

**AURA AGREEMENT No. C2013-720
SMARTS 3 (MOU)
TO OPERATE SMALL TELESCOPES IN CHILE**

THIS MEMORANDUM OF UNDERSTANDING (MOU) is between the Association of Universities for Research in Astronomy, Inc. ("AURA"), an Arizona non-profit corporation, located at 950 North Cherry Avenue, Tucson Arizona 85719-4933, and Yale University ("Yale"), a private non-profit corporation in New Haven, Connecticut that operates the Small and Moderate Aperture Research Telescope System 3 Consortium ("SMARTS 3 Consortium"), as defined by the SMARTS 3 Membership Agreement MOU (AURA AGREEMENT No. C2013-721, "SMARTS 3 Membership Agreement"). AURA and the "SMARTS 3 Consortium" together constitute the "Parties".

Introduction

The SMARTS 3 Consortium will operate the small telescopes (1.5m, 1.3m, 0.9m) at Cerro Tololo Inter-American Observatory ("CTIO") in Chile pursuant to the terms and conditions of this MOU.

I. Recitals

AURA under Cooperative Agreement AST 0809409 between AURA and the United States of America represented by the National Science Foundation, CFDA #47.049, now in full force and effect, operates the National Optical Astronomy Observatory (NOAO), is engaged in the management, operation and maintenance of observatories and related activities for research in the field of astronomy, and desires to enter into an agreement with the SMARTS 3 membership.

NOAO operates the Cerro Tololo Inter-American Observatory ("CTIO"), which manages the small telescope site in Chile.

This MOU represents the third phase in management of the small aperture telescopes at CTIO. The RFP as described in Section II.C, below, continues to establish basic terms of the SMARTS 3 project, as it did for SMARTS 1 and SMARTS 2.

II. MOU.

A. The Work

The Members and AURA (the "SMARTS 3 Consortium" or the "Consortium") agree to operate the small telescopes at Cerro Tololo on the terms and conditions set forth in this MOU.

B. Term of MOU

1. The term of this agreement shall be from August 1, 2013 to July 31, 2016, unless further extended or terminated by the mutual agreement of the Parties or by the operation of this MOU.
2. By February 28, 2014, the Parties will confirm that sufficient financial resources are available to continue the MOU beyond July 31, 2014. If Parties do not mutually agree in writing that such resources are available, the MOU will terminate on July 31, 2014.

3. This arrangement is subject to periodic review by independent ad hoc committees that may be convened from time to time by the National Science Foundation (“NSF”). Any such committee will base its review on the criteria established in the 2002 RFP, described in Section C, below. In the event of an unfavorable review, the Consortium will continue to operate the telescopes at least through the end of the scheduling semester then in progress (or thereafter, as NSF and the Consortium may agree). The financial and closeout responsibilities set forth in this MOU shall become applicable sixty days prior to the end date of final year, and shall survive termination of this MOU.

C. History

In 2002 NOAO initiated a Request for Proposals (RFP) for the operation of the 0.9-m, 1.3-m and 1.5-m telescopes (the “existing small telescopes”) at Cerro Tololo International Observatory in Chile. This RFP requested that responders should be: “prepared to assume the full responsibility, (technical, scientific, and financial), for operations of these telescopes.”

The RFP further stated: “CTIO wishes to retain some access for its users to a CCD imaging capability similar to that presently offered at the 0.9-m telescope.” In exchange for providing the three telescopes and associated instrumentation, CTIO would retain access to 25% of the total observing time, integrated over all three telescopes, with at least half of this time being for CCD imaging. In addition, through an agreement between AURA and the University of Chile, the Chilean astronomers are entitled to 10% of the observing time. The provision of the telescopes and current instrumentation would be the extent of NOAO's contribution. The continued operation and maintenance of all items will be the responsibility of the winning proposal. Proposers are urged to plan for early replacement of the 0.9-m telescope control system.”

The following factors were used in proposal evaluations:

1. Quality and significance of the proposed scientific programs
2. Educational impact of the proposed use
3. Plans for additional instrumentation for the telescopes
4. Plans for public outreach
5. Technical and financial resources available to ensure that the proposed program will be implemented successfully.

The proposal submitted by the SMARTS Consortium (as originally constituted in 2002, “SMARTS 1”), together with an Operations Plan and Budget, was accepted, and the SMARTS Agreement to Operate Small Telescopes in Chile, AURA Contract No. C33003A, was entered into by AURA and the SMARTS 1, effective as of February 1, 2003. The SMARTS 1 consortium was charged with operating the existing small telescopes from February 1, 2003, through January 31, 2006. The SMARTS 2 consortium was charged with operating the existing small telescopes from February 1, 2006 through January 31, 2011. The SMARTS 2 consortium was extended through July 31, 2013 by an amendment to its contract (C77006A). This MOU represents the third phase in management of the small aperture telescopes at CTIO, which will be accomplished by a reconfigured, flexible SMARTS 3 Consortium. The RFP continues to establish basic terms of the SMARTS 3 project, as it did for SMARTS 1 and SMARTS 2.

