

AGREEMENT

CONCERNING THE

OPERATIONS

OF THE

**ATACAMA LARGE MILLIMETER/
SUBMILLIMETER ARRAY**

(ALMA)

BY

The National Science Foundation of the United States

hereinafter referred to as “NSF”,

and

The European Organisation for Astronomical Research in the Southern Hemisphere,

hereinafter referred to as “ESO”

and

The National Institutes of Natural Sciences of Japan

hereinafter referred to as “NINS”

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PREAMBLE

NSF, ESO and NINS (hereinafter referred to as the 'Parties'), desiring to

- contribute to global advances in understanding the physics of the Universe;
- ensure a continuing active program of astronomical research in the ESO Member States, East Asia and North America;
- encourage further scientific collaboration between and among the Parties, and other organizations with an interest in millimeter and submillimeter astronomy; and
- achieve full intellectual and economic benefits to all organizations and institutes participating in the ALMA Project, aiming for long-lasting Operations over 30 years, with a fair and equitable division of responsibilities and benefits among them, consistent with their contributions;

and recognizing

- the potential of large interferometric arrays operating at millimeter and submillimeter wavelengths to contribute to the study of a wide range of astronomical problems;
- the potential interest of the astronomical communities of the ESO Member States, East Asia and North America in operating and further developing such an array;
- the interest of other astronomical communities in participating in a large millimeter and submillimeter interferometric array;
- that NSF and NINS have to carry out their obligations under this Agreement subject to their applicable national laws and regulations, and that ESO has to carry out its obligations under this Agreement within the framework of the Convention Establishing a European Organisation for Astronomical Research in the Southern Hemisphere signed on 5 October 1962 and its annexed Financial Protocol, ESO's agreements with the Republic of Chile and its internal rules;
- the Agreement Concerning the Joint Construction and Operation of the Atacama Large Millimeter Array between NSF and ESO as amended on 28 February 2007 and all its Annexes, and the Agreement Concerning the Construction of the Enhanced Atacama Large Millimeter/submillimeter Array, signed by NSF on 09 August 2004, by ESO on 25 August 2004 and by NINS on 14 September 2004 and all its Amendments and Annexes;
- the Agreement on Scientific Collaboration for Furthering Astronomical Investigations between the National Science and Technology Council (CONICYT) of the Republic of Chile and Associated Universities Inc. (AUI) and European Southern Observatory (ESO) as Executive Bodies, for the Construction and Operation of the Atacama Large Millimeter Array (ALMA Project), dated 28 October 2003, as amended on 12 May 2005 considering the participation of the National Astronomical Observatory of Japan (NAOJ), the Agreement between AUI and the University of Chile dated 20 November 1997 as amended on 12/18 July 2002 and the Agreement between NAOJ and the University of Chile dated 19 May 2004; and

- the considerable contributions made and deliverables supplied by ESO, NINS and NSF or on their behalf during the period of construction of ALMA

conclude the following agreement, the objective of which is to provide the framework under which ALMA Operations are conducted.

ARTICLE 1: DEFINITIONS

“This Agreement” means the following Articles and Annexes, and any Amendments.

“ALMA” means the Atacama Large Millimeter/submillimeter Array.

“ALMA Director” means the Director of the Joint ALMA Observatory as described in Article 6.

“ALMA Project” means the collaborative project of the Parties to construct and operate ALMA.

“ALMA Site” means the Operations Support Facility (OSF) and the Array Operations Site (AOS) including the roads connecting the two sites and the road connecting the OSF with the local Chilean highway as well as the Santiago Central Office (SCO).

“Assets” means all tangible or intangible resources and belongings utilized for ALMA, including all Equipment and Infrastructure, and including Intellectual Property rights, but excluding human resources.

“Bilateral Agreement” means the Agreement Concerning the Joint Construction and Operation of the Atacama Large Millimeter Array between NSF and ESO as amended on 28 February 2007 and all its Annexes.

“Board” means the ALMA Board established by this Agreement under Article 5.

“Budget” means a detailed estimate of income, commitment and expenditure on ALMA Operations within a specified financial year.

“Budget Committee” means the committee set up by the Board to advise and assist the Board in financial and budgetary matters.

“Chile” means the Republic of Chile.

“Director’s Council” means the committee as described in Article 7.

“Equipment” means all components of the ALMA Project, including hardware and software, contributed by or on behalf of the Parties, which have been made available to the ALMA Project and accepted by the ALMA Director, including any maintenance tools and software designated for the ALMA Project located at the Parties or their Executives.

“ESO/NSF/NINS Agreement” means the Agreement Concerning the Construction of the Enhanced Atacama Large Millimeter/submillimeter Array, signed by NSF on 09 August 2004, by ESO on 25 August 2004 and by NINS on 14 September 2004, its Amendment #1 signed by NSF on 03 June 2005, by ESO on 22 June 2005 and by NINS on 24 June 2005, and its Amendment #2 signed by NSF on 12 July 2006, by ESO on 29 June 2006 and by NINS on 04 July 2006 and all its Annexes.

“Executives” means the entities designated by the Parties under Article 3.3.

“Infrastructure” means the basic facilities and installations on the ALMA Site which are firmly attached to the ground, contributed by or on behalf of the Parties, and accepted by the ALMA Director.

“Intellectual Property” means intellectual and industrial property which is capable of protection by patents, trademarks or copyright, and industrial design, technical data or expressions of knowledge or expertise, which are capable of being licensed, but excluding data taken through scientific observations with ALMA.

“International Staff” means all employees, other than Local Staff, employed by one of the three Executives under contractual terms and conditions established by the relevant Executive, assigned to work for the JAO in Chile.

“JAO” or “Joint ALMA Observatory” means the international astronomy observatory set up jointly by the Parties in Chile for the purpose of constructing and operating ALMA.

“Key Personnel” means the individual staff members at the JAO as described in Article 12.

“Local Staff” means all employees recruited and employed to work for the Joint ALMA Observatory under Chilean contracts of employment but not those employees hired by one of the Executives under Chilean contracts of employment to perform functions exclusively for one of the Executives, such as, but not limited to, contracting and procurement, accounting and legal matters, etc.

“Observing Time” means the time scheduled for the observing of astronomical objects with ALMA for scientific purposes, excluding the time required for maintenance and improvements of Equipment and for commissioning of instrumentation.

