules, regulations, ordinances and laws of the Federal, State, or County governments. Sublessee further agrees to indemnify, defend, and hold harmless Lessor and Sublessor from any damages or claims arising from the release of "hazardous material" (as defined in Section 31 below) on the Subleased Premises occurring while Sublessee is in possession, or elsewhere if caused by Sublessee or any person acting under Sublessee.

12. Insurance. Sublessee shall, at its own cost and expense, maintain the following insurance. Such insurance shall be subject to the reasonable approval of Sublessor and Lessor and, except as to any property insurance, shall name Sublessor and Lessor as additional insureds. Sublessee shall deliver executed certificates thereof to Sublessor on or before the Effective Date of this Sublease and thereafter within a reasonable time prior to the expiration of the term of each such policy. As often as any such policy shall expire or terminate, renewal or additional policies shall be procured and maintained by Sublessee in like manner to like extent. If Sublessee has only provided

Sublessor with certificates evidencing the policies required to be carried by Sublessee under this Sublease, Sublessee agrees to deliver executed copies of all such required policies to Sublessor within ten (10) days of Sublessor's written request for the same.

a. **Property Insurance.** Sublessee shall at its own expense and at all times during the term of this Sublease keep Sublessee's property, including but not limited to the TMT Facilities, insured against (i) all of the risks covered by a standard ISO Commercial Property Special Causes of Loss Form (or equivalent) which shall be in an amount equal to the full replacement cost of such property and shall not have a deductible in excess of Two Hundred and Fifty Thousand Dollars (\$250,000), and (ii) such other hazards or risks which a reasonably prudent telescope operator on Mauna Kea would insure against. Sublessee hereby waives any and all rights of subrogation which it may have against Lessor and/or Sublessor, except to the extent of available insurance. In case the property required to be insured above or any part thereof shall be destroyed or damaged by fire or such other casualty required to be insured against, then and as often as the same shall happen, the proceeds of such insurance shall be paid to Sublessee to be used by Sublessee to promptly repair and restore any damage to such property.

b. **Liability Insurance.** Sublessee shall procure at Sublessee's expense and keep in force during the term of this Sublease and any extension thereof, the following insurance:

i) **General Liability Insurance.** Commercial general liability insurance (including coverage for liability caused by the fault of Sublessee, products-completed operations liability, personal and advertising injuries and coverage for contractual liability to the extent provided by ISO Form CGL #00-01-04-13 (or equivalent) covering Sublessee and naming as additional insureds: (i) Sublessor, (ii) Lessor, (iii) Sublessor's and Lessor's managers, officers, agents and employees, and (iv) such other parties as Sublessor may specify, insuring against liability arising out of the use, occupancy or maintenance of the Subleased Premises and areas appurtenant thereto by Sublessee with limits of not be less than One Million Dollars (\$1,000,000) for property damage, and Five Million Dollars (\$5,000,000) for injuries and deaths in any one occurrence or a combined single limit of Five Million Dollars (\$5,000,000) per occurrence and deductibles of no more than Two Hundred and Fifty Thousand Dollars (\$250,000). Such insurance shall be primary and shall not limit the liability of the Sublessee under Section 11 above.

ii) **Auto Liability Insurance.** Auto liability insurance covering all automobiles used by Sublessee in connection with its operations in the Subleased Premises with limits of not less than Five Hundred Thousand Dollars (\$500,000) for property damage, and Five Million Dollars (\$5,000,000) for injuries or deaths in any one occurrence or a combined single limit of Five Million Dollars (\$5,000,000) per occurrence, with deductibles of no more than Five Thousand Dollars (\$5,000) per occurrence and naming Sublessor and Lessor as additional insureds.

iii) **Pollution Liability Insurance.** Pollution liability insurance in the amount of not less than Five Million Dollars (\$5,000,000) and with deductibles of no

more than Two Hundred and Fifty Thousand Dollars (\$250,000) per occurrence and naming Sublessor and Lessor as additional insureds. Such insurance shall cover bodily injury, property damage, and environmental damage, including clean up and defense and remediation costs, for occurrences that arise from the occupancy or use of the Subleased Premises during the term of this Sublease by Sublessee.

c. General Insurance Requirements.

i) Sublessee shall use its best efforts to obtain the following terms in each policy of commercial property insurance and general liability insurance required in Sections 12.a. and 12.b. above to the extent that such terms are reasonably available in the commercial marketplace:

a) a provision that the liability of the insurer thereunder shall not be affected by, and that the insurer shall not claim, any right of set-off, counterclaim, apportionment, proration, or contribution by reason of, any other insurance obtained by or for Sublessor, Lessor, Sublessee, or any person claiming by, through, or under any of them; and

b) no provision relieving the insurer from liability for loss occurring while the hazard to buildings and personal property is increased, whether or not within the knowledge or control of, or because of any breach of warranty or condition or any other act or neglect by Sublessor, Lessor, Sublessee, or any person claiming by, through, or under any of them.

ii) Each policy of commercial property insurance and general liability insurance required in Sections 12.a. and 12.b. above shall:

a) be written by an insurance company rated A- or better, Class size VIII or better, by the Best's Key Rating Guide, based upon the rating system in effect on the date this Sublease is signed. In the event that Best's changes its rating system or ceases to provide ratings at some later date, then such insurance company shall have a rating from Best (or some other comparable rating service if Best's ceases to provide ratings) comparable to the "A- or better, Class VIII or better" requirement of the immediately preceding sentence; and

b) be specifically endorsed to provide that they are primary policies, not contributing with and not in excess of any coverage that Sublessor and/or Lessor may carry, notwithstanding anything to the contrary contained in any policies obtained by Sublessor and/or Lessor.

In addition, Sublessor shall request that each such policy be specifically endorsed to provide that such policy may not be cancelled except upon the insurer giving at least thirty (30) days' prior written notice thereof (ten (10) days in the case of nonpayment of premium) to Sublessor, Lessor, Sublessee, and other person having an interest in the property who has requested such notice of the insurer.

13. Taxes, Assessments, etc. Sublessee shall pay or cause to be paid, when due, the amount of all taxes, rates, and assessments of every description as to which the Subleased Premises or any part, or any improvements, or the Lessor, Sublessor, or Sublessee, are now or may be assessed or become liable by authority of law during the term of this Sublease; provided, however, that with respect to any assessment made under any betterment or improvement law which may be payable in installments, Sublessee shall be required to pay only those installments, together with interest, which becomes due and payable during the term of this Sublease.

14. Utility Services. Sublessee shall be responsible for obtaining any utility services and shall pay when due all charges, duties and rates of every description, including water, sewer, gas, refuse collection or any other charges, as to which the Subleased Premises or any part, or any improvements, or the Lessor, Sublessor, or Sublessee may become liable for during the term, whether assessed to or payable by the Lessor, Sublessor, or Sublessee.

15. Covenant against discrimination. The use and enjoyment of the Subleased Premises shall not be in support of any policy which discriminates against anyone based upon race, creed, sex, color, national origin, religion, marital status, familial status, ancestry, physical handicap, disability, age or HIV (human immunodeficiency virus) infection.

16. Sanitation. Sublessee shall keep the Subleased Premises and improvements in a strictly clean, sanitary and orderly condition.

17. Waste and Unlawful, Improper or Offensive Use of Subleased Premises. Sublessee shall not commit, suffer or permit to be committed any waste, nuisance, strip or unlawful, improper or offensive use of the Subleased Premises or any part, nor, without the prior written consent of the Lessor and Sublessor, cut down, remove or destroy, or suffer to be cut down, removed or destroyed, any trees now growing on the premises.