D. Title to Property; Export and Import.

1. Title to Newly-Acquired Equipment. Except for equipment currently in Chile, and except as noted in Paragraph 3b (i), below, AURA and its subsidiaries and each Member, respectively, will retain title to any equipment that it purchases for Consortium operations, be responsible for its upkeep, and bear the risk of its loss or damage.
2. U.S. Export Law Compliance. In the performance of this MOU, any of the Parties may transfer, exchange, or develop data, information, software, hardware or other technology that may be subject to U.S. export control laws and regulations, including the International Traffic in Arms Regulations, 22 C.F.R. 120-130, and the Export Administration Act regulations, 15 C.F.R. 730-774. Each of the Parties individually will be responsible for obtaining export licenses or other export authority as may be required before exporting controlled data, information, software, hardware or other technology to foreign countries or providing access to foreign persons (as defined in 22 C.F.R. 120.16). Each of the Parties agrees to comply with any applicable United States laws and regulations in the export of such data, information, software, hardware, or other technology. No other Party will be responsible for any failure of another Party to comply with such laws or regulations.
3. Importing Equipment into Chile
 - a. Requesting AURA import of equipment. Upon the reasonable request of a Member, AURA shall import equipment into Chile for the Consortium's or the Member's use on the SMARTS 3 project. All foreign-manufactured (*i.e.*, not manufactured in Chile) equipment to be used in Chile will be imported into Chile by AURA. All costs associated with acquisition and import of equipment to Chile will be borne by the Party purchasing or supplying the equipment, including the costs associated with any export or import permits necessary for the equipment. Each of the Parties agrees to comply with any applicable Chilean import laws and regulations in the import into Chile of any such equipment. The Member desiring the importation into Chile of equipment and AURA shall cooperate in lawfully importing the desired equipment.
 - b. Management of equipment purchase and import. Any equipment purchased by a Party outside of Chile for use under this MOU in connection with the SMARTS project in Chile may be used under SMARTS 3 only if the following terms and conditions are satisfied and procedure used:
 - i. Either before or concurrently with the import into Chile, the purchasing Party will transfer legal title to the equipment to AURA. The purchasing Party will execute any documents necessary to transfer to AURA title to all property shipped to AURA in Chile. AURA will retain legal title while the equipment is in Chile. AURA shall maintain accurate records of the identity of the Purchaser of all equipment shipped to it under this MOU.
 - ii. Any Party exporting property to Chile under this MOU will coordinate such shipments with the AURA Export Control Officer including, as necessary, by presenting all necessary documents and information required to obtain export licenses from the United States Government.

- iii. Export licenses for all shipments to Chile under this MOU will be applied for and executed under the name of AURA and administered by the AURA Export Control Officer.
- iv. The Parties agree to comply with U.S. government export laws and regulations and Chilean government import laws and regulations in shipping equipment to AURA in Chile.
- v. AURA assumes no responsibility for loss or damage to such equipment during shipment or while the equipment is in Chile.
- vi. AURA will dispose of such equipment in Chile as directed by the purchasing Party, at the expense of that Party.
- vii. If the purchasing Party requests that the equipment be shipped out of Chile, AURA will transfer the legal title to the equipment back to the purchasing Party. All costs associated with the export of equipment from Chile will be borne by the Party that is receiving the equipment, including the costs associated with any export or import permits necessary for the equipment.

E. Financial Matters

1. AURA will annually provide the Consortium a schedule of costs for all mountaintop activities to the SMARTS 3 Principal Scientist, Financial Officer, and Management Council to be reimbursed by the SMARTS 3 Consortium. Upon request, AURA will also provide a justification for the costs set by its schedule. Costs scheduled for telescope share, employee salaries and benefits, and mountaintop meals and accommodations will be denominated in U.S. dollars, based upon an anticipated exchange rate between Chilean pesos and U.S. dollars as described in Paragraph 2, below. AURA will concurrently provide its best estimate for other costs, which may vary subsequently depending on local costs and exchange rates. Metered costs such as engineering support, electricity, water, and liquid nitrogen will be given in appropriate units.
2. For the duration of this MOU, the accepted exchange rate will be 475 Chilean pesos for every US dollar. This peso rate may be re-negotiated by the Principal Scientist and the Director of NOAO-South or his or her designee if the actual exchange rate between the Chilean peso and the US dollar deviates from this rate by more than 10% for a continuous period of more than two consecutive calendar months.

F. Chilean astronomers

Due to the 1961 AURA operating agreement with the University of Chile as clarified on October 16, 1998:

1. Ten (10) % of all time available on SMARTS telescopes in Chile is to be provided to Chilean astronomers. If Chilean astronomers do not use their full ten (10) % in a given semester, the extra time will be allocated to Members in proportion to their shares of SMARTS during that semester.
2. Chilean proposals will be submitted through NOAO's proposal process, and will be prioritized by the Chile National Time Assignment Committee ("CNTAC"). NOAO will coordinate with CNTAC so that Chilean proposals will be prepared

appropriately respecting any special operating conditions and restrictions applied by the Members for its users in general. Upon request, the SMARTS Principal Scientist will provide a copy of approved current and future operating plans to the CNTAC.