“Offsite Operations Activities” means support services, including maintenance and development, performed outside the JAO and organising and maintaining the interface between the corresponding regional user community and the JAO, including user support services and public outreach and education activities.

“Operations” means the activities related to the use of ALMA and includes development, maintenance and modifications.

“Partner Organisations or Institutes” means an organisation or institute with which an individual Party has set up arrangements according to Article 3.6 of this Agreement to participate in the ALMA Project without joining this Agreement as a Party.

“Party” means any signatory to this Agreement.

“Personnel Committee” means the committee set up by the Board to advise and assist the Board in personnel and appointment matters.

“Regional ALMA Support Centres” means the regional organisations established, operated and managed by the respective Executives to carry out Offsite Operations Activities.

“Shares of Contributions” shall have the meaning as set out in Article 4.1.

“Trilateral Oversight Group” means the committee as described in Article 3.2.

ARTICLE 2: DESCRIPTION

ALMA has been created and is funded by the Parties and overseen by the ALMA Board, composed of members appointed by the Parties. The Parties have each designated an Executive to carry out and manage tasks and responsibilities on behalf of the Parties. The Joint ALMA Observatory, staffed by the Executives and headed by the ALMA Director, provides the unified leadership and management of ALMA Operations. The ALMA Director as Chair of the Director’s Council meets with the Directors of the Executives to coordinate activities among the Executives and the Joint ALMA Observatory. The necessary scientific and technical interactions and support of the respective regional user communities with ALMA occur through the Regional ALMA Support Centres operated and managed by the respective Executives. The ALMA Board utilizes an ALMA Science Advisory Committee (ASAC), a

Personnel Committee, a Budget Committee and an International Visiting Committee as advisory bodies.

ARTICLE 3: RESPONSIBILITY AND AUTHORITY

- 3.1 All responsibilities for the ALMA Project under this Agreement are vested in the Parties.

The Parties shall ensure that in all actions related to the ALMA Project the international partnership is appropriately recognized and acknowledged.

- 3.2 A Trilateral Oversight Group shall oversee this Agreement to ensure that all roles, responsibilities and authorities assigned herein are executed and discharged effectively. Each Party shall appoint one member to the group. A meeting of the group may be called by any Party.

- 3.3 Each Party shall designate an Executive to perform the specific tasks required to operate and further develop ALMA on behalf of their respective Parties. ESO is both a Party to this Agreement and Executive. The NSF Executive currently is Associated Universities Inc. (AUI), in its capacity as manager of the National Radio Astronomy Observatory (NRAO) and the NINS Executive is the National Astronomical Observatory of Japan (NAOJ).

The Parties may change their Executives, and shall notify the Board in writing of such changes as soon as practically possible for the Party implementing the change, but no later than six months in advance. The Party changing its Executive shall ensure that this change does not impede ALMA Operations and that the newly designated Executive is in a position to take over and perform all tasks as specified in this Agreement.

- 3.4 All legal authority to act for and represent the ALMA Project and the Joint ALMA Observatory resides with the Parties and the Executives. The necessary authorities shall, within the legal constraints of the Executives, be delegated to the ALMA Director to accomplish his/her tasks as identified in this Agreement.

- 3.5 As necessary through corresponding arrangements or agreements, the Parties shall require their Executives to perform and manage all tasks and responsibilities under this Agreement.

In particular, the Parties shall require their respective Executives to jointly complete, implement, and maintain a Management Agreement setting out the manner in which the Executives shall work together concerning all ALMA matters as set out in this Agreement.

- 3.6 Each Party may make arrangements with other organisations and institutes consistent with and subordinate to this Agreement, in particular to invite them to participate in the ALMA Project not as a party to this Agreement but as a Partner Organisation or Institute, and shall notify in writing the Board and the other Parties about any such arrangements.

Each Party shall represent its Partner Organisations or Institutes and work for the benefits of the scientific/astronomical communities affiliated to them. The Partner Organisations or Institutes are specified in Annex A to this Agreement.

- 3.7 No Party shall enter into third-party arrangements concerning ALMA that conflict with the terms of this Agreement.
- 3.8 Organisations other than the Parties may request to join the ALMA Project as a party to this Agreement. Such requests shall be approved by all Parties and shall require a written amendment to this Agreement.

ARTICLE 4: CONTRIBUTIONS

- 4.1 Notwithstanding Article 4.2 below, the Parties will share the cost and contributions for ALMA Operations according to the following table:

| NSF | ESO | NINS |
|-------|-------|------|
| 37.5% | 37.5% | 25% |

(hereinafter referred to as “Shares of Contributions”).

The Parties may jointly agree to change the Shares of Contributions. In the case of joining of new parties to this Agreement (Article 3.8), withdrawal (Article 23) or reduction of shares (Article 24), the Shares of Contributions shall be adjusted accordingly.

Any change or adjustment of the Shares of Contributions shall be reflected in a corresponding adjustment of the obligations of the respective Parties and their rights to participate in and benefit from the ALMA Project, unless otherwise provided for in this Agreement.

- 4.2 Each Party recognizes that funds are made available to the other Parties by the national governments of the states supporting them, and by their Partner Organisations or Institutes.

ARTICLE 5: ALMA BOARD

- 5.1 The ALMA Board is the governing body of the ALMA Project and the primary forum for interactions among, and decisions of the Parties to this Agreement recognizing that ultimate approval authority remains with the Parties. The Board shall ensure that Operations are carried out jointly in accordance with the terms and provisions of this Agreement.
- 5.2 All decisions of the Board shall be consistent with this Agreement and with the governing laws and regulations of the Parties and the Executives and their contractual obligations entered into under this Agreement. Any decision by the Board which may impinge upon the legal, budgetary or similar competences of the Executives shall be taken upon recommendation by the Director’s Council.
- 5.3 In addition to the functions set forth elsewhere in this Agreement, the Board shall, *inter alia*,
- (a) define the mid and long term perspectives of ALMA and determine the scientific, technical and administrative policies required to achieve the agreed goals;

- (b) determine the policy and manner in which Operations will be carried out;
- (c) approve the principles for the coordination of operational processes among the Executives and the Joint ALMA Observatory;
- (d) determine and regularly review the policies and procedures for the allocation of Observing Time, data rights, proprietary time, data storage, archiving, access, and subsequent use by the astronomical community; and
- (e) decide on general policies, guiding principles and all other significant matters concerning ALMA Operations.

