

ESO/Cou-862

03.12.2002

**FOR  
APPROVAL**

**Voting Procedure:  
Simple Majority**

**COUNCIL**

99<sup>th</sup> Meeting

Garching, December 17 and 18, 2002

**ESO-Spain ALMA Agreement**

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A translation of the latest draft is attached. The translation will be further refined and agreed with Spain to ensure equivalence between the two versions.

While the main body of the text is essentially unchanged from the draft put to the Committee of Council on November 11<sup>th</sup>, the overall structure has been substantially modified, in agreement with Spain.

1. It is now explicitly a Bilateral Agreement, between MCyT/MF acting jointly and severally, and ESO. All references within the Agreement are to MCyT/MF.
2. The signatories are representatives of their organisations.
3. Explicit References to specific articles of Spanish Budgetary Law have been removed. For information, the relevant Articles 39 and 45 of the General Budgetary Law state:

Article 39: The rights of the Treasury cannot be reduced, through a court of law or otherwise, or through arbitration, other than by Royal Decree approved by the Council of Ministers following the recommendations of a plenary meeting of the State Council.

Article 45: If a debtor of the Treasury is not paid within 3 months of a judgement or the recognition of an obligation, interest is due on the amount from the date on which written claim for payment was made.

Council is invited to approve the ESO-Spain Agreement and authorise the Director General to sign on behalf of ESO.

**COLLABORATION AGREEMENT  
BETWEEN THE MINISTRY OF PUBLIC WORKS, and THE  
MINISTRY OF SCIENCE AND TECHNOLOGY,  
both of the KINGDOM of SPAIN,**

**and**

**THE EUROPEAN ORGANISATION for ASTRONOMICAL  
RESEARCH in the SOUTHERN HEMISPHERE**

**concerning participation in Phase 2 construction and operation of a large  
millimeter and sub-millimeter telescope in the Atacama Desert of Chile.**

Together and collectively,

On one side, **the Ministry of Public Works of the Kingdom of Spain**, represented by  
Francisco Alvarez-Fernández, Minister, appointed by Royal Decree 561/2000 of 27 April,  
acting under the authority of Article 13.3 of Law 6/197, concerning the Organisation and  
Operation of the General Administration of the State,

and **the Ministry of Science and Technology of the Kingdom of Spain**, represented by  
Josep Piqué i Camps, Minister, appointed by Royal Decree 678/2002 of 9 June, acting under  
the authority of Article 13.3 of Law 6/197, concerning the Organisation and Operation of the  
General Administration of the State,

and

on the other, **the European Organisation for Astronomical Research in the Southern  
Hemisphere**, represented by Catherine Cesarsky, Director General, in accordance with  
Article VI.1a of its establishing Convention,

all with the necessary representative powers and authority to conclude this Agreement,