3. SMARTS will be responsible for funding the visiting astronomer expenses for Chilean observing runs on SMARTS telescopes.

G. Liability for Personal Injury and Property Damage

1. The Parties recognize that the 1.5-m, 1.3-m and 0.9-m buildings and telescopes, complete with control systems, acquisition/guider boxes, and guider assemblies and any CTIO instruments ("Existing Telescopes"), were funded by NSF. (The telescope control system on the 0.9m was purchased by SMARTS/GSU as part of SMARTS for \$75K in April 2005.) The U. S. Government therefore has an equitable ownership interest in the Existing Telescopes. The U. S. Government does not insure its property against casualty loss and, under its agreement with the NSF, AURA does not insure the Existing Telescopes. In the event of casualty loss of one or more of the Existing Telescopes, or any portion thereof, AURA will not be required to repair, replace or render such telescope or portion thereof operable except as AURA shall determine in its sole discretion, unless such repair or replacement is fully funded by the NSF.
2. Each Member of SMARTS is liable for its own actions, as described in the "SMARTS 3 Membership Agreement".
3. Each Party shall be solely responsible for its obligations under this MOU.

H. Amendments/Changes

This MOU may be amended at any time by the execution of an amendment signed by an authorized representative of each Party. Prior to becoming effective as to that Member, any such Amendment may be subject to approval by regulatory authorities having jurisdiction over the signatory party.

I. Incorporation of Membership Agreement; Priority of Documents; Survival

This MOU shall incorporate and include the executed "SMARTS 3 Membership Agreement". In the event of any conflict, the terms of this MOU shall prevail. If the SMARTS 3 Consortium should be terminated by action of the Management Council, rights and obligations under this Agreement which by their nature should survive, including, but not limited to any and all payment obligations invoiced prior to the termination or expiration hereof, will remain in effect after termination or expiration hereof.

J. Compliance with laws

Each Party agrees to comply with applicable Chilean and United States laws and regulations in its performance of this MOU. All shipments to CTIO shall be made in accordance with the provisions of the Agreement between AURA and the Government of Chile. Copies of the Agreement between AURA and the Government

of Chile shall be available to any Party upon written request to AURA.

K. Notices

All notices under this MOU shall be given in writing, by overnight mail, by confirmed facsimile, at the addresses set forth in the Membership Agreements or as may later be changed by a party by written notice given to AURA, the Principal Scientist, and all Consortium Members. Notices may also be given by email with confirmation of receipt, at the email addresses set forth in the Membership Agreements.

L. Counterparts

This MOU may be executed in any one or more identical counterparts, each of which shall be deemed to be an original instrument, but all of which together shall constitute but one instrument.

M. Choice of Law

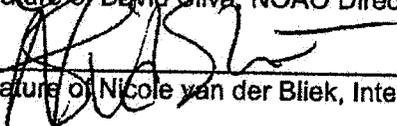
Any action brought to enforce this MOU must be brought in a court of competent jurisdiction located in the United States of America.

The persons executing this Agreement represent and warrant that they have the full power and authority to enter into this Agreement on behalf of the entities they are representing.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the dates set forth below to be effective on the date first set forth above.

Signature lines:

For AURA:

	Date: 8/1/13
Signature of William Smith, AURA President	
	Date: 7/30/13
Signature of David Silva, NOAO Director	
	Date: July 18, 2013
Signature of Nicole van der Blik, Interim CTIO Director	

For Yale:

Signature of Authorized Representative _____ Date: _____

Print Name and Title _____

of Chile shall be available to any Party upon written request to AURA.

K. Notices

All notices under this MOU shall be given in writing, by overnight mail, by confirmed facsimile, at the addresses set forth in the Membership Agreements or as may later be changed by a party by written notice given to AURA, the Principal Scientist, and all Consortium Members. Notices may also be given by email with confirmation of receipt, at the email addresses set forth in the Membership Agreements.

L. Counterparts

This MOU may be executed in any one or more identical counterparts, each of which shall be deemed to be an original instrument, but all of which together shall constitute but one instrument.

M. Choice of Law

Any action brought to enforce this MOU must be brought in a court of competent jurisdiction located in the United States of America.

The persons executing this Agreement represent and warrant that they have the full power and authority to enter into this Agreement on behalf of the entities they are representing.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the dates set forth below to be effective on the date first set forth above.

Signature lines:

For AURA:

Signature of William Smith, AURA President Date: _____

Signature of David Silva, NOAO Director Date: 7/30/13

Signature of Nicole van der Blik, Interim CTIO Director Date: July 18, 2013

For Yale:

Signature of Authorized Representative Date: 8/1/2013

Donald T. Deyo, Ph.D.

Print Name and Title Director, Corporate Contracts and Export Control Licensing
Yale University

Reviewed and Approved
Corporate Contracts
Yale University
Date: _____

**AURA AGREEMENT No. C2013-721
SMARTS 3 (MOU)
MEMBERSHIP AGREEMENT**

THIS MEMORANDUM OF UNDERSTANDING (MOU) is between each of the Small and Moderate Aperture Research Telescope System 3 (“SMARTS 3”) Consortium members, as further defined below (hereinafter, “Members” or “Parties”).