The policies and principles mentioned above shall be proposed to the Board by the ALMA Director after consultation within the Director's Council. Their implementation shall be overseen by the Board.

Furthermore, the Board shall:

- (f) approve annually a Budget for the following financial year and provide budgetary oversight;
- (g) appoint and review the performance of the ALMA Director and appoint Key Personnel; and
- (h) undertake such other duties and responsibilities to facilitate implementation of this Agreement.

- 5.4 The Board shall be composed of twelve members. NSF and ESO shall each appoint four members and NINS shall appoint three members to the Board. Additionally, the Parties invite Chile to appoint one member to the Board. The members appointed by each Party are expected to cover astronomical, technical and managerial expertise relevant for ALMA. The membership of the Board shall be appropriately balanced.
- 5.5 Each Party shall designate one of its appointed members to speak on its behalf. One member appointed by each Party shall represent the Party's Executive.
- 5.6 The total number of members to the Board as well as the number of members appointed by each Party shall be adjusted jointly by the Parties to reflect changes in the Shares of Contributions.
- 5.7 Each Party may additionally appoint an assessor to the Board. The assessors provide advice to the Board and are entitled to participate in all Board sessions and activities but shall have no voting rights.
- 5.8 The member appointed for Chile shall have the right to both participate in discussions and vote in all matters, except those which involve budgetary obligations of the Parties or relations between the ALMA Project and the Republic of Chile.
- 5.9 Each member of the Board shall have one vote. The presence of two-thirds of the members of the Board, including at least one member from each Party, shall be required to constitute a quorum at any meeting of the Board.

Unless otherwise provided for in this Agreement, decisions of the Board shall be taken by two-thirds majority of the members present and voting.

Notwithstanding the preceding paragraph, the following decisions shall require a two-thirds majority of the Board including the approval of the members of the Board designated by the Parties to speak on their behalf:

- a) The adoption of the rules and procedures of the Board under which the work of the Board is conducted;
- b) Any financial matter to be approved by the Board as provided for in Article 13 of this Agreement;
- c) The adoption for planning purposes of the long term budget plan; and
- d) The approval of the Budget.

5.10 The Board shall meet not less than once per year.

The Board shall designate one of its members as Chairperson and one of its members as Vice-Chairperson.

5.11 The Board may establish advisory bodies additional to the ones set out in this Agreement and shall define their terms of reference.

ARTICLE 6: ALMA DIRECTOR

6.1 The ALMA Director is the Director of the Joint ALMA Observatory, manages the office of the Joint ALMA Observatory and is responsible for leading and managing Operations in Chile. The ALMA Director reports to the Board. The ALMA Director consults with the Director's Council as necessary, particularly when carrying out activities that require coordination among the Executives.

6.2 The Parties through the Executives shall remain responsible for all Offsite Operations Activities which shall be carried out by the Executives under the coordination of the ALMA Director recognizing that these activities are necessary for efficient and effective Operations. However, the ALMA Director shall be responsible for data quality assurance and data delivery to users and shall, through the Director's Council, coordinate and work with the Executives in this respect as part of their Offsite Operations Activities.

6.3 The ALMA Director shall be appointed by the Board through a fair and neutral selection process in accordance with internationally recognized best practices. The Board shall determine the duration of the term of the ALMA Director, set his/her objectives and review at least annually his/her job performance, and decide on the extension of the appointment of the ALMA Director at least one year before the end of his/her term. The ALMA Director shall be employed by one of the Executives and hold unpaid appointments with the other Executives.

6.4 The ALMA Director shall act for the best interests of ALMA and shall not treat any particular Party or Executive in preference to others. He/she shall adhere to the rules applicable to the Executives considering their legal status in Chile and shall regularly inform the Director's Council about the exercise of the authorities delegated to him/her.

6.5 *Inter alia*, the ALMA Director shall:

- (a) Direct the Joint ALMA Observatory;
- (b) Organise the Joint ALMA Observatory to be the focal point for management of ALMA in Chile;
- (c) Chair the Director's Council;

- (d) Allocate Observing Time in accordance with policies and procedures determined by the Board and be responsible for the delivery and quality of data obtained with ALMA;
- (e) Submit to the Board regular reports on the scientific output of ALMA;
- (f) Implement decisions of the Board;
- (g) Represent and promote ALMA in the scientific community and the general public;
- (h) Work, through the Director's Council, to harmonize Offsite Operations Activities of the Executives to the mutual benefit of ALMA and the regional user communities;
- (i) Collaboratively and proactively address through the Director's Council any issues ensuring the proper functioning of ALMA and recommend appropriate actions for approval by the Board;
- (j) Propose annually a draft Budget to the Board upon recommendation of the Director's Council;
- (k) Provide strategic advice to the Board and the Director's Council on all matters concerning the ALMA Project and its role in furthering world astronomy; and
- (l) Perform such other tasks as requested by the Board.

ARTICLE 7: DIRECTOR'S COUNCIL

- 7.1 The Director's Council supports the ALMA Director to ensure that ALMA Operations are carried out in accordance with the obligations of the Parties as defined in this Agreement, the rules applicable to the Executives and the policies set forth by the Board. In particular, the Director's Council shall recommend the long term budget plan for adoption by the Board for planning purposes, and shall recommend to the Board for approval the Budget, the principles of the ALMA proposal review process, and the policies as referred to in Article 5.3 (a) to (e).
- 7.2 On a management level, the Director's Council shall be the forum to discuss and coordinate activities among the Executives and the Joint ALMA Observatory and to identify and resolve policy implementation matters consistent with the policies set forth by the Board.

In particular, the tasks of the Director's Council include:

- (a) Oversight over all administrative matters, including but not limited to procurement, health and safety and insurance matters;
- (b) Coordinating the relations to external parties, including Chilean authorities or third-party projects;
- (c) Coordinating the interactions of the Executives with the scientific communities affiliated to the Parties;
- (d) Facilitating the recruitment of International Staff aimed at achieving a fair balance of representation among the Executives; and

- (e) Development of a joint internal audit function for the Joint ALMA Observatory reporting to the Director's Council and offering recommendations to the ALMA Director.
- 7.3 The Director's Council shall be composed of the ALMA Director as Chair and one representative of each Executive as approved by the respective Parties. The representatives of the Executives shall be assigned with the necessary authorities to represent and commit the respective Executive on all matters tasked to the Director's Council.