## DO DECLARE

1. That the Ministry of Science and Technology (hereinafter MCyT), through the State Secretariat of Science and Technology Policy of the Ministry of Science and Technology, by virtue of Article 1 of Royal Decree 696/2000 dated May 12, has the function, amongst others, of co-ordinating and prioritising large scientific and technical projects of national importance.
2. That the Ministry of Public Works (hereinafter MF), through the office of the Directorate of the National Geographic Institute (hereinafter IGN), is the department of State with responsibility for Cartography, Geodesy, Geophysics, and Astronomy, established under Article 10 of Royal Decree 1475/2000 dated August 4 on the Basic Structure of the Ministry of Public Works.
3. That the European Organisation for Astronomical Research in the Southern Hemisphere (hereinafter ESO) is an international organisation with its headquarters in Garching, Munich, Federal Republic of Germany, dedicated to the design, construction, and exploitation of an astronomical Observatory in the Southern Hemisphere and to support and assist cooperation in astronomical research amongst its member states.
4. That the Ministry of Science and Technology and the Ministry of Public Works (hereinafter referred to collectively as MCyT/MF) have expressed their desire to participate jointly in the design, construction and operation of the prototype antennas and receivers of the large interferometer called the Atacama Large Millimeter Array (hereinafter ALMA), which will operate at millimetre and sub-millimetre wavelengths for the purpose of contributing to the study of a wide range of problems in astronomy and which will be built in the Atacama desert of Chile.
5. That ESO signed a Memorandum of Understanding with several European organisations on 6 November 1999 relating to the design and construction of a large millimetre and sub-millimetre interferometer and aimed at completing a coordinated programme of design and development over a Phase 1 period from 1 January 1999 to 31 December 2001.
6. That on 10 June 1999 ESO, Centre National de la Recherche Scientifique of France (CNRS), Max-Planck-Gesellschaft of Germany (MPG), the Netherlands Foundation for Research in Astronomy/Nederlandse Onderzoeksschool Voor Astronomie (NFRA/NOVA), the United Kingdom Particle Physics and Astronomy Research Council (PPARC), the Swedish Natural Science Research Council (NFR, later VR), the National Science Foundation of USA (NSF) and the national Research Council of Canada (NRC) signed an MoU to establish an extensive joint Design and Development program to be carried out in preparation for the Construction and Operation of the Atacama Large Millimeter Array project.
7. That, subsequently, the previous Office of Science and Technology and the National Geographical Institute (IGN) of the Ministry of Public Works agreed to join this MoU and signed Amendment 2 on 2 January 2000, participating under Article 2 of the MoU with all rights and obligations as provided for in Article 11 and establishing in Article 3 the contributions of all signatories to Phase 1.
8. That MCyT and IGN signed Amendment 2 to this MoU on 26 September 2001 and so committed their financial contribution to participation in Phase 1.
9. That because all the objectives of Phase 1 had not been accomplished by the end of 2001, ESO initiated an extension of this Phase to 30 September 2002 through an Amendment 3 to the MoU with additional financial contributions, formalising the corresponding Agreement together with Amendment 3 presented by ESO.

10. That the progress on the definition of the construction and operations Phase 2 of ALMA as a bilateral project between the North American signatories of the agreement of 10 June 1999 and ESO has resulted in the completion by the National Science Foundation (NSF) of USA, the National Research Council (NRC) of Canada, and ESO of a Bilateral Agreement for Phase 2 of ALMA, which ESO will also sign on behalf of European organisations and institutes.
11. That all the parties wish to participate in ALMA Phase 2, continuing the present collaboration established in Phase 1, and that the present Agreement is established for that purpose.

Taking into account the above declarations, the parties agree on the following.

## **ARTICLE 1: DEFINITIONS**

- 1.1 **“This Agreement”** means the Articles which follow and all Annexes referenced in the Articles.
- 1.2 **“Bilateral Agreement”** means the “Agreement Concerning the Construction and Operation of the Atacama Large Millimeter Array (ALMA)” between the National Science Foundation of USA, the National Research Council of Canada, and ESO.
- 1.3 Terms used in this Agreement and defined in Article 1 of the Bilateral Agreement shall have the same meaning as in the Bilateral Agreement.

## **ARTICLE 2: GUIDING PRINCIPLES OF ALMA**

- 2.1 MCyT/MF endorse the guiding principles of ALMA as set out in Article 2 of the Bilateral Agreement.

## **ARTICLE 3: PRECEDENCE**

- 3.1 This Agreement shall be subsidiary to the Bilateral Agreement.

## **ARTICLE 4: SCOPE**

- 4.1 This Agreement covers Construction, Commissioning, and Operations, including Early Operations, of ALMA, and provides the framework whereby MCyT/MF as funding organisations participate in ALMA.

## **ARTICLE 5: PARTICIPATION IN ALMA**

- 5.1 MCyT/MF shall participate in ALMA through ESO. MCyT/MF shall benefit from participation in ALMA in the same way and to the same extent as ESO member states, as set out in the Bilateral Agreement, and shall be jointly and severally responsible for the commitments and obligations foreseen in this Agreement.
- 5.2 MCyT/MF authorize ESO to act for them in implementing the Bilateral Agreement.