18. Compliance with Laws. Sublessee shall comply with all applicable requirements of all municipal, state, and federal authorities and observe all municipal, state and federal laws applicable to the Subleased Premises, now in force or which may be in force.

19. Inspection of Subleased Premises. Upon reasonable notice by Sublessor to Sublessee, Sublessee shall permit the Lessor, Sublessor, and their respective agents, at all reasonable times during the Sublease term, to enter the Subleased Premises and examine the state of its repair and condition.

20. Improvements. Sublessee shall not at any time during the term of this Sublease construct, place, maintain and install on the premises any building, structure or improvement of any kind and description except with the prior written approval of the Lessor and the Sublessor and upon those conditions as the Lessor or Sublessor may impose, unless otherwise provided in this Sublease. Construction of the TMT Facilities in accordance with Section 4 above is authorized. Except as otherwise provided in this

Sublease, Sublessee shall own all improvements constructed by and installed by Sublessee on the Subleased Premises.

21. Repairs to Improvements. Sublessee shall, at its own expense, keep, repair, and maintain all buildings and improvements now existing or hereafter constructed or installed on the Subleased Premises in good order, condition and repair, reasonable wear and tear excepted.

22. Liens. Sublessee shall not commit or suffer any act or neglect which results in the Subleased Premises, any improvement, the leasehold estate of the Sublessor, or the subleasehold estate of the Sublessee becoming subject to any attachment, lien, charge, or encumbrance, except as provided in this Sublease, and shall indemnify, defend, and hold the Lessor and Sublessor harmless from and against all attachments, liens, charges, and encumbrances and all resulting expenses.

23. Assignments, etc. Sublessee shall not sublease, subrent, transfer, assign, or permit any other person to exclusively occupy the Subleased Premises or any portion or transfer or assign this Sublease or any interest therein, either voluntarily or by operation of law, without the prior written approval of the Lessor and the Sublessor.

24. Costs of Litigation. Sublessee shall pay all costs, including reasonable attorney's fees, and expenses incurred by or paid by the Lessor or Sublessor (i) in enforcing the covenants and agreements of the Master Lease or this Sublease with respect to Sublessee, (ii) in recovering possession of the Subleased Premises, or (iii) in the collection of delinquent rental, taxes, and any and all other charges.

25. Breach. Time is of the essence in this Sublease and if the Sublessee shall become bankrupt, or if this Sublease and Subleased Premises shall be attached or taken by operation of law, or if Sublessee shall fail to observe and perform any of the material covenants, terms, and conditions contained in this Sublease and on its part to be observed and performed (other than a failure that causes a breach of the Master Lease, in which case Sublessor and Sublessee hereby agree that Section 8 above applies), and this failure shall continue for a period of more than sixty (60) days after delivery by the Sublessor of a written notice of breach or default and demand for cure, by personal service, registered mail or certified mail to the Sublessee at its last known address and to each holder of record having a security interest in the premises, then Sublessor may, subject to the provisions of Section 171-21 of the Hawaii Revised Statutes, at once re-enter the premises, or any part, and upon or without the entry, at its option, terminate this Sublease without prejudice to any other remedy or right of action for arrears of rent or for any preceding or other breach of contract; and in the event of termination, at the option of Sublessor, all buildings and improvements shall remain and become the property of the Sublessor or shall be removed by Sublessee in accordance with Section 10 above; furthermore, Sublessor shall retain all rent paid in advance to be applied to any damages.

26. Condemnation. If at any time, during the term of this Sublease, any portion of the Subleased Premises should be condemned, or required for public purposes by any

government authority, the rental shall be reduced in proportion to the value of the portion of the Subleased Premises condemned. Sublessee shall be entitled to receive from the condemning authority the proportionate value of the Sublessee's permanent improvements so taken in the proportion that it bears to the unexpired term of the Sublease; provided, that the Sublessee may, in the alternative, remove and relocate its improvements to the remainder of the lands occupied by Sublessee. Sublessee shall not by reason of the condemnation be entitled to any claim against the Lessor or Sublessor for condemnation or indemnity for leasehold interest and all compensation payable or to be paid for or on account of the leasehold interest by reason of the condemnation shall be payable to and be the sole property of the Lessor or Sublessor. The foregoing rights of the Sublessee shall not be exclusive of any other to which Sublessee may be entitled by law. Where the portion taken renders the remainder unsuitable for the use or uses for which the Subleased Premises were leased, Sublessee shall have the option to surrender this lease and be discharged and relieved from any further liability; provided, that Sublessee shall remove the permanent improvements constructed, erected and placed by it within any reasonable period allowed by the Lessor and Sublessor, in accordance with Section 10 above.

27. Right to Enter. The Lessor, Sublessor, or the County of Hawaii and their agents or representatives shall have the right to enter and cross any portion of the Subleased Premises for the purpose of performing any public or official duties; provided, however, in the exercise of these rights, the Lessor, Sublessor, or the County of Hawaii shall not interfere unreasonably with the Sublessee or Sublessee's use and enjoyment of the Subleased Premises.

28. Extension of Time. Notwithstanding any provision contained in this Sublease, when applicable, Sublessor may for good cause shown, allow additional time beyond the time or times specified in this Sublease for the Sublessee to comply, observe, and perform any of the Sublease terms, conditions, and covenants.

29. Quiet Enjoyment. Sublessor covenants and agrees with Sublessee that upon payment of the rent at the times and in the manner provided and the observance and performance of these covenants, terms, and conditions on the part of the Sublessee to be observed and performed, the Sublessee shall and may have, hold, possess, and enjoy the premises for the term of this Sublease, without hindrance or interruption by the Lessor, Sublessor or any other person or persons lawfully claiming by, through, or under the Lessor or Sublessor.

30. Non-warranty. Neither the Lessor nor Sublessor warrants the conditions of the Subleased Premises, as the same are being subleased as is.

31. Hazardous Materials. Sublessee shall not cause or permit the escape, disposal or release of any hazardous materials except as permitted by law. Sublessee shall not allow the storage or use of such materials in any manner not sanctioned by law or by the highest standards prevailing in the industry for the storage and use of such materials, nor allow to be brought onto the premises any such materials except to use in the ordinary

course of Sublessee's business where the Sublessee has provided Sublessor with a list that contains the identity of such materials used or stored by Sublessee in the ordinary course of its business and in compliance with all applicable federal and state regulations; provided, that if Sublessor disapproves in writing any such materials, the disapproved materials shall not be brought onto the Subleased Premises. If any lender or governmental agency shall ever require testing to ascertain whether or not there has been any release of hazardous materials by Sublessee, then the Sublessee shall be responsible for the reasonable costs thereof. In addition, Sublessee shall execute affidavits, representations and the like from time to time at Lessor's or Sublessor's request concerning Sublessee's best knowledge and belief regarding the presence of hazardous materials on the Subleased Premises placed or released by Sublessee.

For the purpose of this Sublease, "hazardous material" shall mean any pollutant, toxic substance, hazardous waste, hazardous material, hazardous substance, or oil as defined in or pursuant to the Resource Conservation and Recovery Act, as amended, the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, the Federal Clean Water Act, or any other federal, state, or local environmental law, regulation, ordinance, rule, or by-law, whether existing as of the date hereof, previously enforced, or subsequently enacted.

32. Hawaii Law. This Sublease shall be construed, interpreted, and governed by the laws of the State of Hawaii.

33. Exhibits - Incorporation in Sublease. All exhibits referred to herein are attached to this Sublease and hereby are deemed incorporated by reference.

34. Headings. The section headings herein are inserted only for convenience and reference and shall in no way define, describe or limit the scope or intent of any provision of this Sublease.