The Director's Council shall seek consensus in all matters. In the absence of consensus on substantial matters, the ALMA Director shall convey the different views to the Board.
- 7.4 The Director's Council may establish advisory groups and shall define their terms of reference.

ARTICLE 8: EXECUTIVES

- 8.1 It shall be the role of the Executives to perform the specific tasks required to operate and further develop ALMA on behalf of their respective Parties. Funding and Equipment for ALMA shall be provided by the Parties through the Executives.
- 8.2 The role of the Executives shall include, *inter alia*, to:
 - (a) receive, track, and maintain records of financial contributions from the respective Party;
 - (b) forward such necessary records with appropriate evaluations to the ALMA Director to enable him/her to fulfil all reporting requirements under this Agreement;
 - (c) ensure that all Equipment and Infrastructure, including at times before it has been made available to the ALMA Project and accepted by the ALMA Director, can be examined by the Parties upon reasonable request;
 - (d) carry out decisions of the Board or the Director's Council;
 - (e) employ, or arrange for the employment of, and administrate all staff assigned to the Joint ALMA Observatory, including the ALMA Director;
 - (f) issue contracts for goods and services upon request of the ALMA Director;
 - (g) report regularly to the Board at all times when in the judgment of the Executives such reporting is warranted; and
 - (h) establish, manage and operate the Regional ALMA Support Centres.
- 8.3 The Parties expect the Executives to mutually work together to achieve excellent and efficient Operations. When leadership and responsibility for a task are assigned to a particular Executive, they shall be exercised in cooperation with the other Executives and the ALMA Director.
- 8.4 After consultation with the ALMA Director and upon recommendation by the Board, the Executives owning the concession rights of the ALMA Site may approve new scientific projects by third parties on the ALMA Site and shall define the terms and conditions of such arrangements.

ARTICLE 9: INTERNATIONAL VISITING COMMITTEE

- 9.1 The International Visiting Committee assesses the status of the ALMA Project under terms of reference defined by the Board. It may consist of up to eight members appointed by the Board and shall contain at least one member nominated by each Party. The Board shall be required to ask the Parties for nominations.
- 9.2 The International Visiting Committee shall conduct an assessment every three years. The cycle of the assessment may be changed by the Board. The assessment shall be broad-based and in particular focus on the external perception of the ALMA Project in the community of users, the calibre and range of scientific and technical activities at ALMA, management, Budget performance, current issues and risks as well as the long-term plan and the initiatives for implementing it as well as other issues presented to the International Visiting Committee by the Board. The assessments of the International Visiting Committee shall be submitted in writing to the Board.

ARTICLE 10: ALMA SCIENCE ADVISORY COMMITTEE

- 10.1 The ALMA Science Advisory Committee (ASAC) advises the Board on the scientific and technical perspectives of those major issues that affect the science capabilities of ALMA. The ASAC's advice will also be used when the Board needs to make decisions regarding prioritization of tasks and resources, including the ALMA development program. Additionally, the ASAC shall provide scientific and technical advice to the Board and the ALMA Director related to ALMA development.
- 10.2 The ASAC shall consist of up to 12 members to be appointed by the Board upon nomination of up to eight candidates by each Party. The ASAC shall contain at least two but not more than six members nominated by each Party. Appointments of members to the ASAC shall be based on scientific and technical expertise maintaining a broad spectrum covering all principal areas of ALMA related science and instrumentation.

Chile is invited to appoint one of the ASAC members from the Chilean astronomical community whose appointment requires concurrence of the Board.
- 10.3 The Board shall determine the terms of reference of the ASAC and the frequency of its meetings.

ARTICLE 11: STAFF OF THE JOINT ALMA OBSERVATORY

- 11.1 The Joint ALMA Observatory shall be headed by the ALMA Director and is comprised of such staff as is required for Operations in Chile. It shall be composed of International Staff and Local Staff.

The ALMA Director shall be responsible for managing and directing all JAO staff regardless of their employer, and be the primary point of contact for representatives of JAO staff and the employer in all labour matters. Any negotiations with International or Local Staff shall be conducted through a process led by the ALMA Director in consultation with the Executives. Each Executive shall remain solely legally responsible for its own employees and for any administrative decisions affecting its employees, in particular regarding career development, disciplinary actions, dispute settlement and all legal matters.

International Staff

- 11.2 International Staff, including the ALMA Director, will be employed by the Executives.
- 11.3 The recruitment process of all International Staff shall be managed by the ALMA Director with participation of the Executives, unless otherwise provided for in Articles 6 and 12 of this Agreement. The definition of staff positions, job descriptions, vacancy notices and appointments shall be concurred with the Executives as well as any extension, termination or change of the employment contract.

Local Staff

- 11.4 The Parties have designated the NSF Executive to be the sole employer of Local Staff of the Joint ALMA Observatory for the partnership. The Parties may jointly agree to change this designation.
- 11.5 The ALMA Director shall coordinate among the employer of Local Staff and the Executives all policy matters concerned with the employment of Local Staff, in particular regarding staffing levels, the recruitment process and plan, employment and working conditions, remuneration and social security, health and safety and training.

These policies shall be reviewed regularly by the ALMA Director in consultation with the Director's Council. Their implementation shall be monitored by the Director's Council.

- 11.6 The employer of Local Staff shall consult the ALMA Director in the introduction and implementation of policies or procedures and in all other measures regarding Local Staff whenever any of those actions may have financial consequences, and shall ensure that they are consistent with budget planning projections of the JAO and the Executives. Prior approval of all Executives is required whenever any of those actions incurs payment commitments above the approved personnel Budget.
- 11.7 The employer of Local Staff shall:
 - a) Affirm to the Parties that it has immunities, prerogatives, privileges and facilities in Chile in all matters relevant to this Agreement and in particular in matters arising out of the employment of Local Staff, granted to the employer by the Government of Chile.
 - b) Comply with and conform to the requirements of Chilean labour legislation concerning the employment of Local Staff as applicable to the employer.
 - c) Coordinate with the ALMA Director all interactions with the Chilean Government on issues exclusively related to or arising from the contracts of employment of Local Staff.
 - d) Accept full and exclusive liability for payment of any and all contributions or taxes imposed by the Government of Chile or its agency, which are measured by wages, salaries, or other remuneration paid to Local Staff under the contracts of employment or which arise by virtue of their employment.
 - e) Provide regular reports to all Parties, Executives and the ALMA Director regarding significant developments concerning Local Staff.