Introduction

A consortium consisting of the following “Members” shall constitute the “SMARTS 3 Consortium” (or “the Consortium”):

- A. Yale University (“Yale”), a private, non-profit corporation in New Haven, Connecticut
- B. Todd Henry
- C. The National Optical Astronomy Observatory (“NOAO”)
- D. Debra Fischer
- E. Georgia State University Research Foundation (“GSU”), a nonprofit corporation in Atlanta, Georgia
- F. Ohio State University (“OSU”), a subdivision of the State of Ohio
- G. Michael Shara
- H. Research Foundation of the State of New York, for State University of New York (“SUNY”), a subdivision of the State of New York
- I. Sejong University
- J. Wesleyan University
- K. Secondary Members as defined in section C, paragraph 1.b. below:
- L. High Point University

The SMARTS 3 Consortium will operate the small telescopes (1.5-m, 1.3-m, 0.9-m) at Cerro Tololo Inter-American Observatory (“CTIO”) in Chile pursuant to the terms and conditions of the MOU between The Association of Universities for Research in Astronomy, Inc. (“AURA”) and Yale (AURA AGREEMENT No. C2013-720, hereinafter the “SMARTS Operations Agreement”).

II. MOU.

A. The Work

The Members of the “SMARTS 3 Consortium” agree to the terms of this MOU including the schedule and terms of contributions as outlined in Appendix A.

B. Term of MOU

1. The term of this agreement shall be from August 1, 2013 to July 31, 2016, unless further extended or terminated by the mutual agreement of the Parties or by the operation of this MOU.
2. By February 28, 2014, the Parties will confirm that sufficient financial resources are available to continue the MOU beyond July 31, 2014. If Parties do not mutually agree that such resources are available, the MOU will terminate on July 31, 2014.

C. Management and Memberships

1. A "Member" of the SMARTS 3 Consortium may be a research or academic institution; a specific department or division within such an institution, as represented by the institution; or individual research groups or researchers, whose membership in the Consortium has satisfied the conditions of this MOU and has been approved by the Management Council.
 - a. Members who in any semester (as defined in Section D, Paragraph 1, below) contribute \$25,000 or the equivalent (as determined by the Management Council and consistent with Section E, below) in any combination of cash, services, operations, telescopes, or instrumentation (the "Primary level"), will be considered Primary Members during the semester of their contribution at the Primary level. Primary Members are entitled to a seat on the SMARTS 3 Management Council, as defined in Paragraph 2, below. A Primary Member is entitled to attend and vote in the Management Council when its contribution has been made or (in the view of the Management Council) adequately committed. Membership in the Management Council terminates at the end of the last semester for which the Primary Member contributed at the Primary level.
 - b. Members who contribute at less than the Primary level will be considered Secondary Members. Secondary Members will not be entitled to a seat on the SMARTS 3 Management Council. A Secondary Member may join at any time within the term of this MOU, provided observing time is available, and is required to complete a supplementary agreement, the form of which can be found in Appendix B.
2. SMARTS 3 will be governed by a Management Council, comprised of one representative from each of the Primary Members. The Management Council shall have oversight responsibility for this MOU and the overall operations of the SMARTS 3 Consortium project. To carry out this responsibility, it shall:
 - a. Meet annually, via a teleconference, a videoconference, or in person, at a place and time designated by the Principal Scientist, to evaluate operations over the previous year and approve an operations plan for the following year. Each Primary Member will pay its own costs related to attending meetings of the Management Council. Primary Members who cannot attend the annual meeting may attend by teleconference.
 - b. Hold teleconferences as and when necessary, as determined by the Principal Scientist or any three Primary Members, to examine specific issues.
 - c. Act by a majority vote of those Primary Members present in person or by proxy in a meeting of a quorum. A quorum shall be a majority of the Primary Members. Major disputes among the Primary Members regarding the operation of the SMARTS project will be resolved by the Management Council on the basis of one vote per Consortium Member, with NOAO having the deciding vote in case of ties.
 - d. Review and approve or reject the proposed addition of any new Members of the Consortium.
 - e. Appoint a Principal Scientist, and review and approve the Principal Scientist's choice of a SMARTS Financial Officer.
 - f. Should wind-down become necessary, or any Consortium Member wish to cease membership or be in breach of this MOU, address

- orderly wind-down, withdrawal, membership termination, or other appropriate action, in consultation with the Principal Scientist.
- g. Take other actions appropriate and necessary to the overall management of the Consortium.