35. Partial Invalidity. If any term, provision, covenant or condition of this Sublease should be held to be invalid, void or unenforceable, the remainder of this Sublease shall continue in full force and effect and shall in no way be affected, impaired or invalidated thereby.

36. Withdrawal. If and to the extent that Lessor exercises its power of withdrawal under the Master Lease to withdraw any portion of the Subleased Premises for public uses or purposes upon giving reasonable notice and without compensation except as otherwise provided in the Master Lease, HRS Chapter 171, the New Master Lease, or other master lease between Sublessor and Lessor that includes the Subleased Premises, then Sublessor shall have the right to withdraw these same portions of the Subleased Premises during the term of this Sublease upon giving reasonable notice to Sublessee and subject to the Sublessee's claim for any compensation provided under the Master Lease, HRS Chapter 171, the New Master Lease, or other master lease between Sublessor and Lessor that includes the Subleased Premises for any permanent improvement constructed upon the Subleased Premises that is destroyed or made unusable in the process of the withdrawal or

taking. Upon such withdrawal, or upon the taking which causes any portion of the Subleased Premises to become unusable for the specific use or uses for which it was subleased, the rent shall be reduced in proportion to the value of the land withdrawn or made unusable, and to the extent permitted in the Master Lease, HRS Chapter 171, the New Master Lease, or other master lease between Sublessor and Lessor that includes the Subleased Premises, if any permanent improvement constructed upon the land by Sublessee is destroyed or made unusable in the process of the withdrawal or taking, the proportionate value shall be paid based upon the unexpired term of the lease (which value shall also include the cost of decommissioning such improvements including site restoration as required in the Decommissioning Plan).

37. Building Construction. All building construction shall be in full compliance with all applicable laws, rules and regulations of the federal, state, and county governments and in accordance with plans and specifications submitted to and approved by the Sublessor and the Chairman of the Board of Land and Natural Resources prior to commencement of construction.

38. Clearances. Sublessee shall be responsible for obtaining all necessary federal, state or county clearances.

39. Time of Essence. Time is of the essence in all provisions of this Sublease.

40. Written Notice. All notices shall be in writing and shall be deemed to have been delivered on the date sent if sent by certified mail (return receipt requested) or recognized courier (with delivery confirmation) or transmitted by facsimile (with written confirmation of transmission) and in each case with a copy sent by email on the same date as follows:

Sublessor:

Chancellor
University of Hawaii at Hilo
200 West Kawili Street
Hilo, Hawaii 96720-4091
Telephone: (808) 932-7348
Facsimile: (808) 932-7338
Email: dstraney@hawaii.edu

Sublessee:

Project Manager (during construction) or Observatory Director (after first light; contact information for Observatory Director to be delivered to Sublessor by written notice following construction)
TMT International Observatory LLC
1111 South Arroyo Parkway, Suite 200
Pasadena, CA 91105

Telephone: (626) 395-2997
Facsimile: (626) 296-1887
Email: sanders@tmt.org

With a copy to:

Ann Martin
General Counsel
TMT Observatory Corporation
Telephone: (626) 395-1646
Facsimile: (626) 395-6841
Email: ann.martin@caltech.edu

41. Dispute Resolution. Any dispute relating to or arising as a result of or in connection with this Sublease, if not resolved by negotiation, shall be submitted first to non-binding mediation with Dispute Prevention & Resolution, Inc. and if such mediation is not concluded within six (6) months after submission, then shall be decided in legal or equitable proceedings in accordance with Hawaii law in any court having jurisdiction in the State of Hawaii. Such mediation shall take place in the County of Honolulu, State of Hawaii. Each party shall bear its own costs and fees for such mediation and the fees and expenses of the mediator shall be borne by the parties equally.

42. Historic preservation. In the event any historic properties or burial sites, as defined in Section 6E-2 of the Hawaii Revised Statutes, are found on the Subleased Premises, Sublessee and Sublessee's agents, employees and representatives shall immediately stop all land utilization and/or work and contact the Historic Preservation Office in compliance with Hawaii Revised Statutes Chapter 6E.

43. Removal of Trash. Sublessee shall be responsible for the removal of all illegally dumped trash upon the premises within ninety (90) days from the date of execution of this Sublease and shall so notify the Sublessor in writing at the end of ninety (90) days.

44. Phase I Environmental Site Assessment. Prior to termination or revocation of this Sublease, Sublessee shall conduct a Phase I environmental site assessment of the Subleased Premises and conduct a complete abatement and disposal of any such sites, if necessary, satisfactory to the standards required by the Federal Environmental Protection Agency, the Department of Health, and the Department of Land and Natural Resources. Failure to comply with the provisions of this Section 44 shall not extend the term of this Sublease or automatically prevent termination or revocation of the lease. Sublessor, at its sole option, may refuse to approve termination, unless this evaluation and abatement provision has been performed. In addition or in the alternative, Sublessor may, at its sole option if Sublessee does not do so, arrange for performance of the provisions of this Section 44, all costs and expenses of such performance to be charged to and paid by Sublessee.

45. **Counterparts.** This Sublease may be executed in counterparts, each of which so executed shall, irrespective of the date of its execution and delivery, be deemed an original (including counterparts delivered by facsimile or email), and said counterparts together shall constitute one and the same agreement binding all of the parties hereto.

[Remainder of page intentionally left blank; signature page follows.]

IN WITNESS WHEREOF, Sublessor and Sublessee have executed this Sublease as of the date first written above.

SUBLESSOR:

SUBLESSEE:

FOR THE UNIVERSITY OF HAWAII:

FOR TMT INTERNATIONAL
OBSERVATORY LLC:

By David Lassner
Name: David Lassner
Title: President
Date: 7/28/14

By EC Stone
Name: Edward C. Stone
Title: Executive Director
Date: 7/23/14

By Howard Todo
Name: Howard Todo
Title: Vice-President for Budget and
Finance
Date: 7/28/14

By Donald D. Straney
Name: Donald Straney
Title: Chancellor, University
of Hawai'i at Hilo
Date: 28 July 14

Approved as to form:

By Lawrence S. Okinaga
Name: Lawrence S. Okinaga, Carlsmith Ball LLP
Title: Special General Counsel
Date: 07/28/2014

STATE OF HAWAII)
) ss.
CITY AND COUNTY OF HONOLULU)

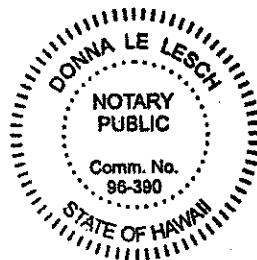
The attached document: **SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT BETWEEN TMT INTERNATIONAL OBSERVATORY LLC AND THE UNIVERSITY OF HAWAII**, dated July 28, 2014 which consists of 48 pages (including this page), was executed by **DAVID LASSNER** and **HOWARD TODO** and on this 28 day of July, 2014 in the First Judicial Circuit of the State of Hawaii, personally known/proved to me on the basis of satisfactory evidence to be the persons, who personally appeared before me and being by me duly sworn or affirmed, did say that they are the **PRESIDENT** and **VICE-PRESIDENT FOR BUDGET AND FINANCE**, respectively, of the **UNIVERSITY OF HAWAII**, and that such persons executed the foregoing instrument as the free act and deed of such persons, and if applicable in the capacities shown, having been duly authorized to execute such instrument in such capacities.