- 5.3 MCyT/MF shall contribute to ESO's obligations under the Bilateral Agreement by carrying out Work as in-kind contributions and by making financial contributions to ESO in its role as one of the Executives for ALMA.
- 5.4 The contributions made by MCyT/MF to ALMA shall be Valued according to the ALMA costing model.
- 5.5 The total Value of the contributions made by MCyT/MF conjointly to construction shall amount to 22.041M EUR at 2002 price levels as set out in Table 1 in the Annex to this Agreement, which represents 7.5% of the total Value of the contributions to be made by ESO under the Bilateral Agreement. Of this amount, 13.6% shall represent contingency.
- 5.6 MCyT/MF shall be assigned activities for ALMA as shown in 2002 prices in Table 3 of the Annex to this Agreement.
- 5.7 The details and schedule of the contributions to be made by MCyT/MF shall be set out in the Annex to this Agreement, which may be amended by ESO and MCyT/MF in accordance with Article 6 of this Agreement.
- 5.8 ESO shall use its best efforts to enable MCyT/MF to gain further Work and industrial contracts from ALMA.
- 5.9 MCyT/MF shall contribute to ESO 7.5% of the total cost of annual Early Operations and Operations assumed by ESO. This share is shown in Table 1 of the Annex to this Agreement at 2002 price levels to the year 2012.
- 5.10 Each of MCyT/MF will provide 50% of the financial contributions shown in Table 1 of the Annex, other than that for 2003, which will be provided by MF alone. These contributions are detailed in Table 2 of the Annex to this Agreement.
- 5.11 The rights and obligations of MF under this Agreement will be accepted by the Directorate of IGN and funded from the budget of that Directorate.
- 5.12 The financial contributions of MCyT will be charged to budgetary commitment 20.10.542M.791, "Contribution to the European Southern Observatory (ESO) for the design and construction of the Atacama Large Millimeter Array (ALMA)".

## **ARTICLE 6: AMENDMENT**

- 6.1 This Agreement or its Annexes may be amended at any time. An amendment of this Agreement or its Annexes must specifically state the intention to amend this Agreement or Annexes and becomes effective when signed and dated by both ESO and MCyT/MF. Any amendment shall be subsidiary to the Bilateral Agreement.

## **ARTICLE 7: DURATION and TERMINATION**

- 7.1 This Agreement shall become effective when all parties, the European Organisation for Astronomical Research in the Southern Hemisphere, the Ministry of Science and Technology, and the Ministry of Public Works, have signed and dated it.
- 7.2 Should the Bilateral Agreement not enter into force within 6 months of the date on which this Agreement becomes effective, this Agreement shall terminate.

- 7.3 This Agreement shall expire on the same date on which the Bilateral Agreement expires, or on the accession of the Kingdom of Spain to ESO, whichever is the sooner.

## **ARTICLE 8: WITHDRAWAL**

- 8.1 MCyT/MF may withdraw from this Agreement prior to the termination date set out in Article 7 of this Agreement by giving written notice of withdrawal to ESO. Such withdrawal shall take effect at the end of the following financial year. To enable ESO to continue with the project, MCyT/MF shall negotiate the terms and conditions of its withdrawal or – failing this – shall pay ESO in cash either (1) 50% of the Value of its total unpaid scheduled contribution or (2) the total Value of its scheduled contributions for 5 years commencing with the date of the notice of withdrawal, whichever is the greater.

The above does not preclude the application, if relevant, of the General Budgetary Law of the Kingdom of Spain, according to which a Royal Decree, agreed by a meeting of the Council of Ministers, is required to restrict the rights of the Treasury.