3. The Principal Scientist shall:

- a. Have overall responsibility for the project.
- b. Assign any of the responsibilities listed below to his/her designee.
- c. Supervise day-day running of the project from his or her home institution, traveling when necessary to ensure smooth operations.
- d. Direct the SMARTS off-site team in its scheduling of telescope time, in accordance with the shares allocated by the Management Council.
- e. Resolve any issues pertaining to SMARTS operations on Cerro Tololo, turning in the first instance to the Director of CTIO, or his/her designee.
- f. Supervise the preparation of reports and plans for consideration by the Management Council, and for calling Management Council meetings.
- g. Convene the Management Council when issues arise that require consideration by the Consortium.
- h. Coordinate regularly with the NOAO Office of Public Affairs & Educational Outreach on the timely release of potentially newsworthy scientific results and imagery from SMARTS telescopes, and on mutually beneficial educational outreach activities
- i. Appoint and supervise a SMARTS Financial Officer.
- j. Sign documents on behalf of the Consortium to bind the Consortium and its Primary Members, when consistent with Management Council action or otherwise with the duties of the Principal Scientist.

4. The SMARTS 3 Financial Officer shall:

- a. Report to the Principal Scientist, and manage all financial aspects of the SMARTS Consortium.
- b. Manage Consortium membership invoicing and payment collection.
- c. Serve as interface between Consortium Members, NOAO and CTIO.
- d. Prepare annual budgets and financial reports on Consortium operations for the consideration of the Management Council.
- e. Provide an ongoing record of the financial status of the Consortium for use by the Management Council and the Principal Scientist upon request by either.

D. SMARTS 3 Finances and Operating Plan

1. SMARTS will operate on a semester basis, and SMARTS semesters will coincide with NOAO scheduling semesters (February-July and August-January) unless otherwise determined by the Management Council.
2. Prior to the start of each semester, the Principal Scientist and Financial Officer will prepare an operating plan. Operating plans may include more than one semester. Operating plans will include a financial projection for the semester(s), and a description of the telescopes, instruments and observing modes that will be supported during the semester(s). The operating plan will also describe the format, due date(s) and submission procedures for observing programs and other information required to carry out SMARTS observations. A Member's

failure to provide observing programs and associated information in the designated format by the designated time and in the designated manner may result in loss or reduction of observing time, at the discretion of the Principal Scientist or other individual designated by the Management Council. The operating plan will also specify a date by which observing time will be officially allocated by the Principal Scientist, and the principles by which such allocation will be carried out. Each operating plan must be reviewed and approved by the Management Council.

3. Once the Management Council has approved an operating plan for a semester, the operating plan and contribution schedule (Appendix A) for that semester will be renegotiated only if one or more of the following circumstances applies, as reasonably determined by the Management Council:
 - a. The Chilean Peso to United States Dollar conversion rate is re-negotiated as outlined in the "SMARTS Operations Agreement".
 - b. Prior to the allocation of telescope time for the semester, the Principal Scientist determines that technical problems prevent the telescopes, instruments or operating modes set out in the operating plan from being supported.
 - c. The non-fixed costs estimated by AURA increase by more than the financial contingency provided in the operating plan.
4. Once telescope time has been allocated, all Members are liable for the contributions specified in Appendix A, even if technical problems encountered thereafter prevent the telescopes, instruments or operating modes set out in the operating plan from being supported. If, after telescope time has been allocated, any individual Member sustains a loss of observing capability in a semester due to technical problems (not including bad weather) that exceeds either (i) the equivalent of 15 nights of observing time, or (ii) 1/3 of the time allocated to that Member, the Management Council may authorize the Principal Scientist to reallocate observing time according to the following principles:
 - a. Fractional shares of overall observing time, and of time on specific instruments, telescopes and observing modes should be kept as close as possible to those specified by the operating plan and Membership agreements, even if the total number of nights is reduced.
 - b. Disruption of travel plans already set in place should be kept to a minimum.
 - c. Any financial savings realized by ceasing operations of some observing capability will be refunded to Members in proportion to the number of nights of observing time lost by that Member.

E. SMARTS 3 Contributions and Shares

1. Each Consortium Member shall contribute telescopes, instrumentation, cash, and scientific oversight and management as set forth in Appendix A and reflected in the Operating Plan. Any Member that fails timely to make its complete contribution may be subject to adverse action by the Management Council, including by reduction in facility use or termination of its Consortium Membership.
2. The Principal Scientist, or his or her designee, on behalf of the Management Council shall allocate telescope time among Consortium Members in every

semester of operation according to the principles established in the approved operating plan for that semester. The operating plan will specify the relative value of time with the various telescopes and instrument modes.