Donna Le Lesch
[Notary Signature]

(notary stamp or seal)

Printed Name: Notary Name

My commission expires: Donna Le Lesch
Commission No. 96-390
Notary Public, State of Hawaii
My commission expires July 18 2016



CITY &
STATE OF HAWAII

COUNTY OF HAWAII

)
) ss.
)

The attached document: **SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT BETWEEN TMT INTERNATIONAL OBSERVATORY LLC AND THE UNIVERSITY OF HAWAII**, dated July 28, 2014 which consists of 48 pages (including this page), was executed by **DONALD STRANEY** on this 28 day of July, 2014 in the Third Judicial Circuit of the State of Hawaii, personally known/proved to me on the basis of satisfactory evidence to be the person, who personally appeared before me and being by me duly sworn or affirmed, did say that he is the **CHANCELLOR of UNIVERSITY OF HAWAI'I AT HILO**, and that such person executed the foregoing instrument as the free act and deed of such person, and if applicable in the capacity shown, having been duly authorized to execute such instrument in such capacity.

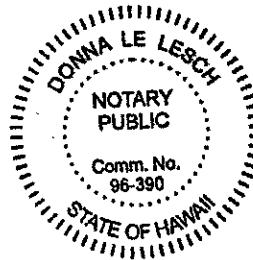
Donna Le Lesch
[Notary Signature]

(notary stamp or seal)

Printed Name: Notary Name

DONNA LE LESCH
Commission No. 96-390
Notary Public, State of Hawaii
My commission expires July 18 2016

My commission expires: _____



STATE OF CALIFORNIA

COUNTY OF Los Angeles

)
) ss.
)

The attached document: **SUBLEASE AND NON-EXCLUSIVE EASEMENT AGREEMENT BETWEEN TMT INTERNATIONAL OBSERVATORY LLC AND THE UNIVERSITY OF HAWAII**, dated July 23, 2014 which consists of 22 pages (including this page), was executed by **EDWARD C. STONE** on this 23rd day of July, 2014, personally known/proved to me on the basis of satisfactory evidence to be the person, who personally appeared before me and being by me duly sworn or affirmed, did say that he is the **EXECUTIVE DIRECTOR** of **TMT INTERNATIONAL OBSERVATORY LLC** and that such person executed the foregoing instrument as the free act and deed of such person, and if applicable in the capacity shown, having been duly authorized to execute such instrument in such capacity.

C.M. Aguilar

(Notary Signature)

(notary stamp or seal)

Printed Name: Notary Name C.M. Aguilar

My commission expires: Jan. 16, 2017

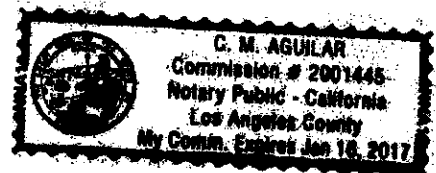


Exhibit A to Sublease

Master Lease (General Lease No. S-4191)

GENERAL LEASE NO. S-4191

THIS INDENTURE OF LEASE, made this 21st day of June, 1968, by and between the STATE OF HAWAII, by its Board of Land and Natural Resources, pursuant to the provisions of Section 103A-90(b), Revised Laws of Hawaii 1955, as amended, hereinafter referred to as the "LESSOR", and the UNIVERSITY OF HAWAII, a body corporate, whose post office address is 2444 Dole Street, Honolulu, City and County of Honolulu, State of Hawaii, hereinafter referred to as the "LESSEE",

WITNESSETH THAT:

FOR and in consideration of the mutual promises and agreements contained herein, the Lessor does hereby demise and lease unto the said Lessee and the said Lessee does hereby rent and lease from the Lessor, all of that certain parcel of land situate at Kaohi, Hamakua, County and Island of Hawaii, State of Hawaii, and more particularly described in Exhibit "A", hereto attached and made a part hereof.

TO HAVE AND TO HOLD, all and singular the said premises, herein mentioned and described, unto the said Lessee, for and during the term of sixty-five (65) years, to commence from the 1st day of January, 1968, and to terminate on the 31st day of December, 2033.

DEPARTMENT OF LAND AND NATURAL RESOURCES
HONOLULU, HAWAII

EXHIBIT A

RESERVING UNTO THE LESSOR THE FOLLOWING:

1. Water Rights. All surface and ground waters appurtenant to the demised premises, together with the right to enter and to capture, divert or impound water; provided, that the Lessor shall exercise such rights in such manner as not to interfere unreasonably with the Lessee's use of the demised premises; provided, further, that the Lessee shall have the right to use the waters of Lake Waiau for any purpose necessary or incidental to the use permitted by this lease on the following conditions:

a. No drilling or disturbance of Lake Waiau's bottom, banks or areas adjacent thereto shall be permitted;

b. No activity shall be permitted which will result in the pollution of the waters of Lake Waiau;

c. Lessee shall not take or divert any of the waters arising from springs which furnish the water supply for Pohakuloa, and no alterations to said springs shall be made by Lessee.

2. Access. All rights to cross the demised premises for inspection or for any government purposes.

3. Hunting and Recreation Rights. All hunting and recreation rights on the demised lands, to be implemented pursuant to rules and regulations issued by said Board in discharging its fish and game or state parks responsibilities; provided, however, that such hunting and recreation activities shall be coordinated with the activities of the Lessee on the demised lands; and provided, further, that such hunting and recreation activities shall be limited to day-light hours only.

4. Right to use Demised Lands. The right for itself, and its successors, lessees, grantees and permittees, to use any portion of the lands demised and the right to grant to others rights and privileges affecting said land; provided, however, that, except as otherwise provided herein, no such use shall be permitted or rights and privileges granted affecting said lands, except upon mutual determination by the parties hereto that such use or grant will not unreasonably interfere with the Lessee's use of the demised premises; provided, further, that such agreement shall not be arbitrarily or capriciously withheld.

THE LESSEE, IN CONSIDERATION OF THE PREMISES, COVENANTS WITH THE LESSOR AS FOLLOWS:

1. Surrender. The Lessee shall, at the expiration or sooner termination of this lease, peaceably and quietly surrender and deliver possession of the demised premises to the Lessor in good order and condition, reasonable wear and tear excepted.

2. Maintenance of the Premises. The Lessee shall keep the demised premises and improvements in a clean, sanitary and orderly condition.

3. Waste. The Lessee shall not make, permit or suffer, any waste, strip, spoil, nuisance or unlawful, improper or offensive use of the demised premises.

4. Specified Use. The land hereby leased shall be used by the Lessee as a scientific complex, including without limitation thereof an observatory, and as a scientific reserve being more specifically a buffer zone to prevent the intrusion of activities inimical to said scientific complex.

Activities inimical to said scientific complex shall include light and dust interference to observatory operation.

Rev. 11/15
~~during hours of darkness~~ and certain types of electric or electronic installation on the demised lands, but shall not necessarily be limited to the foregoing.

5. Assignments. The Lessee shall not sublease, sub-rent, assign or transfer this lease or any rights thereunder without the prior written approval of the Board of Land and Natural Resources.

6. Improvements. The Lessee shall have the right during the existence of this lease to construct and erect buildings, structures and other improvements upon the demised premises; provided, that plans for construction and plot plans of improvements shall be submitted to the Chairman of the Board of Land and Natural Resources for review and approval prior to commencement of construction. The improvements shall be and remain the property of the Lessee, and shall be removed or disposed of by the Lessee at the expiration or sooner termination of this lease; provided, that with the approval of the Chairman such improvements may be abandoned in place. The Lessee shall, during the term of this lease, properly maintain, repair and keep all improvements in good condition.

7. Termination by the Lessee. The Lessee may terminate this lease at any time by giving thirty (30) days' notice in writing to the Lessor.

8. Termination by the Lessor. In the event that (1) the Lessee fails to comply with any of the terms and conditions of this lease, or (2) the lessee abandons or fails to use the demised lands for the use specified under paragraph 4 of these covenants for a period of two years, the Lessor may terminate this lease by giving six months' notice in writing to the Lessee.