- 11.8 The Parties through the Trilateral Oversight Group shall regularly assess the performance of the employer of Local Staff and its compliance with this Article.

ARTICLE 12: KEY PERSONNEL

- 12.1 A limited number of staff positions may be designated as Key Personnel by the Board. The Board shall periodically review such designation.
- 12.2 Key Personnel shall be selected jointly by the Executives and the ALMA Director in a manner approved by the Board. Board approval will be required for the appointments of all Key Personnel and their extension. The performance and continued appointment of each Key Personnel shall be reviewed periodically by the Personnel Committee in consultation with the ALMA Director and the Executives.

ARTICLE 13: FINANCIAL PROVISIONS - GENERAL

- 13.1 The Parties intend that the funds that they will set aside and obligate from time-to-time to the ALMA Project will meet their obligations under this Agreement. The Parties further recognize that funds not being made available may seriously jeopardise the aims of this Agreement and might cause damages to the other Parties and/or the Executives. However, the Parties must operate within the constraints of the funding made available by national governments, funding agencies and governing bodies of the Parties. Therefore, the financial obligations under this Agreement are subject to the availability of appropriated funds.
- 13.2 The financial year of the ALMA Project shall be the calendar year (January 1 through December 31).
- 13.3 The Parties shall ensure that the Executives and the ALMA Director make best efforts to keep the costs of the procurement of goods and services to a minimum.
- 13.4 The ALMA Director shall notify the Board in advance of the intention to place any contract valued above a threshold periodically reviewed by the Board.
- 13.5 The ALMA Director shall approve the placing of any contract, excluding the placement of contracts exclusively related to Offsite Operations Activities of the Executives, prior to any necessary final approval according to the internal rules of the Executives.

ARTICLE 14: BUDGET

- 14.1 The Board shall adopt a long term budget plan for planning purposes which shall be prepared by the ALMA Director in consultation with the Executives and be recommended by the Director's Council to the Board. The plan shall be updated by the Board if required.
- 14.2 The ALMA Director, in consultation with the Executives, shall prepare the Budget and submit it, with the recommendation of the Director's Council, to the Board for approval. The Budget shall contain both onsite Operations activities at the Joint ALMA Observatory and Offsite Operations Activities of the Executives.

The approval of the Budget by the Board is subject to the corresponding approval of appropriated funds by the competent governing bodies of the Parties.

- 14.3 In case a Budget proposal which does not exceed the amount of the long term budget plan meets the required two-thirds majority in the Board, but lacks the approval of a member of the Board designated to speak on behalf of a Party, such Party shall notify to the Board the maximum amount which it is able to contribute to the Budget, and a new Budget shall be prepared and approved taking into consideration this maximum amount. Such rejection of approval by a member of the Board designated to speak on behalf of a Party shall be considered as a corresponding notice of reduction of the Shares of Contributions of the respective Party according to Article 24 of this Agreement.

If within two years following the approval of the new Budget, the respective Party does not fully balance the difference between its new contributions according to the approved new Budget and its Shares of Contributions in the initial Budget proposal the reduction in the share of Observing Time shall take effect retroactive to the time of approval of the new Budget.

- 14.4 The ALMA Director is responsible for adherence to the approved onsite Operations Budget.
- 14.5 The ALMA Director shall send periodic expenditure reports to the Board and to the Executives at frequencies defined by the Board upon recommendation from the Director's Council.

ARTICLE 15: OWNERSHIP AND DISPOSITION

- 15.1 Equipment and Infrastructure contributed by NSF remains the property of the Government of the United States or the NSF Executive. Equipment and Infrastructure contributed by ESO or NINS remains the property of ESO or NINS, respectively. The respective owner grants the other Parties and Executives the right to make full use of its Equipment and Infrastructure for Operations. Intellectual Property shall be subject to the provisions of Articles 20 and 23.6 of this Agreement.
- 15.2 The Parties acknowledge that exports or imports of material or Intellectual Property may be subject to the requirements of applicable export or import regulations and shall require the Executives to discuss in good faith any solutions to mitigate the effect of such requirements on Operations.
- 15.3 The Parties acknowledge that disposition of Equipment will be subject to the requirements of the owner as defined in Article 15.1. It is the intent of the Parties that Equipment will not be disposed of unless said Equipment is
- a) surplus to the future requirements of ALMA, unserviceable and beyond reasonable economic repair, or
 - b) of minor value not exceeding thresholds as set jointly by the Parties, recognizing their respective financial regulations.
- 15.4 The ALMA Director in consultation with the Director's Council will identify and make recommendations to the Parties concerning disposition of Equipment referred to in Article 15.3 a). Where the value of Equipment identified for disposition exceeds a limit as set by the Board, the Parties shall consult with the Board before disposing of the Equipment.

15.5 The ALMA Director shall identify such equipment referred to in Article 15.3 b) which shall be disposed of and shall be authorised to request the respective Party or Executive to dispose of it.

15.6 The other Parties will be provided the right of first refusal in the event that one Party or its designated Executive institutes disposition procedures. The right of first refusal may be exercised either individually or jointly.

The Parties shall use their best efforts to ensure that all net proceeds realized from any disposition are reinvested in the ALMA Project based on a proposal by the ALMA Director.

15.7 Before this Agreement expires or terminates according to Article 25, the Parties shall make best efforts to agree on the date and the manner in which the Assets and obligations of the Parties or Executives with respect to the ALMA Project shall be disposed of. Unless otherwise agreed, each owner as defined in Article 15.1 shall retrieve its property and shall be solely responsible for its disposition. In this case, the costs or benefits arising from the disposition of all Assets and obligations, including the net proceeds that may arise from the sale of such Assets, shall be divided among the Parties in proportion to their Shares of Contributions according to Article 4.1 above.