3. The operating plan may authorize the Principal Scientist to allocate time of up to six (6) nights per semester per telescope for science or engineering purposes at his/her discretion. Any such time not used will be allocated to Members proportionately to their shares of SMARTS during that semester.
4. Due to an agreement between AURA and the University of Chile, ten (10) % of all time available for science on SMARTS telescopes in Chile is to be provided to Chilean astronomers. If Chilean astronomers do not use their full ten (10) % in a given semester, the extra time will be allocated to Members in proportion to their shares of SMARTS during that semester.
5. All shares of SMARTS 3 established in this MOU, or in SMARTS 3 operating plans, will refer to and be based on net time – that is, the time remaining after the Chilean time and any discretionary time under Paragraphs 3 and 4, above, has been set aside.
6. Member contributions to SMARTS 3 may come in one of three forms, described below. The precise allocation of shares within the guidelines specified below will be set out in the operating plans and Appendix A.
 - a. Telescopes. Members may contribute telescopes, which may include the dome, the telescope itself, and a working Telescope Control System ("TCS"). Any expenditure by SMARTS 3 for major new equipment and/or software required to bring the telescope into working order will be deducted from the share of observing time allocated to the contribution of the telescope. Routine telescope and facility maintenance will be considered part of the operating expenses for the project, and will not be subject to such a deduction.
 - b. Instrumentation. Members may contribute instrumentation for the telescopes, which should include documentation and training for operators and observers, as well as non-routine maintenance, upkeep and repairs of the instrument(s). Any expenditure by SMARTS 3 to bring the instrument into working order will be deducted from the share of observing time allocated to the contribution of the instrument.
 - c. Operations. Members may contribute toward the operations costs of SMARTS, which may include mountaintop expenses, employee salaries, routine maintenance of telescopes and instruments, scientific, technical and financial management, and any other costs incurred by the Consortium. Contributions may be either in cash, or in kind, as provided in Appendix A and Operating Plans. Major upgrades and repairs of telescopes or instruments, and salaries and travel expenses of instrument or telescope scientists and engineers, are considered part of the Telescope (see 6.a., above) or Instrument (see 6.b., above) contributions.
7. For any telescope or instrument supplied by a Party other than AURA, the supplying Party shall determine whether or not to insure such property, and the

risk of loss of or damage to the telescope of instrument shall be borne entirely by the supplying party. No supplying Party shall have any obligation to replace any such equipment in the event of destruction or loss.

F. Liability for Personal Injury and Property Damage

1. The Parties shall, at all times, exercise due care for safety. No Party shall make any claim against any other Party (or its guests, agents, employees, officers or directors), for property damage, personal injury or death arising out of any injury, death or damage arising from the activities conducted pursuant to this MOU, including such events that may occur as a result of negligence. Each of the Parties shall, to the extent permitted under the laws governing such Party, indemnify and hold harmless the other Party from and against any such claim made by any of the indemnifying Party's employees, agents, or affiliates.
2. Each of the Parties shall obtain insurance or self-insure for Liability, Casualty and other risks consistent with its own institutional insurance program. Each of the other Parties shall be endorsed as an additional insured as regards operations under this MOU in the insurance policies of the Party, or in the self-insurance program of the Party. Each party that maintains a self-insurance program certifies that all applicable regulatory requirements for such self-insurance program have been met.
3. Each Party shall be solely responsible for its obligations under this MOU.

G. Amendments/Changes

This MOU may be amended at any time by the execution of an amendment signed by an authorized representative of each Party. Prior to becoming effective as to that Member, any such Amendment may be subject to approval by regulatory authorities having jurisdiction over the signatory party. The addition of Consortium Members and recalculation of shares and related obligations shall not be treated as an amendment to this MOU if approved by the Management Council as set forth in this MOU.

H. Incorporation of Membership Agreement; Priority of Documents; Survival

This MOU shall incorporate and be subservient to the executed "SMARTS Operations Agreement". In the event of any conflict, the terms of the "SMARTS Operation Agreement" shall prevail.

If the SMARTS 3 Consortium should be terminated by action of the Management Council, rights and obligations under this Agreement which by their nature should survive, including, but not limited to any and all payment obligations invoiced prior to the termination or expiration hereof, will remain in effect after termination or expiration hereof.

I. Compliance with laws

Each Party agrees to comply with applicable Chilean and United States laws and

regulations in its performance of this MOU. All shipments to CTIO shall be made in accordance with the provisions of the Agreement between AURA and the Government of Chile. Copies of the Agreement between AURA and the Government of Chile shall be available to any Party upon written request to AURA.

J. Notices

All notices under this MOU shall be given in writing, by overnight mail, by confirmed facsimile, at the addresses set forth in the Membership Agreements or as may later be changed by a party by written notice given to AURA, the Principal Scientist, and all Consortium Members. Notices may also be given by email with confirmation of receipt, at the email addresses set forth in the Membership Agreements.

K. Counterparts

This MOU may be executed in any one or more identical counterparts, each of which shall be deemed to be an original instrument, but all of which together shall constitute but one instrument.

L. Choice of Law

Any action brought to enforce this MOU must be brought in a court of competent jurisdiction located in the United States of America.

The persons executing this Agreement represent and warrant that they have the full power and authority to enter into this Agreement on behalf of the entities they are representing.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement on the dates set forth below to be effective on August 1, 2013.