9. Non-Discrimination. The Lessee covenants that the use and enjoyment of the premises shall not be in support of any

policy which discriminates against anyone based upon race, creed, color or national origin.

10. General Liability. The Lessee shall at all times, with respect to the demised premises, use due care for safety, and the Lessee shall 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 the Lessee on or in connection with the demised premises, subject to the laws of the State of Hawaii governing such liability.

11. Laws, Rules and Regulations, etc. The Lessee shall observe and comply with Regulation 4 of the Department of Land and Natural Resources and with all other laws, ordinances, rules and regulations of the federal, state, municipal or county governments affecting the demised lands or improvements.

12. Objects of Antiquity. The Lessee shall not appropriate, damage, remove, excavate, disfigure, deface or destroy any object of antiquity, prehistoric ruin or monument of historical value.

13. Undesirable Plants. In order to prevent the introduction of undesirable plant species in the area, the Lessee shall not plant any trees, shrubs, flowers or other plants in the leased area except those approved for such planting by the Chairman.

IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 21st

day of June, 1968, and the UNIVERSITY OF
HAWAII, by its President and Vice President
has caused these presents to be duly executed this 1st
day of June, 1968, effective as of the day and
year first above written.

STATE OF HAWAII

By: [Signature]
Acting Chairman and Member
Board of Land and
Natural Resources

And By: [Signature]
Member
Board of Land and
Natural Resources

UNIVERSITY OF HAWAII

By: [Signature]
Its Acting President

And By: [Signature]
Its

APPROVED AS TO FORM: [Signature]

Deputy Attorney General
Dated: June 1, 1968

ma
Proofed by: [Signature]

EXHIBIT "A"

MAUNA KEA SCIENCE RESERVE

Kahe, Hamakua, Island of Hawaii, Hawaii

Being a portion of the Government Land of Kahe

Beginning at a point on the south boundary of this parcel of land, the coordinates of said point of beginning referred to Government Survey Triangulation Station "SUMMIT 1955" being 12,325.95 feet South and 471.84 feet West, as shown on Government Survey Registered Map 2789, thence running by azimuths measured clockwise from True South:-

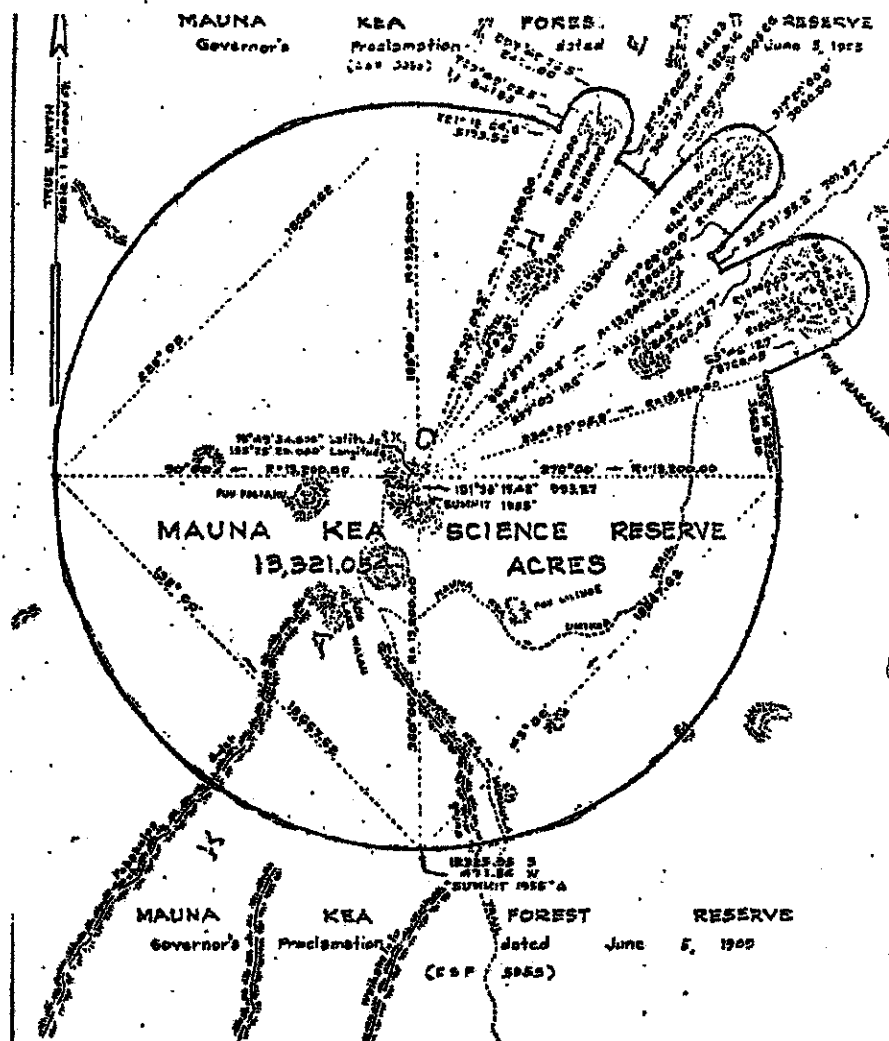
1. Along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 135° 00' 18,667.62 feet;
2. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 225° 00' 18,667.62 feet;
3. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 281° 18' 04.6" 5173.56 feet;
4. 207° 49' 06.5" 841.83 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
5. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1200.00 feet, the chord azimuth and distance being: 297° 49' 06.5" 2400.00 feet;

6. 27° 49' 06.5" 841.53 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
7. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 306° 59' 47.4" 1824.16 feet;
8. 227° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
9. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 1500.00 feet, the chord azimuth and distance being: 317° 29' 00.9" 3000.00 feet;
10. 47° 29' 00.9" 2805.06 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
11. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13200.00 feet, the chord azimuth and distance being: 325° 31' 55.2" 701.87 feet;
12. 245° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
13. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 2000.00 feet, the chord azimuth and distance being: 335° 46' 12.7" 4000.00 feet;
14. 65° 46' 12.7" 2760.45 feet along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909;
15. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 352° 14' 32.9" 3563.50 feet;

16. Thence along Mauna Kea Forest Reserve, Governor's Proclamation dated June 5, 1909, still on a curve to the right with a radius of 13,200.00 feet, the chord azimuth and distance being: 45° 00' 18,667.62 feet to the point of beginning and containing an AREA OF 13,321.054 ACRES.

EXCEPTING and RESERVING to the State of Hawaii and to all others entitled thereto, the Mauna Kea-Hunua and Mauna Kea-Umikea Trails, and all other existing trails within the above-described parcel of land, together with rights of access over and across said trails.

ALSO, EXCEPTING and RESERVING to the State of Hawaii, its successors and assigns, the waters and all riparian and other rights in and to all the streams within the above-described parcel of land.



MAUNA KEA SCIENCE RESERVE

Kaohe, Hamakua, Island of Hawaii, Hawaii

Scale: 1 inch = 4000 feet

1962 4-3078

C. D. 1961, 1962, 1963

TAX MAP 4-4-15

SURVEY DIVISION
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
STATE OF HAWAII

1962 4-3078

Exhibit B to Sublease

Consent to Sublease Under General Lease No. S-4191

(attached)

CONSENT TO SUBLEASE OF GENERAL LEASE NO. S-4191

CONSENT is hereby given by the STATE OF HAWAII, by its Board of Land and Natural Resources, Lessor under unrecorded General Lease No. S-4191 dated June 21, 1968, leased to the University of Hawaii, a public body corporate, as Lessee, to the attached Sublease and Non-Exclusive Easement Agreement ("Sublease") dated _____, 2014, from the UNIVERSITY OF HAWAII, a public body corporate, as "Sublessor," to TMT INTERNATIONAL OBSERVATORY LLC, a Delaware limited liability company, as "Sublessee"; SUBJECT, HOWEVER, to the provisions of Section 171-21, Hawaii Revised Statutes, as amended, relating to the rights of holder of security interests, PROVIDED, FURTHER, that nothing contained herein shall change, modify, waive or amend the provisions, terms, conditions and covenants or the duties and obligations of the Lessee or Sublessee under General Lease S-4191.

