

No. 11474

**EUROPEAN SPACE RESEARCH ORGANISATION
and
ITALY**

**Agreement concerning the launching of sounding rockets
from the Salto-di-Quirra Range in Sardinia (with
annexes). Signed at Paris on 31 May 1967**

Authentic texts: French, English and Italian.

Registered by the European Space Research Organisation on 29 December 1971.

**ORGANISATION EUROPÉENNE
DE RECHERCHES SPATIALES
et
ITALIE**

**Accord concernant le lancement de fusées sondes à partir de
la base de Salto-di-Quirra (Sardaigne) [avec annexes].
Signé à Paris le 31 mai 1967**

Textes authentiques: français, anglais et italien.

Enregistré par l'Organisation européenne de recherches spatiales le 29 décembre 1971.

AGREEMENT¹ CONCERNING THE LAUNCHING OF SOUNDING ROCKETS FROM THE SALTO-DI-QUIRRA RANGE AT SARDINIA

The Italian Government, on the one part, and the European Space Research Organisation (hereinafter referred to as “the Organisation”), on the other part,

CONSIDERING article V, paragraph *h*, of the Convention for the Establishment of a European Space Research Organisation² (hereinafter referred to as “the Convention”), whereas the Organisation may in particular make contractual arrangements for the use of launching ranges for rockets and satellites and other facilities available in Member or other States,

DESIROUS to take all necessary measures to ensure the best legal and material conditions in connection with the launching activities of the Organisation in Italy,

HAVE AGREED as follows :

PART I

SUBJECT OF THE AGREEMENT

Article 1

1. Subject to the following provisions the Italian Government shall make available its range in Salto-di-Quirra for the launching of sounding rockets for the Organisation’s purposes.

2. For this purpose the Italian Government shall employ or make available its facilities and equipment on the range and outside, in so far as they are connected with the range and necessary to carry out the Organisation’s programme.

Article 2

This Agreement will be valid for a period of eight years from the date of entry into force. One year before the expiry of the afore-said period both parties shall reconsider a renewal of the Agreement, and the Italian Government shall give favourable consideration to the future needs of the Organisation.

¹ Came into force on 31 May 1967 by signature (with the exception of article 20), in accordance with article 25.

² United Nations, *Treaty Series*, vol. 528, p. 33.

PART II

PROVISIONS CONCERNING PREPARATION AND EXECUTION OF CAMPAIGNS

Article 3

1. The launchings will normally be grouped in campaigns of four to ten rockets, lasting from four to six weeks.

2. The campaigns shall not occupy the range during more than thirty weeks per calendar year.

Article 4

1. The number of campaigns and the number of rockets to be launched during each campaign shall be decided by the Organisation within the limits stated in article 3 and in the campaign specifications referred to in article 6.

2. The dates of a campaign shall be mutually agreed at least six months in advance. Minor changes of these dates, if required, must be mutually agreed at least two weeks in advance.

Article 5

The Organisation will select the types of sounding rockets to be launched. The Italian Government, however, shall have the right to refuse the launching of a certain type for safety reasons.

Article 6

1. Campaign specifications describing the intended experiments and specifying range facilities required shall be established at least six months before a campaign.

2. Trial specifications describing in detail all operations before, during and after the launch shall be established at least one month before the intended date of launching. In so far as these specifications determine special operations to be carried out on the range, they shall also define the fields of competence of both parties, and shall be prepared in consultation with and be submitted by the Organisation to the competent Italian authorities for approval.

Article 7

1. The Organisation shall provide at least forty days before the beginning of a campaign a list of its personnel and of the scientific experimenters who will need access to the range facilities.

2. Italy shall guarantee that the Organisation's personnel and the scientific experimenters shall have access to the range facilities to be used for the preparation or execution of the launchings. In case that access is necessary to certain areas requiring special clearance, only personnel in respect of whom such clearance can be obtained shall be given access to these areas.

3. The number of Italian staff necessary for the operations shall be agreed in detail by both parties for each firing campaign, at least one month before the beginning of the campaign.

Article 8

The Italian authorities shall arrange for the transportation of personnel, materials and equipment, from and to an agreed port and airport of entry to and from the range area.

Article 9

The Organisation shall become owner of the data collected during the campaign.

Article 10

The competence of the parties in respect of main elements of launching operations are defined in annex I, and in detail in the trial specifications referred to in paragraph 2 of article 6.

Article 11

1. Both parties shall undertake the liabilities for any injury or damage resulting from their own activities as defined in annex I referred to in article 10 and in the trial specifications referred to in paragraph 2 of article 6.