- 8.2 The extent to which the funds already paid and, where relevant, Work already completed and delivered, entitle MCyT/MF to Observing Time after withdrawal shall be determined by ESO in negotiation with MCyT/MF. MCyT/MF may not transfer any rights to Observing Time without the prior agreement of ESO.
- 8.3 MCyT/MF shall, at the request of ESO, transfer, to the extent necessary for the continuation of ALMA, its rights, title, and interest in any property, contracts (to the extent allowed under those contracts) or work in progress funded out of money contributed to ALMA under this Agreement to such other persons or parties as ESO directs and shall otherwise cooperate in order to facilitate the continuation of ALMA.
- 8.4 MCyT/MF shall not transfer any rights, title, or interest in any property, contracts (to the extent allowed under those contracts) or work in progress funded out of money contributed to ALMA under this Agreement without the prior agreement of ESO.
- 8.5 Notwithstanding Articles 8.3 and 8.4 of this Agreement, MCyT/MF shall retain its rights in Intellectual Property acquired as at the effective date of withdrawal, subject to the terms of Article 23 of the Bilateral Agreement.
- 8.6 Except as provided in Articles 8.3, 8.4, and 8.5 of this Agreement or as otherwise agreed by ESO, all rights and benefits conferred under this Agreement shall be forfeited at the effective date of withdrawal. In particular, MCyT/MF shall not be entitled to any compensation for its prior contribution to the project other than that provided for in Article 8.3 of this Agreement.

## **ARTICLE 9: REPRESENTATION ON ALMA BODIES**

- 9.1 MCyT/MF shall be entitled to appoint a single representative to the European ALMA Board (EAB). The EAB shall agree the European position on ALMA matters and shall make recommendations to ESO Council through the ESO Executive, and provide briefing and advice to the European appoint to the ALMA Board.

- 9.2 MCyT/MF shall be entitled to appoint a single Observer to the ALMA Board, subject to the provisions of the Bilateral Agreement, should none of the ESO appointees be from Spain.
- 9.3 Appointments to all other bodies shall be governed by the principles of Article 5.1 of this Agreement.

#### **ARTICLE 10: FUTURE MEMBERSHIP OF ESO**

- 10.1 Should the Kingdom of Spain accede to ESO during the period of validity of this Agreement, the terms of accession shall be negotiated separately. They shall take account of any contributions to ALMA that MCyT/MF has made under the terms of this Agreement and the contributions MCyT /MF have made to Phase 1 of ALMA.

#### **ARTICLE 11: DEFAULT**

- 11.1 ESO reserves the right to seek compensation from MCyT/MF should the provisions of the Bilateral Agreement be applied to ESO as a consequence of a delay or failure on the part of MCyT/MF. If the delay is due to the MCYT/MF payments, the interest due should be subject to the Budgetary General Law of the Kingdom of Spain. Interest on delayed payments will be made at the current legal interest rate throughout the period in which the amount had to be paid, incremented by the percentage established in the current Budgetary Law. If the delay concerned in-kind contributions, the compensation to ESO will be subject to negotiation, and Article 13 of this Agreement will apply.

#### **ARTICLE 12: OBSERVING TIME AND DATA RIGHTS**

- 12.1 With respect to Observing Time and Data Rights, MCyT/MF shall be treated in all respects as if Spain were an ESO Member State.

#### **ARTICLE 13: DISPUTES**

- 13.1 Any disagreements regarding the interpretation, implementation or application of this Agreement shall be resolved by negotiation between ESO and MCyT/MF. Should such negotiation fail, the matter shall be put to MCyT/MF and the President of the ESO Council for resolution. The President of the ESO Council and MCyT/MF, acting with the authorisation of the Council of Ministers, may, at their discretion, appoint an arbitrator to assist them in reaching a resolution. If appropriate, the provisions of the General Budgetary Law of the Kingdom of Spain will apply, as already mentioned under Article 8.1.

#### **ARTICLE 14: ANNEXES**

- 14.1 There is one Annex to this Agreement: the Schedule of Contributions which will be made by MCyT and M F are those shown in Tables 1, 2, and 3 of the Annex.

**ARTICLE 15: AUTHENTIC TEXTS**

15.1 This Agreement is signed in six original versions, three in English and three in Spanish, all being authentic and of equal validity.