IT IS UNDERSTOOD that except as provided herein, should there be any conflict between the terms of General Lease No. S-4191 and the terms of the Sublease, the former shall control; and that no further sublease or assignment of any interest of the premises or any portion thereof shall be made without the prior written consent of the Board of Land and Natural Resources.

IT IS FURTHER UNDERSTOOD AND AGREED by the STATE OF HAWAII, by its Board of Land and National Resources, that in the event said General Lease No. S-4191 is surrendered or defaulted upon by Lessee, UNIVERSITY OF HAWAII, prior to the expiration of the term thereof, the Sublease shall remain in full force and effect for the remainder of the term thereof, and Sublessee, TMT INTERNATIONAL OBSERVATORY LLC, shall be allowed its continued right to quiet enjoyment of the demised premises, upon and subject to the terms, conditions and covenants of General Lease No. S-4191. For the avoidance of doubt, for purposes of the immediately preceding sentence, a "surrender" by Lessee, UNIVERSITY OF HAWAII, does not include a mutual cancellation of said General Lease No. S-4191 and concurrent issuance of a New Master Lease (as defined in Section 9.a. of the Sublease) on terms that are acceptable to Sublessee or other master lease on terms that are acceptable to Sublessee, TMT INTERNATIONAL OBSERVATORY LLC, as contemplated by Section 9 of the Sublease.

FURTHERMORE, Lessee hereby acknowledges that the Lessor's consent to sublease under General Lease No. S-4191 does not release the Lessee of any and all responsibilities, obligations, liabilities, and claims respecting or arising under or out of said General Lease prior to the effective date of this consent. _____

DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P. O. Box 621
Honolulu, Hawaii 96809

IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board and Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be fully executed on this ____ day of _____, 2014.

STATE OF HAWAII

Approved by the Board
of Land and Natural
Resources at its
meeting held on
_____, 2014

By _____
Chairperson and Member
Board of Land and
Natural Resources

LESSOR

UNIVERSITY OF HAWAII, a public body
corporate

By _____
DAVID LASSNER
Its President

By _____
HOWARD TODO
Its Vice-President for Budget and Finance

By _____
DONALD STRANEY
Chancellor, University of Hawai'i at Hilo

LESSEE

APPROVED AS TO FORM:

Deputy Attorney General
Dated: _____

DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P. O. Box 621
Honolulu, Hawaii 96809

)

)

SS.

Name: _____

My commission expires: _____

Exhibit C-1 to Sublease

Subleased Premises and Easement Area

(attached)

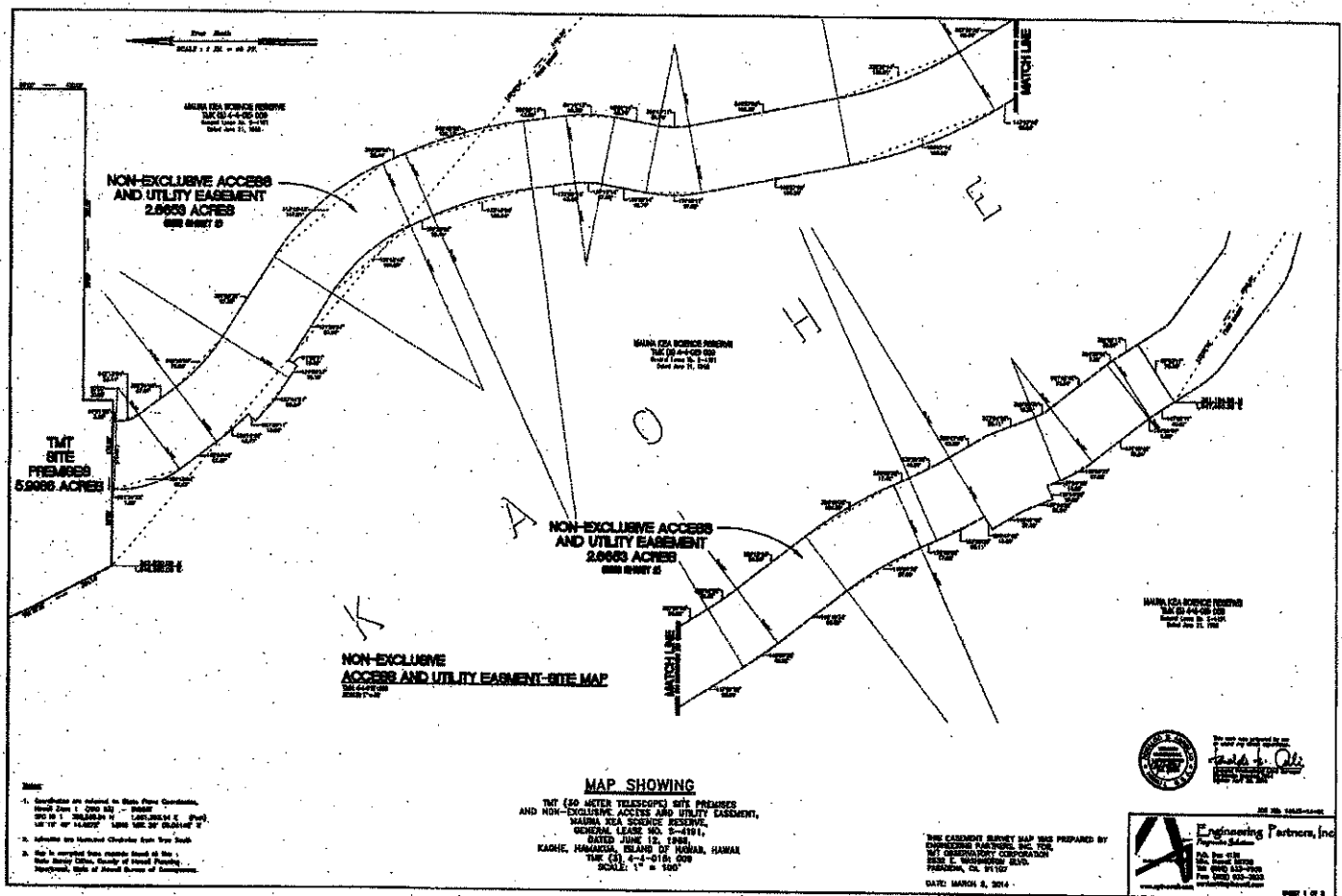


Exhibit C-2 to Sublease

Legal Description of Subleased Premises

(attached)

DESCRIPTION

TMT SITE PREMISES

All of that certain parcel of land being a portion of the Government Land of Kaohe, being also a portion of Mauna Kea Science Reserve covered by General Lease S-4191 to the University of Hawaii
Situate at Kaohe, Hamakua, Island of Hawaii, Hawaii

Beginning at the southwest corner of this parcel of land referred to the Hawaii State Plane Coordinate System, Zone 1 (NAD83) 362,519.00 feet North and 1,646,660.00 feet East and the direct azimuth and distance from the Government Survey Triangulation Station "SUMMIT 1955" being 129° 52' 08"; 6,166.86 feet and running by azimuths measured clockwise from True South:

1. 152° 35' 33" 304.14 feet along the remainder of the Government Land of Kaohe and the remainder of Mauna Kea Science Reserved covered by General Lease S-4191 to the University of Hawaii;
2. 180° 00' 00" 190.00 feet same;
3. 270° 00' 00" 630.00 feet along same;
4. 0° 00' 00" 430.00 feet along same;
5. 90° 00' 00" 320.00 feet along same;
6. 0° 00' 00" 30.00 feet along same;
7. 90° 00' 00" 170.00 feet along the same to the point of beginning and containing an area of 5.9986 acres, more or less.