Signature lines:

For Yale:



Date: 8/7/2013

Signature of Authorized Representative

Print Name and Title

Donald T. Deyo, Ph.D.
Director, Corporate Contracts and
Export Control Licensing
Yale University

Reviewed and Approved
Corporate Contracts
Yale University
Date: [Signature]

For Todd Henry:



Signature of Authorized Representative

Date: 8/1/13

TODD HENRY, DIRECTOR OF RECONS

Print Name and Title

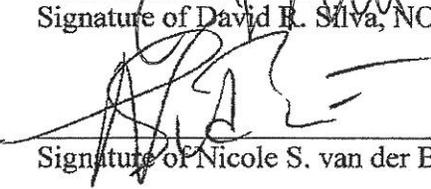
For NOAO:



Signature of David R. Silva, NOAO Director

Date:

8/28/13

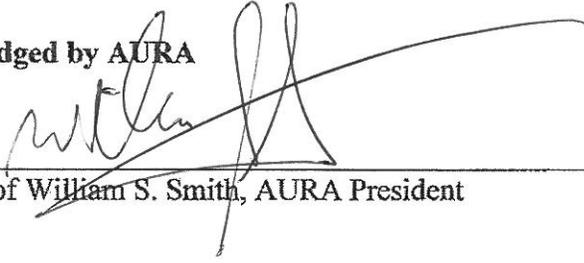


Signature of Nicole S. van der Blik, Interim CTIO Director

Date:

August 28 2013

Acknowledged by AURA



Signature of William S. Smith, AURA President

Date:

8/29/13

For Debra Fischer:

Debra A Fischer

Date: 8-05-13

Signature of Authorized Representative

Debra A. Fischer, Professor

Print Name and Title

For GSU:

Signature of Authorized Representative

Date: 8/9/2013

Print Name and Title

JAMES WEYHENMEYER, VP RESEARCH

Print Name and Title

For NOAA:

Signature of Authorized Representative Date: _____

Print Name and Title

For Debra Fischer:

Signature of Authorized Representative Date: _____

Print Name and Title

For GSU:

Signature of Authorized Representative Date: _____

Print Name and Title

For OSU:

 _____
Signature of Authorized Representative Date: 7-31-13

Geoffrey S. Chatas, Senior Vice President for Business and Finance and CFO

Print Name and Title

For Michael Shara:

Signature of Authorized Representative Date: _____

Print Name and Title

For Michael Shara:

M Shara

Signature of Authorized Representative

Date: *August 7/2013*

MICHAEL SHARA, CURATOR, AMNH

Print Name and Title

For SUNY:

LM

Date: 8/5/13

Signature of Authorized Representative

LASZLO MIHALY

Print Name and Title

PROFESSOR AND CHAIR

For Sejong:



Date: 30 July 2013

Signature of Authorized Representative

Jae-Woo Lee, Professor

Print Name and Title

For High Point University:

Brad N. Barlow

Date: 19 JUN 2015

Signature of Authorized Representative

BRAD N. BARLOW, ASSISTANT PROFESSOR

Print Name and Title

Print Name and Title

For SUNY:

Signature of Authorized Representative _____ Date: _____

Print Name and Title

For Wesleyan University:

Peters,
Signature of Authorized Representative

Nathan
Print Name and Title



Digitally signed by Peters, Nathan
DN: cn=Peters, Nathan, o=Wesleyan
University, ou=Associate Vice
President for Finance,
email=npeters@wesleyan.edu, c=US
Date: 2013.08.05 10:02:22 -04'00'

SMARTS 3 Appendices

- | Appendix A SMARTS 3 Contribution Schedule for Year 1
- Appendix B Secondary Membership Agreement
- Appendix C SMARTS 3 Budget FY14-16

SMARTS 3 Appendices

- Appendix A SMARTS 3 Contribution Schedule for Year 1
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Appendix A: SMARTS 3 Contribution Schedule for Year 1

1.3m / 1.5m Institution	Telescope	Cash Contributions	In Kind Contrib.	Subtotal Contrib.	Year 1 hours	13B (Oct-Jan) hrs	14A (Feb-July) hrs	14B (Aug-Sep) hrs	% of 5840 Total hrs
Debra Fischer (Yale)	1.5m	\$100,000							
<i>Chiron</i>			\$55,739						
<i>1/2 of 1.5m queue</i>			\$22,750						
Subtotal Debra Fischer				\$178,489	892	297	446	149	15.3%
Todd Henry (GSU)	1.3m&1.5m	\$24,000			120	46	54	20	2.1%
NOAO	1.3m&1.5m	tels; site mgmt			876	292	438	146	15.0%
OSU	1.3m	\$50,000							
<i>ANDICAM</i>			\$111,477						
Subtotal OSU				\$161,477	807	257	380	157	13.8%
Stonybrook (SUNY)	1.3m&1.5m	\$25,000		\$25,000	125	42	62	21	2.1%
Yale University	1.3m&1.5m	\$125,000							
<i>Overall Mangement</i>			\$56,280						
<i>1.3m queue & 1/2 of 1.5m queue</i>			\$68,250						
Subtotal Yale University				\$249,530	1,248	309	731	208	21.4%
LSU	1.3m	\$20,000			100	33	50	17	1.7%
Bill Herbst (Wesleyan)	1.3m	\$25,000			125	42	62	21	2.1%
Aleks Scholz (DIAS)	1.3m	\$6,600			33	12	16	5	0.6%
Michael Shara (AMNH)	1.5m	\$20,000							
<i>SIMON</i>			\$ 55,739						
Subtotal Shara (AMNH)				\$ 75,739	379	126	189	63	6.5%
Sejong (Young-Woon Kang)	1.5m	\$29,000			145	75	70	0	2.5%
Piotr Sybilski	1.5m	\$3,000			15	6	6	3	0.3%
Milena Ratajczak	1.5m	\$2,000			10	10	0	0	0.2%
Saul Adelman (Citadel)	1.5m	\$1,000			5				0.1%
Engineering / DD time / holiday	1.3m & 1.5m	\$0			240	108	100	32	0.0%
Chile	1.3m&1.5m	\$0			584	195	292	97	10.0%
Total		\$430,600	\$370,235	\$690,235	5,704				93.6%