2. The Organisation shall take care to cover its liabilities with adequate insurance. The terms of the insurance contract shall be determined after consultation with the Italian Government, but in any case this insurance shall cover all explosive risks, including such arising during the transport of rockets motors and components by the Italian Government.

PART III

PROVISIONS CONCERNING MODIFICATION AND CONSTRUCTION OF RANGE
FACILITIES AND MAINTENANCE OF EQUIPMENT*Article 12*

1. The Italian Government undertakes to carry out the modifications to and construction of range facilities as defined in Annex II.

2. These modifications or constructions serve :

- (a) to enhance the general capacity of facilities on the range (see annex II, chapter I);
- (b) to bring facilities on the range into line with special requirements of the Organisation (see annex II, chapter II).

Article 13

The Italian Government offers at the request of the Organisation its assistance for modifications or construction of scientific observation stations located inside or outside the range. The nature of such modifications and constructions shall be agreed between the parties.

Article 14

If in addition to the facilities listed in annex II other facilities are subsequently required, their specifications shall be included in the campaign specifications under consideration and shall be agreed by both parties.

Article 15

1. The Organisation shall have the right to install additional facilities to those listed in chapter II of annex II, as may be agreed under article 14.

2. The Organisation shall have the right to take away its facilities referred to in paragraph 1 of this article and in chapter II of annex II, or to leave them on the range between the campaigns.

3. If the Organisation leaves its facilities on the range, the Italian Government has to maintain them properly, subject to conditions to be agreed by both parties.

4. The Italian Government is entitled to use the Organisation's facilities for its own programmes subject to conditions to be agreed by both parties.

PART V

FINANCIAL PROVISIONS

Article 16

1. The cost calculations for each launching are based on the assumption that at least fifty sounding rockets will be launched from the Salto-di-Quirra range. In the event of the number of launchings varying from fifty by more than 10 per cent, the basis for the cost calculations shall be reviewed.

2. The Organisation shall pay in arrears to the Italian Government for each firing campaign the costs for such a campaign, calculated in accordance with the provisions of annex III.

3. If the Italian Government, at the request of the Organisation, has to take measures or to procure or provide special facilities not foreseen in the typical campaign set out in annex III, these measures or facilities shall be determined and agreed before the starting of the campaign. The corresponding costs are to be paid in addition to the costs in paragraph 2 of this article.

4. The costs of a typical campaign as calculated in annex III may be revised if a modification of any of its elements arises.

Article 17

1. The costs of the modifications or constructions of the range facilities referred to in article 12, paragraph 2, *a*, shall be paid by the Italian Government.

2. The costs of modifications or constructions of range facilities referred to in article 12, paragraph 2, *b*, shall be reimbursed to Italy by the Organisation. The total cost for these modifications or constructions shall not exceed 80 million lire. The reimbursement by the Organisation shall take place in accordance with its financial rules.

3. Unless otherwise agreed, the costs for modifications or constructions referred to in article 13 shall also be reimbursed by the Organisation in accordance with its financial rules.

Article 18

The Italian Government shall provide board and accommodation on the launching range for at least 30 staff members of the Organisation or scientific experimenters during the campaigns, at a cost normally charged on the base.

PART V

GENERAL PROVISIONS

Article 19

The Italian Government shall, pending the entry into force of the Protocol on Privileges and Immunities of the Organisation, signed on 31 October 1963,¹ allow the Organisation and its staff members, for the exercise of their functions and duties in Italy, such facilities foreseen in the said Protocol as may be granted by means of administrative measures.

Article 20

1. Any dispute arising out of the interpretation or application of this Agreement which cannot be settled directly between the parties, may be submitted by either party to an Arbitration Tribunal. If a party intends to submit a dispute to arbitration it shall notify the other party.

2. The Italian Government and the Organisation shall each designate one member of the said tribunal. The members so appointed shall designate their chairman.

3. If, within three months from the date of the notification referred to in paragraph 1 of this article, either party fails to make the nomination referred to in paragraph 2 of this article, the choice of the arbitrator shall, at the request of the other party, be made by the President of the International Court of Justice. This shall also apply, when so requested by either party, if within one month from the date of appointment of the second arbitrator, the first two arbitrators are unable to agree on the nomination of the third arbitrator.

4. The tribunal shall determine its own procedure.

5. No appeal shall lie against the award of the arbitration tribunal, which shall be final and binding on the parties. In case of dispute concerning the import or scope of the award it shall be incumbent upon the arbitration tribunal to interpret it on request by either party.