Description Prepared By:
Engineering Partners Inc.

Ronaldo B. Aurelio

RONALDO B. AURELIO
Licensed Professional Land Surveyor
Certificate Number 7564
Expires April 30, 2014

Hilo, Hawaii, March 10, 2014

Exhibit C-3 to Sublease
Legal Description of Easement Area
(attached)

DESCRIPTION

NON-EXCLUSIVE ACCESS AND UTILITY EASEMENT

All of that certain parcel of land being a portion of the Government land of Kaohe, being also a portion of Mauna Kea Science Reserve covered by General Lease S-4191 to the University of Hawaii
Situate at Kaohe, Hamakua, Island of Hawaii, Hawaii

Beginning at the southwest corner of this parcel of land referred to the Hawaii State Plane Coordinate System, Zone 1 (NAD83) 361,104.89 feet North and 1,647,460.58 feet East and the direct azimuth and distance from the Government Survey Triangulation Station "SUMMIT 1955" being 122° 50' 16"; 4,680.47 feet and running by azimuths measured clockwise from True South:

1. 147° 03' 17" 30.07 feet along the remainder of the Government Land of Kaohe and the remainder of Mauna Kea Science Reserved covered by General Lease S-4191 to the University of Hawaii;

Thence along the same on a curve to the left with a radius of 15.00 feet, the chord azimuth and distance being;
2. 144° 25' 01" 1.38 feet;
3. 141° 46' 45" 73.94 feet along same;

Thence along the same on a curve to the right with a radius of 135.00 feet, the chord azimuth and distance being;
4. 149° 50' 37" 37.88 feet;
5. 157° 54' 28" 14.29 feet along same;
6. 67° 54' 28" 15.00 feet along same;
7. 157° 54' 28" 32.04 feet along same;
8. 148° 47' 42" 37.18 feet along same;
9. 238° 47' 42" 15.00 feet along same;

Thence along the same on a curve to the right with a radius of 435.00 feet, the chord azimuth and distance being;

10. 152° 25' 35" 55.11 feet;
11. 156° 03' 28" 17.62 feet along same;

Thence along the same on a curve to the left with a radius of 365.00 feet, the chord azimuth and distance being;

12. 149° 09' 32" 87.69 feet;
13. 142° 15' 36" 89.55 feet along same;

Thence along the same on a curve to the right with a radius of 435.00 feet, the chord azimuth and distance being;

14. 145° 06' 28" 43.22 feet;
15. 147° 57' 20" 86.90 feet along same;

Thence along the same on a curve to the right with a radius of 435.00 feet, the chord azimuth and distance being;

16. 158° 27' 14" 158.52 feet;
17. 168° 57' 08" 156.20 feet along same;

Thence along the same on a curve to the right with a radius of 155.00 feet, the chord azimuth and distance being;

18. 179° 43' 11" 57.92 feet;
19. 190° 29' 14" 45.76 feet along same;

Thence along the same on a curve to the left with a radius of 85.00 feet, the chord azimuth and distance being;

20. 181° 19' 15" 22.08 feet;

21. 172° 09' 16" 43.65 feet along same;
Thence along the same on a curve to the left with a radius of 365.00 feet, the chord azimuth and distance being;
22. 163° 49' 06" 105.84 feet;
23. 155° 28' 55" 25.44 feet along same;
Thence along the same on a curve to the left with a radius of 185.00 feet, the chord azimuth and distance being;
24. 138° 43' 43" 106.65 feet;
25. 121° 58' 31" 82.07 feet along same;
26. 31° 58' 31" 10.00 feet along same;
27. 121° 58' 31" 15.18 feet along same;
Thence along the same on a curve to the right with a radius of 275.00 feet, the chord azimuth and distance being;
28. 127° 44' 21" 55.24 feet;
29. 223° 30' 11" 10.00 feet along same;
Thence along the same on a curve to the right with a radius of 265.00 feet, the chord azimuth and distance being;
30. 138° 12' 29" 43.47 feet;
31. 142° 54' 46" 47.07 feet along same;
Thence along the same on a curve to the right with a radius of 105.00 feet, the chord azimuth and distance being;
32. 162° 13' 04" 69.43 feet;
33. 181° 31' 22" 1.83 feet along same;
34. 270° 00' 00" 70.02 feet along the TMT Building Site Easement;

35. 1° 31' 22" 3.69 feet along the remainder of the Government Land of Kaohē and the remainder of Mauna Kea Science Reserved covered by General Lease S-4191 to the University of Hawaii;

Thence along the same on a curve to the left with a radius of 35.00 feet, the chord azimuth and distance being;

36. 342° 13' 04" 23.14 feet;

37. 322° 54' 46" 47.07 feet along same;

Thence along the same on a curve to the left with a radius of 195.00 feet, the chord azimuth and distance being;

38. 312° 26' 39" 70.86 feet;

39. 301° 58' 31" 97.25 feet along same;

Thence along the same on a curve to the right with a radius of 255.00 feet, the chord azimuth and distance being;

40. 318° 43' 43" 147.01 feet;

41. 335° 28' 55" 25.44 feet along same;

Thence along the same on a curve to the right with a radius of 435.00 feet, the chord azimuth and distance being;

42. 343° 49' 06" 123.13 feet;

43. 352° 09' 16" 43.65 feet along same;

Thence along the same on a curve to the right with a radius of 155.00 feet, the chord azimuth and distance being;

44. 1° 19' 15" 49.38 feet;

45. 10° 29' 14" 45.76 feet along same;

Thence along the same on a curve to the left with a radius of 85.00 feet, the chord azimuth and distance being;

46. 359° 43' 11" 31.76 feet;

47. 348° 57' 08" 156.20 feet along same;

Thence along the same on a curve to the left with a radius of 365.00 feet, the chord azimuth and distance being;

48. 338° 27' 14" 133.01 feet;

49. 327° 57' 20" 86.90 feet along same;

Thence along the same on a curve to the left with a radius of 365.00 feet, the chord azimuth and distance being;

50. 325° 06' 28" 36.27 feet;

51. 322° 15' 36" 89.55 feet along same;

Thence along the same on a curve to the right with a radius of 435.00 feet, the chord azimuth and distance being;

52. 329° 09' 32" 104.50 feet;

53. 336° 03' 28" 17.62 feet along same;

Thence along the same on a curve to the left with a radius of 365.00 feet, the chord azimuth and distance being;

54. 332° 25' 35" 46.24 feet;

55. 328° 47' 42" 43.96 feet along same;

56. 337° 54' 28" 53.11 feet along same;

Thence along the same on a curve to the left with a radius of 65.00 feet, the chord azimuth and distance being;

57. 329° 50' 37" 18.24 feet;

58. 321° 46' 45" 73.94 feet along same;

Thence along the same on a curve to the right with a radius of 85.00 feet, the chord azimuth and distance being;

59. 324° 25' 01" 7.82 feet;

60. 327° 03' 17" 30.07 feet along same;

61. 57° 03' 17" 70.00 feet along same to the point of beginning and containing an area of 2.6653 acres, more or less.



Description Prepared By:
Engineering Partners Inc.

