

## Trust Agreement

The trustee, Inter-University Research Institute Corporation, National Institutes of Natural Sciences of Japan (hereinafter referred to as “A”) and the entruster, University of Chile, (hereinafter referred to as “B”) hereby enter into a trust agreement (hereinafter referred to as “this agreement”) as follows:

### (Definition)

Article 1 The terms below shall be defined as follows in this agreement:

- (1) “ALMA” shall mean the Atacama Large Millimeter/Submillimeter Array.
- (2) “Deliverables” shall mean the “ALMA cartridge test cryostat” manufactured by “A” in accordance with this agreement.

### (Subject of trust agreement)

Article 2 “A” shall perform the tasks entrusted by “B” as defined below

- (1) Subject: Manufacturing of the “ALMA cartridge test cryostat” as described in the Exhibit (ALMA memo 455) and in accordance with the requirements specified in the Appendix.
- (2) Purpose: The purpose is that “A” shall accept the toll of manufacturing the “ALMA cartridge test cryostat” as a deliverable in accordance with this Trust Agreement and provide it to “B”, and “B” shall pay the expenses stipulated in (4) of this article to “A” as compensation for the relevant deliverables.
- (3) The persons in charge of the Trust Agreement: National Astronomical Observatory of Japan,  
National Institutes of Natural Sciences  
Advanced Technology Centre Associate professor, Yutaro Sekimoto
- (4) Business expenses: 13,405,000 Yen  
Direct purchase expenses 12,087,000 Yen  
Transportation 969,000 Yen  
Labor 258,000 Yen  
Indirect expenses 91,000 Yen
- (5) Period of performance of the Agreement: from April 1, 2009 to April 30, 2010
- (6) Place of implementation: National Astronomical Observatory of Japan, National Institutes of Natural Sciences

### (Provision of the deliverables)

- Article 3 Upon completion of the deliverables, the “ALMA cartridge test cryostat”, “A” shall immediately provide by electronic mail “B” with the test result report. “B” shall conduct an acceptance inspection and notify “A” of the result within two weeks from the reception.
- (2) A shall ship deliverables within two weeks that starting the next day from the day of the receiving acceptance inspection



(Payment of expenses)

Article 4 Payment is divided into 2 times. First time, "B" shall pay "A" for the direct purchase expenses stipulated in Article 2 (4) in advance on this agreement. Second time, "B" shall pay for the rest of the expenses (Transportation, Labor, and Indirect expenses) after the delivery.

2. "B" shall pay within 30 days of receipt of the invoice issued by "A".
3. The currency applied to the first paragraph shall be Japanese Yen. And the payments shall be paid by telegraphic transfer to "A" 's bank accounts in Japan as "A" may designate.
4. "B" shall pay the transfer fee.

(Share of the expenses for carrying in the deliverables, etc.)

Article 5 Share of transportation of expenses for the provision of the performance deliverables by "A" to "B" described in 3 shall be as follows:

2. Expenses of cost, insurance, and freight (CIF) for sea transportation of the deliverables to a port near the location of "B" (Santiago port) shall be included in the expenses in this agreement.

(Change of amount of expenses)

Article 6 When an excess or deficiency of expenses is incurred by "A", this agreement may be changed as follows:

2. If a deficiency is incurred in the direct expenses, "A" may reduce the relevant amount from the indirect expenses and increase the direct expenses by this amount as described in the preceding paragraph.
3. If there is still a deficiency in the direct expenses after taking the measure described in the preceding paragraph, "A" may change the amount of expenses upon consultation between "A" and "B".
4. If there is a surplus amount in the direct expenses, "A" may reduce the relevant amount from the direct expenses and increase the indirect expenses by this amount as described in the first paragraph.

(Confidentiality obligation relating to the contents of agreement)

Article 7 "A" and "B" shall mutually assume the responsibility for confidentiality with regard to the items described in this agreement, and shall not disclose them to any third parties except as obligated by the law.

(Cancellation of agreement)

Article 8 In the event of any of the following events, "A" and "B" may request the other party within 14 days to remedy the situation in writing determining the period for taking remedial action, and may cancel this agreement if the situation is not remedied within the relevant period:

- i. When the other party has committed a fraud or unfair action in performing this agreement
- ii. When the other party has breached this agreement

(Compensation for damage)

Article 9 If any damage is caused due to any of the events listed in the preceding article, or "A", "B", a person in charge of the Agreement or a collaborator for the performance of the Agreement



causes damage to the other party intentionally or by gross negligence, "A" or "B" must compensate for the damage to the other party.

(Effective period of agreement)

Article 10 The effective period of this agreement shall be as stipulated in Article 2.

2. Stipulation of Articles 4, 5 and 9 shall remain in force after the implementation of this agreement until the period or the subject matters stipulated in the relevant articles are completely lapsed.

(Consultation)

Article 11 If it is necessary to stipulate any matter that is not stipulated in this agreement, it shall be stipulated upon consultation between "A" and "B".

(Applicable laws)

Article 12 The laws of Japan shall be applied to the interpretation of this agreement.

(Jurisdiction)

Article 13 Any lawsuit relating to this agreement shall be under exclusive jurisdiction of the Tokyo District Court.

IN WITNESS WHEREOF, "A" and "B" hereto have signed this agreement in duplicate, and each party shall keep one original copy.

Date:

2009. 5. 14

Yoshiro Shimura  
President of Inter-University Research Institute  
Corporation  
National Institutes of Natural Sciences  
2-21-1, Osawa, Mitaka-shi, Tokyo

Agent

Shoken Miyama

Director General of National Astronomical  
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Francisco Brieva

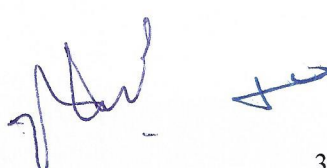
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## Appendix: Technical requirements.

1. The test cryostat shall implement a SHI cold head identical to the model used for the production of ALMA cryostat. Model RDK-3ST-R2.
2. The compressor shall be SHI CNA61D, 400V, 50 Hz, three-phase. The 20 m He flexible lines shall be delivered.
3. The cryogenic interfaces (300K, 100K, 15K, 4K) shall be compliant with the standard ALMA blank cartridge.
4. The interface on the signal input side shall be a blank metal plate.
5. The combination of cryocooler and cold link performance shall be following temperatures measured on the stages of a blank NAOJ-type cartridge:
  - a. 100K stage: 70K or less
  - b. 15K stage: 12K or less
  - c. 4K stage: 3.5K or less
6. Temperature stability of each stage shall be following variation measured on the stages of a blank NAOJ-type cartridge.
  - a. 100K stage: 0.1K or less
  - b. 15K stage: 0.1K or less
  - c. 4K stage: 20 mK or less
7. The supporting frame and a smooth cartridge loader shall be delivered.
8. The blank NAOJ-type cartridge, temperature sensors, and heaters are not deliverable.