ARTICLE 16: MAINTENANCE

16.1 It is the common understanding and intent of the Parties to maintain all Equipment and Infrastructure in good order and that they will be collectively responsible for the costs of all maintenance according to the Shares of Contributions as defined in Article 4.1 above. For the antennas, the Parties shall review the principles of maintenance, including the sharing of costs, after sufficient time has elapsed for reliably assessing their operational performance and maintenance requirements.

16.2 The principles of a maintenance plan for all Equipment and Infrastructure shall be proposed by the ALMA Director in consultation with the Director's Council and approved by the Board, recognizing the need to accommodate any warranty issues of the Executives.

16.3 The ALMA Director in consultation with the Executives shall prepare a maintenance plan for all Equipment and Infrastructure on the basis of the established principles.

The maintenance plan shall be approved by the Director's Council.

ARTICLE 17: DEVELOPMENT AND MODIFICATIONS

Development

17.1 The Parties, subject to availability of appropriate funding, shall require their Executives to fund and carry out the development of new ALMA capabilities as approved by the Board upon proposal by the ALMA Director.

17.2 The Board shall establish the principles for an ALMA development program to be proposed by the ALMA Director upon recommendation by the Director's Council.

Modifications

- 17.3 Modification of Equipment or Infrastructure shall be done according to an ALMA modification program. The Board shall establish the principles for such program to be proposed by the ALMA Director upon recommendation by the Director's Council, taking into account that the authority to modify the design of Equipment or Infrastructure remains with the owner.

The costs of modifications shall be shared by the Parties according to the Shares of Contributions, unless otherwise agreed by the Parties. Such shared costs shall not affect ownership of the Equipment or Infrastructure.

ARTICLE 18: OBSERVING TIME AND DATA RIGHTS

- 18.1 The Observing Time available to the Parties during Operations shall be divided among them in proportion to their Shares of Contributions, and distributed equitably according to the seasons of the year.
- 18.2 All data taken by ALMA shall be jointly owned by the Parties. Ownership shall not impact the free access to the data for use by observers and the astronomical community according to a policy set by the Board.
- 18.3 Any observer who takes data with ALMA shall have exclusive access to and use of that data for a period defined by the Board. Thereafter, the data shall become openly accessible to the astronomical community in accordance with a policy approved by the Board.
- 18.4 Recognizing the agreements between the Parties and their respective Chilean counterparts, ten percent of the ALMA Observing Time will be set aside each year for Chilean astronomy. The procedure for allocation of this time is governed by the agreement between the Chilean astronomical community and the Executives. This agreement may be modified by mutual consent, in consultation with the Board and the ALMA Director.
- 18.5 The ALMA Director, together with the Executives, shall arrange for the maintenance of an effective archiving system for each observation as approved by the Board.

ARTICLE 19: ACCESS TO OBSERVING TIME BY OTHERS

- 19.1 Any Party may, with the prior written consent of all other Parties, give access to its share of Observing Time, in whole or in part, for a fixed period of time or a specific project, to another entity not a party to this Agreement. The right of any Party to make arrangements according to Article 3.6 of this Agreement without the prior written consent of all other Parties remains unaffected.
- 19.2 The Party giving access to Observing Time to third parties shall ensure that these third parties abide by all rules pertaining to Operations, Intellectual Property Rights and data release.

ARTICLE 20: INTELLECTUAL PROPERTY

- 20.1 The inventor or creator of Intellectual Property or his/her assignee or employer shall own or have the option to own all Intellectual Property arising out of any activity relating to ALMA Operations done pursuant to this Agreement.
- 20.2 Subject to Article 20.3 of this Agreement, for all Intellectual Property created under this Agreement, the appropriate Executives shall provide and obtain a non-exclusive, non-transferable, irrevocable, royalty free, paid-up license (1) for use in the ALMA Project and (2) for each of the Parties and Executives to use or have used on their behalf throughout the world for non-commercial, non-military, scientific research purposes of any such Intellectual Property.

The appropriate Executives shall continue to provide and obtain for each of the Parties and Executives corresponding licenses as provided for in the Bilateral Agreement and the ESO/NSF/NINS Agreement for all Intellectual Property created during activities related to ALMA pursuant to these existing Agreements.

Intellectual Property owned by the Parties or Executives which existed before the start of the construction phase of the ALMA Project or was created outside of the scope of the ALMA Project shall only be made available to the other Parties or Executives on a need-to-know basis if necessary for the ALMA Project considering the confidentiality interests of the owner of such Intellectual Property. The Parties or Executives making available such Intellectual Property shall take reasonable measures to ensure that the use of such Intellectual Property by the Parties or Executives for the purpose of the ALMA Project does not infringe any third party rights.

- 20.3 The Parties recognize that third parties may limit the uses made of certain Intellectual Property provided to the Executives because the third party providing the Intellectual Property treats it as proprietary or trade secret or otherwise restricts its use. In such cases, the Parties recognize that it may not be cost-effective or possible for the Executives to obtain license rights for the Parties or the Executives of the type contemplated by Articles 20.2 of this Agreement and do not expect the Executives to obtain such rights in such cases, provided that whatever license rights are obtained should be the same for all Parties and Executives.
- 20.4 The ALMA Director shall ensure that all Intellectual Property created under this Agreement can be identified and reported to the Parties and Executives and that the licenses as provided for in Article 20.2. can be granted. Any arrangement made or contract placed by the Executives within the scope of this Agreement which may lead to the creation of Intellectual Property shall contain such terms and conditions designed to assure the identification and reporting of newly created Intellectual Property and the granting of corresponding licenses to all Parties or Executives. When arrangements involving its employees are made that are subject to this Article, the Party will have to enter into appropriate arrangements with the appropriate Executives to accomplish the intent of this Article.
- 20.5 The Parties acknowledge that the provisions of any NSF funding agreement with the NSF Executive will, if applicable, contain the patent right provisions required by relevant U.S. laws, including a requirement that the NSF Executive provides or obtains, in addition to the license rights of the United States, the licenses as provided for in Article 20.2. The license rights which the NSF Executive will obtain for the United States from ESO or NAOJ shall be limited to a license for NSF as described in Article 20.2.