Ronaldo B. Aurelio

RONALDO B. AURELIO
Licensed Professional Land Surveyor
Certificate Number 7564
Expires April 30, 2014

Hilo, Hawaii, March 10, 2014

EXHIBIT “19”

Total Number of Pages:
Tax Map Key No. (3) 4-4-015:Portion of 009

CONSENT is hereby given by the STATE OF HAWAII, by its Board of Land and Natural Resources, Lessor under unrecorded General Lease No. S-4191 dated June 21, 1968, issued to the University of Hawaii, a body corporate, as "Lessee," to the Sublease and Non-Exclusive Easement Agreement (the "Sublease") dated July 28, 2014, between TMT INTERNATIONAL OBSERVATORY LLC, a Delaware limited liability company, whose address is 1111 South Arroyo Parkway, Suite 200, Pasadena, California 91105, as "Sublessee," and the UNIVERSITY OF HAWAII, a public body corporate and the public university of the State of Hawaii, whose address is 2444 Dole Street, Honolulu, Hawaii 96822, as "Sublessor"; SUBJECT, HOWEVER, to the provisions of Section 171-21, Hawaii Revised Statutes, as amended, relating to the rights of holder of security interests; PROVIDED, FURTHER, that nothing contained herein shall change, modify, waive or amend the provisions, terms, conditions and covenants or the duties and obligations of the Lessee or Sublessee under General Lease No. S-4191.

PRELIM. APPRO'D.
Department of the
Attorney General

10004246

SUBJECT FURTHER, that:

1. The Lessee shall submit construction plans of the Sublessee's improvements to the Land Division, Department of Land and Natural Resources, State of Hawaii, for the Chairperson of the Board of Land and Natural Resources' approval prior to constructing any improvements on the premises.

2. The Sublessee shall comply with all the conditions of Conservation District Use Permit No. HA-3568, as approved by the Board of Land and Natural Resources' Findings of Fact, Conclusions of Law, and Decision and Order issued on April 12, 2013.

IT IS UNDERSTOOD that except as provided herein, should there be any conflict between the terms of General Lease No. S-4191 and the terms of the Sublease, the former shall control; and that no further sublease or assignment of any interest of the premises or any portion thereof shall be made without the prior written consent of the Board of Land and Natural Resources.

IN WITNESS WHEREOF, the STATE OF HAWAII, by its Board of Land and Natural Resources, has caused the seal of the Department of Land and Natural Resources to be hereunto affixed and these presents to be duly executed this 9th day of April, 2015.

STATE OF HAWAII

Approved by the Board of Land and Natural Resources at its meeting held on June 27, 2014. R

Interim

By [Signature]
~~WILLIAM J. AILA, JR.~~ CARTY S. CHANG
Chairperson
Board of Land and Natural Resources

LESSOR

APPROVED AS TO FORM:

[Signature]
JULIE H. CHINA
Deputy Attorney General

Dated: October 24, 2014

UNIVERSITY OF HAWAII, a public body corporate and the public university of the State of Hawaii

By [Signature]
David Lassner
Its President

APPROVED AS TO FORM:

[Signature]
Print Name: Fawn L. Sanderson
Carlsmith Bell
Title: Partner
Dated: 2/9/15

By [Signature]
Jan Gouvêa
Its VP for Administration

By [Signature]
Donald O. Straney
Its Chancellor, UH Hilo

LESSEE/SUBLESSOR

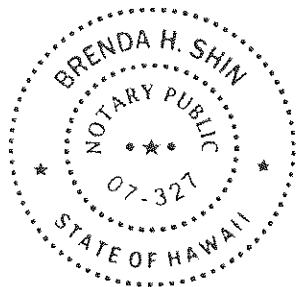
TMT INTERNATIONAL OBSERVATORY LLC, a Delaware limited liability company

By [Signature]
Edward C. Stone
Its EXECUTIVE DIRECTOR

SUBLESSEE

STATE OF HAWAII)
) SS.
CITY AND COUNTY OF HONOLULU)

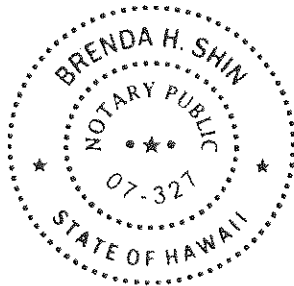
On this 6th day of February, 20 15, before me appeared David Lassner and Jan Gouveia, to me personally known, who, being by me duly sworn, did say that they are the David Lassner, President and Jan Gouveia, VP for Administration, respectively, of the UNIVERSITY OF HAWAII, a body corporate, and that the seal affixed to the foregoing instrument is the corporate seal of said University and that the foregoing instrument was signed and sealed in behalf of said University by authority of its Board of Regents, and the said Jan Gouveia and David Lassner acknowledged said instrument to be the free act and deed of said University.



Brenda H Shin
Notary Public, State of Hawaii

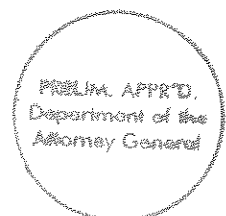
Brenda H. Shin

My commission expires: 7-08-15



Doc Date none at time of notarization # Pages 6
Brenda H Shin First Circuit
Doc. Description Consent to sublease and Non-Exclusive Easement Agreement between the International Observatory LLC and the UH
Brenda H Shin 2-06-15
Notary Signature Date

NOTARY CERTIFICATION

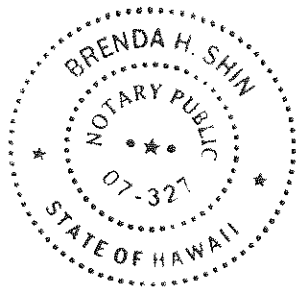


STATE OF HAWAII

COUNTY OF

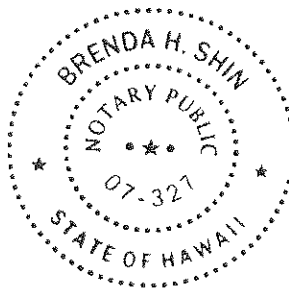
)
) SS.
)

On this 9th day of February, 20 15, before me appeared Donald Straney, to me personally known, who, being by me duly sworn, did say that he/~~she~~ is the Chancellor, UH Hilo, of the UNIVERSITY OF HAWAII, a body corporate, and that the seal affixed to the foregoing instrument is the corporate seal of said University and that the foregoing instrument was signed and sealed in behalf of said University by authority of its Board of Regents, and the said Donald Straney acknowledged said instrument to be the free act and deed of said University.

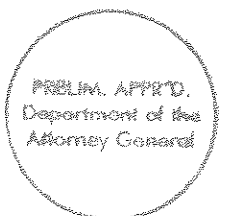


Brenda H Shin
Notary Public, State of Hawaii

Brenda H. Shin
My commission expires: 07/08/15

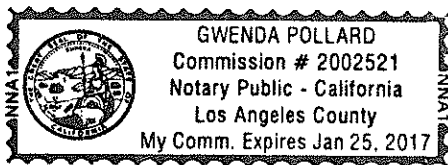


Doc Date none at time of notarization # Pages 6
Brenda H. Shin First Circuit
Doc Description Consent to sublease and Non-Exclusive Easement Agreement Between TMT International Observatory LLC + the UH
Brenda H Shin 2/09/15
Notary Signature Date
NOTARY CERTIFICATION



STATE OF California)
COUNTY OF Los Angeles) SS.

On this Feb. 25 day of 25 February, 2015,
before me personally appeared Edward C. Stone,
to me personally known, who, being by me duly sworn or affirmed,
did say that such person executed the foregoing instrument as the
free act and deed of such person, and if applicable in the
capacity shown, having been duly authorized to execute such
instrument in such capacity.



Gwenda Pollard California
Notary Public, State of
California Gwenda Pollard
My commission expires: Jan. 25, 2017