For the Ministry of Public Works

For the Ministry of Science and Technology

Francisco Álvarez-Cascos Fernández, Minister    Josep Piqué i Camps, Minister

For the European Organisation for Astronomical Research in the Southern Hemisphere,

Catherine Cesarsky, Director General

## ANNEX

### SCHEDULE OF CONTRIBUTIONS

**Construction.**

The total European contribution to the construction of ALMA is Valued at 294 million €<sub>2002</sub> comprised of the estimated cost of the European share of construction = 253,2 million €<sub>2002</sub> plus a contingency of 40,7 million €<sub>2002</sub>. MCyT/MF will contribute 7.5 percent of the total European contribution to ALMA construction = 22 million €<sub>2002</sub>, including 3 million €<sub>2002</sub> to the contingency. The European share of ALMA construction will be funded over the period of 2003-2012. The schedule of the contribution by MCyT/MF to ALMA construction is given in first line of Table A-1. This schedule of contributions will be adjusted annually for inflation in accordance with ESO financial rules and regulations.

For a portion of its contribution to ALMA construction MCyT/MF will be assigned responsibility to perform the ALMA work elements listed in Table A-2. Delivery of the products of these work elements will be credited as in-kind contributions to ALMA construction. The projected schedule of expenditures for these work elements, exclusive of contingency, is given in the second line of Table A-1. In the performance of these work elements MCyT/MF will have the same access to the use of contingency as all European institutions participating in ALMA. The use of contingency must be approved by the European ALMA Project Manager and in addition, is subject to the provisions of Article 15.4 of the Bilateral Agreement.

The balance of the contribution by MCyT/MF after credit for the in-kind contributions is given in the third line of Table A-1. This is the schedule for in-cash contributions to ALMA construction by MCyT/MF. In-cash contributions shall be made by 31 March of each year.

**Operations.**

For 2012 and beyond (full-scale operations), the estimated annual cost of the European share of operations, maintenance, upgrades, and development for ALMA is 17,1 million €<sub>2002</sub> per year. MCyT/MF will contribute 7.5 percent of the total European cost of operations = 1,3 million €<sub>2002</sub> per year. Early Operations are scheduled to start with a partial array in 2007. Correspondingly, contributions for operations will start in 2006 and rise to the full-scale level in 2012. The contribution of MCyT/MF to ALMA Operations is given in the bottom line of Table A-1.

**Table A-1. MCyT/MF Contribution Schedule (k€<sub>2002</sub>)**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
<b>Construction Total</b>	1.040	3.040	3.038	2.918	2.800	2.526	2.268	2.108	1.900	0.403	22.041
<b>Work (In-kind) Contributions</b>	0.088	1.940	1.738	1.678	0.900	0.457	0.430	0.199	0.199		7.630
<b>Cash Contributions</b>	0.952	1.100	1.300	1.240	1.900	2.069	1.838	1.908	1.701	0.403	14.411
<b>Operations</b>				0.083	0.286	0.481	0.713	0.942	1.150	1.282	4.937

**Table A-2. MCyT/MF Contribution Schedule (k€<sub>2002</sub>)**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
<b>MCyT</b>		1.5200	1.5190	1.5005	1.5430	1.5035	1.4905	1.5250	1.5250	0.8425	12.9690
<b>MF</b>	1.0400	1.5200	1.5190	1.5005	1.5430	1.5035	1.4905	1.5250	1.5250	0.8425	14.0090

**Table A-3. ALMA Work Elements Assigned to MCyT/MF**

Work Element Number *	Title	Budgeted Cost (k€ <sub>2002</sub> )	Period of Performance
0210 partial	Site video monitoring system	1.596	2004 - 2011
0820	Front end IF selection switch production	1.494	2004 - 2007
0840	Front end monitor & control system production	1.080	2004 - 2007
0920	Front end focal plane calibration system production	0.928	2004 - 2008
1420 partial	Band 7 cold IF amplifier production	0.691	2004 - 2009
1460 partial	Band 9 cold IF amplifier production	0.691	2004 - 2009
1600	Front end test station replication	0.753	2003 - 2005
1660	Front end mechanical chassis/mount production	0.397	2004 - 2007
		7.630	*

Note: Budgeted cost = European cost = Assigned Value