ARTICLE 21: CONFIDENTIALITY

- 21.1 The Parties acknowledge that information pertaining to the ALMA Project may be declared as proprietary or commercially sensitive. Any such declaration which restricts the exchange of information among the Parties or the Executives shall not prejudice the purpose of this Agreement. If a Party intends to declare information as proprietary or commercially sensitive and any such declaration might have the effect to prejudice the purpose of this Agreement, the Parties shall discuss in good faith to balance the interest of all Parties and Executives.

The Parties shall use information which has been declared as proprietary or commercially sensitive solely for the purpose for which it was released and shall make their best efforts to retain such information in confidence.

- 21.2 Publication or distribution to third parties of any sensitive information pertaining to the ALMA Project shall in general be restricted.

ARTICLE 22: LIABILITY

- 22.1 The Parties shall share the costs of all liabilities arising out of or related to the execution of this Agreement in proportion to their Shares of Contributions, including liability for Local or International Staff designated to work at the Joint ALMA Observatory and while performing work for the ALMA Project, provided that the liability does not arise out of wilful or gross negligent acts of the Parties, the Executives or their employees. These costs include any related expenses, any losses and damages of any nature, excluding punitive damages, but including reasonable costs to defend against alleged or actual liabilities.

The Parties and Executives do not indemnify each other or any third party beyond those shared costs explicitly recognised in this Agreement.

- 22.2 The Parties will ensure that the Executives procure and maintain for their joint benefit, and at shared costs, comprehensive general liability insurance and other insurances, as appropriate.
- 22.3 Notwithstanding Article 22.1 above, the Parties and Executives shall be responsible and solely liable for their Equipment and Infrastructure until it has been accepted by the ALMA Director according to this Agreement.

ARTICLE 23: WITHDRAWAL

- 23.1 A Party wishing to initiate withdrawal prior to the agreed expiry date of this Agreement may do so at any time by providing two years written notice of withdrawal to the other Parties. It is the intent of the Parties that withdrawal would not occur before 31 December 2024. The withdrawing Party shall continue to be fully bound by its obligations under this Agreement, in particular to pay the contributions due, until the date of withdrawal, subject to Article 13.1.
- 23.2 The date on which withdrawal takes effect may be brought forward if the withdrawing Party is able to find a replacement partner acceptable to the remaining Parties. The date of replacement shall be determined by the remaining Parties in consultation with the withdrawing Party and, if appropriate, the replacement partner or partners.

- 23.3 At the point of withdrawal, the withdrawing Party will make available all Assets to the remaining Parties.

Unless otherwise agreed by the remaining Parties, Assets shall be exchanged for Observing Time at a value and a conversion rate to be agreed by the Parties. This value of Assets will take into account their net worth based on the original contributions of the withdrawing Party, considering depreciation and the operating and maintenance costs, and may also include disposal costs. Assets that the remaining Parties do not wish to continue to operate must be disposed of and the site made good by the withdrawing Party and at its own expense.

- 23.4 The withdrawing Party shall provide best efforts to transfer any right, title, or interest in any property, contracts (to the extent allowed under those contracts) or work in progress contributed to or funded out of money contributed to the ALMA Project to the remaining Parties upon their request, and will not transfer any of those without the prior written agreement of the other Parties.
- 23.5 Any Observing Time resulting from Operations contributions paid shall be used by the withdrawing Party within a period of two years commencing with the date of withdrawal. A withdrawing Party may not transfer any rights to Observing Time without the prior written agreement of the other Parties.
- 23.6 Notwithstanding Article 23.3, a withdrawing Party shall retain its ownership rights in Intellectual Property, not including licensed rights, acquired as at the effective date of withdrawal. At the request of the remaining Parties, the withdrawing Party shall make any Intellectual Property available to the remaining Parties by providing the necessary licenses as defined in Article 20.2.
- 23.7 Except as provided in Articles 23.3 through 23.6 of this Agreement or as otherwise agreed by the Parties, all rights and benefits conferred under this Agreement shall be forfeited by the withdrawing Party at the point of withdrawal.

ARTICLE 24: REDUCTION OF SHARES

- 24.1 A Party wishing to reduce its Shares of Contributions may do so at any time by providing two years written notice to the other Parties. It is the intent of the Parties that no reduction will be made before 31 December 2024. The reducing Party shall continue to be fully bound by its obligations under this Agreement, in particular to fully pay its contributions, until the date the reduction takes effect, subject to Article 13.1.
- 24.2 The date on which the reduction takes effect may be brought forward if the reducing Party is able to find a replacement partner acceptable to the other Parties. The date of replacement shall be determined by the other Parties in consultation with the reducing Party and, if appropriate, the replacement partner or partners.
- 24.3 The reduction of its Shares of Contributions shall have no effect on the ownership of property of the reducing Party who shall not remove any of its Assets from the ALMA Project without the prior written agreement of all Parties.
- 24.4 In case of a reduction of the Shares of Contributions, the share of Observing Time of the reducing Party shall be reduced accordingly.

ARTICLE 25: DURATION AND EXPIRY

25.1 This Agreement shall enter into force on the date on which the last Party signs, but not before 01 January 2015.

It shall expire on 31 December 2034 unless extended under Article 25.2.

25.2 This Agreement will be automatically renewed for further periods of 10 years unless any of the Parties provide written notice to the other Parties of its intent not to renew this Agreement or to renew it for other periods at least two years before 31 December 2034 or any other expiry date agreed to among the Parties, Unless automatically renewed, the renewal of this Agreement shall be formally agreed upon in writing by the continuing Parties.

25.3 The Parties may jointly decide to terminate this Agreement at any time, in which case the procedure of winding down ALMA shall be agreed by the Parties in accordance with this Agreement. A Party which has given notice of withdrawal or reduction of shares as defined in Articles 23 and 24, respectively, shall be excluded from the decision to terminate this Agreement. In this case, termination of this Agreement shall not take effect before the date of withdrawal or reduction of shares, unless all Parties agree otherwise.

ARTICLE 26: FAILURE TO FULFIL OBLIGATIONS

26.1 If one of the Parties fails or can reasonably be expected to fail to fulfil its obligations arising out of this Agreement, the respective Party shall immediately inform the other Parties and the ALMA Director, together with an explanation of the causes. The ALMA Director shall immediately forward this information to the Board, together with the likely consequences of such failure and proposed actions to be taken.