Expected "surplus"* SMARTS2 40,209
Total for 1.3m and 1.5m 470,809

* Yale has given \$100K towards SMARTS with the expectation that it might earn some of that back through selling time. It has thus far sold back \$68,530 of this but operations expenses have taken some of these funds away.

Appendix A: SMARTS 3 Contribution Schedule for Year 1

0.9m Institution	Telescope	Contribution	Nights
Chile	0.9m	N/A	28
Todd Henry (GSU)	0.9m	\$50,000	83
Linda French (IWU)	0.9m	\$6,000	10
NOAO	0.9m	tel; site mgmt	42
Andrew West (Boston U)	0.9m	\$24,000	40
Bob Wing	0.9m	\$10,000	17
Total for 0.9m		\$90,000	220

(at least 10% of all scheduled nights)

(at least 15% of all scheduled nights)

APPENDIX B

SMARTS 3 SECONDARY MEMBERSHIP AGREEMENT

THIS SMARTS 3 SECONDARY MEMBERSHIP AGREEMENT establishes that _____ (“Secondary Member”) is eligible for Secondary Membership in SMARTS as defined in AURA Contract No. C2013-721, “SMARTS Membership Agreement”. The SMARTS 3 Secondary Member Agreement is subject to, and incorporates the terms of the SMARTS Membership Agreement.

1. Parties

Secondary Member Information:

Institution:
Name of Institutional Contact:
Address of Institution:
E-mail of Institutional Contact:
Telephone of Institutional Contact:

Primary Member Information:

Institution:
Name of Institutional Contact:
Address of Institution:
E-mail of Institutional Contact:
Telephone of Institutional Contact:

2. Membership term covered by this Agreement: _____

3. Terms

- a. “Secondary Member” will provide _____ in cash (“Membership Contribution”) upon receipt of invoice.
- b. Upon payment of the Membership Contribution, above, the Secondary Member will receive _____ hours and / or _____ nights of observing time on the SMARTS 3 telescopes.

For Secondary Member:

Signature of Authorized Representative Date: _____

Print Name and Title

Signature of Secondary Member Principal Investigator Date: _____

Print Name and Title

For SMARTS:

Signature of Authorized Representative Date: _____

Print Name and Title

Appendix C: SMARTS3 Budget FY14-16

Expenditures	0.9m Expenses Yr8 (proj. Apr-Sept)	0.9m Yr1 (FY14)	0.9m Yr2 (FY15)	0.9m Yr3 (FY16)	1.3m/1.5m Expenses Yr 8 (proj. Jul-Sep)	1.3m/1.5m Yr1 (FY14)	1.3m/1.5m Yr2 (FY15)	1.3m/1.5m Yr3 (FY16)
Facilities Maintenance	5,045.00	5,000	5,150	5,305	8,298	8,500	8,755	9,018
Liquid Nitrogen	4,616.00	6,000	6,180	6,365	29,808	30,000	30,900	31,827
Engineering Support	14,930.00	20,000	20,600	21,218	73,878	53,050	54,642	56,281
Staff Salaries	-	-	-	-	197,848	195,000	201,435	207,478
Chileans/ Ops. on Mt.	4,000.00	4,000	4,120	4,244	76,911	70,000	72,100	74,263
Shuttle Costs	-	-	-	-	4,089	7,000	7,210	7,426
Utilities Costs	3,920.00	4,500	4,635	4,774	27,988	30,000	30,900	31,827
Network fee	3,333.00	4,000	4,120	4,244	6,667	6,667	6,867	7,073
Miscellaneous	4,000.00	4,000	4,120	4,244	9,542	9,000	9,270	9,548
AOSS Mountain Fee	44,000.00	44,000	45,320	46,680	86,214	86,500	89,095	91,768
AURA Fees (2.89%)	2,423.09	2,644	2,724	2,805	14,788	14,326	14,773	15,216
Total Actual AOSS	86,267.09	94,144	96,969	99,878	536,032	510,043	525,946	541,725
Severance Accrual	-	-	-	-	40,000	15,000	10,000	10,000
Total Costs	86,267.09	94,144.35	96,968.68	99,877.74	576,032	525,043	535,946	551,725

Total expected income
Yr1

90,000

470,809

Assumptions:

475 peso rate

3% annual inflation

extra 1% salary increase in FY14

extra 3% salary increase in FY15 and FY16