26.2 The said Party shall be called upon by the other Parties to abide by its obligations. If the said Party does not comply with that request or remedies the failure in the time set by the other Parties, the other Parties may take such steps as they deem necessary to ensure that the purpose of this Agreement is maintained. These steps may include measures to be taken against the Party failing to fulfil its obligations, including, but not limited to, a reduction of Observing Time or the suspension of voting rights on the Board.

26.3 An event where a Party should not be in a position to adhere to its intentions as described in Articles 13.1, 15.3, 23.1 or 24.1, shall be considered a failure to fulfil obligations and treated according to this Article. The said Party shall use best efforts to mitigate the effects of such an event.

ARTICLE 27: NOTICE

Any notice contemplated by this Agreement shall be made in writing and must be sent with genuine original or digital signature clearly identifying the sender by certified mail or any other generally accepted way of delivery with similar assurance of delivery to the addresses stated in Annex B to this Agreement, and copied to the Board. The recipient Parties shall acknowledge receipt of the notice without any delay by corresponding means.

The notice is considered to have been received thirty days after it is sent, unless received earlier as documented by the acknowledgment of receipt.

ARTICLE 28: AMENDMENT AND ANNEXES

- 28.1 The Articles to this Agreement may be amended at any time. An amendment must specifically state the intention to amend this Agreement, and takes effect when signed and dated by all Parties.
- 28.2 This Agreement has the following Annexes:
- Annex A: List of Partner Organisations or Institutes
 - Annex B: Addresses of Parties
- 28.3 The Annexes form an integral part of this Agreement. They may be unilaterally updated by any Party by giving written notice to the other Parties.

ARTICLE 29: PRECEDENCE

- 29.1 This Agreement shall take precedence over all prior communications, negotiations and agreements between the Parties concerning ALMA Operations.
- 29.2 Any inconsistency or conflict in this Agreement shall be resolved by giving precedence in the following order: Amendments (most recent first), Agreement, Annexes.

ARTICLE 30: DISPUTES

The resolution of any disputes between and among the Parties regarding the interpretation, implementation or application of this Agreement shall be sought by consultation between the Parties within the Trilateral Oversight Group. Should such consultation fail, the matter shall be put to the Director of NSF, the President of NINS and the President of the ESO Council for resolution.

ARTICLE 31: TRANSITIONAL REGULATIONS

- 31.1 From its date of entry into force, this Agreement shall replace both the Bilateral Agreement and the ESO/NSF/NINS Agreement. The provisions of the latter agreements exclusively dealing with construction, commissioning and early operations as defined therein shall remain applicable for any such activities still ongoing at the time of entry into force of this Agreement until the end of those activities.
- 31.2 Provisions in any existing agreement, contract or arrangement between the Parties or the Executives concerning the ALMA Project or in any internal ALMA regulation, policy or procedure shall be interpreted in the light of this Agreement to best comply with its purpose and intention. Any provision non-compliant with the provisions of this Agreement or in conflict with its purpose or intention shall be deemed replaced by a provision that comes closest to expressing the purpose and intention of this

Agreement. To the extent these provisions rely on the agreement of third parties, the Parties and Executives will make best efforts to conform to this paragraph.

- 31.3 Provisions in any agreement, contract or arrangement between the Parties or the Executives or in any internal ALMA regulation, policy or procedure which link the termination or duration of any of the said documents to the termination or duration of the Bilateral Agreement or the ESO/NSF/NINS Agreement shall be replaced by a provision which keeps the respective document in force until this Agreement is terminated, unless explicitly agreed otherwise by the Parties.
- 31.4 The Parties shall require their Executives to take the steps as necessary with respect to Articles 31.2 and 31.3, regarding agreements, contracts or arrangements to which the Executives are signatory or in which they are otherwise involved.

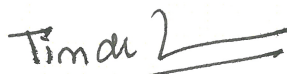
**For the National
Science Foundation
of the United States:**

**For the European
Organisation for
Astronomical Research in
the Southern Hemisphere:**

**For the National Institutes
of Natural Sciences
of Japan:**



France A. Córdova
Director



Tim de Zeeuw
Director General



Katsuhiko Sato
President

15 Dec 2015

Date

15 december 2015

Date

15 December 2015

Date

Tokyo

Place

Tokyo

Place

Tokyo

Place

ANNEX A

to the AGREEMENT CONCERNING THE OPERATIONS OF THE
ATACAMA LARGE MILLIMETER/ SUBMILLIMETER ARRAY
(ALMA) BY NSF, ESO and NINS

List of Partner Organisations or Institutes

NSF Partner Organisations or Institutes

NATIONAL RESEARCH COUNCIL OF CANADA (NRC)

National Research Council Canada
1200 Montreal Road
Building M-58
Ottawa, Ontario K1A 0R6
Canada

TAIWAN MINISTRY OF SCIENCE AND TECHNOLOGY (MOST)

Ministry of Science and Technology
No. 106, Heping E. Road, Section 2
Taipei 10622
Taiwan

NINS Partner Organisations or Institutes

ACADEMIA SINICA

128 Academia Road, Section 2
Nankang
Taipei 11529
Taiwan (R.O.C.)

KOREA ASTRONOMY AND SPACE SCIENCE INSTITUTE

776, Daedeokdae-ro
Yuseong-gu
Daejeon 305-348
Republic of Korea

ESO Partner Organisations or Institutes

currently none

ANNEX B

to the AGREEMENT CONCERNING THE OPERATIONS OF THE
ATACAMA LARGE MILLIMETER/ SUBMILLIMETER ARRAY
(ALMA) BY NSF, ESO and NINS

Addresses of Parties

European Organisation for Astronomical Research in the Southern Hemisphere (ESO)

Karl-Schwarzschild-Straße 2
D-85748 Garching bei Muenchen
Germany

e-mail: info@eso.org

National Institutes of Natural Sciences (NINS)

2-21-1 Osawa
Mitaka-shi
Tokyo 181-8588
Japan

e-mail: nins-sohmu@nins.jp

National Science Foundation (NSF)

Directorate for Mathematical and Physical Sciences
4201 Wilson Boulevard
Arlington, Virginia 22230
U.S.A.

e-mail: info@nsf.gov