Article 21

1. Before the entry into force of the Protocol on Privileges and Immunities of the Organisation, signed on 31 October 1963, the Italian Government may submit to the arbitration tribunal referred to in article 20 also any dispute arising from the activities of the Organisation or involving any other non-contractual responsibilities of the Organisation.

¹ See p. 279 of this volume.

2. With the entry into force of the aforesaid Protocol, article 26 of this Protocol, shall apply for disputes referred to in paragraph 1 of this article.

Article 22

This Agreement may be revised at the request of either party in the event of any essential change in circumstances.

Article 23

The Agreement shall automatically terminate in the event of the dissolution of the Organisation under the terms of the Convention.

Article 24

The Annexes referred to in this Agreement and attached hereto form an integral part of the Agreement.

Article 25

This Agreement shall enter into force the day of its signature, except for article 20, which shall enter into force after the Italian Government has notified the Organisation that the procedure for its entry into force has been carried out.

IN WITNESS WHEREOF the undersigned representatives have appended their signature to this Agreement.

DONE in Paris, this thirty first day of May 1967, in the French, English and Italian languages, all texts being equally authoritative, in two original copies.

For the European Space Research Organization :

[Signed]¹

For the Italian Government :

[Signed]²

¹ Signed by P. Auger.

² Signed by E. Cigerza.

ANNEX I

TO THE AGREEMENT CONCERNING THE LAUNCHING OF SOUNDING ROCKETS FROM THE SALTO-DI-QUIRRA RANGE AT SARDINIA

Definitions of competencies in respect to main operational activities

I. The Italian Government shall be competent for :

- a) the logistic support of the launching operations (transportation, storage, electrical power supply, living facilities for personnel, medical assistance, fire fighting service during the launching operations, manpower and workshops, etc.);
- b) the operation and maintenance of technical ground equipment (Gigli tower, launching facilities, communications, timing, tracking, telemetry, camera);
- c) data operations as defined in the trial specifications and supply of raw data resulting from the launchings;
- d) safety on the range (the safety regulations in the area reserved for launching preparations and the launchings);
- e) safety in the impact area;
- f) the selection of the launching angle (elevation and azimuth);
- g) authorisation of a launch;
- h) the operational preparation and positioning of the tower.

II. The Organisation shall be competent for :

- a) check out, preparation, assembling and test of motors and payloads;
- b) check out and installation of igniters and of firing circuit connections;
- c) firing the rocket.

ANNEX II

TO THE AGREEMENT CONCERNING THE LAUNCHING OF SOUNDING ROCKETS FROM THE SALTO-DI-QUIRRA RANGE AT SARDINIA

Modifications to, or construction of, facilities at the Sardinia launching range

The symbols used in the text have the following meanings :

i) Notes in brackets (cf. T.S., page ... (i)) refer to the Technical Specifications concerning the facilities to be supplied at the Sardinia launching range, drawn up by the European Preparatory Commission for Space Research, dated February 1964.

ii) Notes in brackets (cf. T.S., page ... (ii)) refer to the Technical Specifications concerning modifications and constructions to be carried out on the Gigli tower in Sardinia (P.7003/86) published by the Organisation in August 1964.

iii) Notes in brackets (cf. T.S., page ... (iii)) refer to the Technical Specifications concerning modifications and constructions to be carried out on the launching pad. Equipment for the Sardinia launching range—P.7003/85, published by the Organisation in August 1964.

iv) Notes in brackets (cf. T.S., page ... (iv)) refer to the Technical Clauses concerning modifications to be made to the Centaure launching pad published by the Organisation in October 1964.

I. MODIFICATIONS AND CONSTRUCTION TO BE ENTIRELY PAID FOR BY THE ITALIAN GOVERNMENT WITHOUT SUBSEQUENT REIMBURSEMENT BY THE ORGANISATION (Article 12, paragraph 2, a, of the Agreement)

The equipment concerned shall remain the property of the Italian Government.

I.1 *Modifications to the Gigli tower*

a) *Guide rails* (modifications to be made to the existing rails)

- Manufacture, installation and adjustment of a special stop on the upper rail section at the joint of the door rail sections (cf. T.S., page 2 (ii));
- Chamfering of the ends of the rail sections (cf. T.S., page 2 (ii));
- Alignment of the rails (cf. T.S. pages 2, 3 and 4 (ii) and T.S. pages 14 and 15 (i));
- Installation and utilisation of necessary equipment of the Organisation for aligning the rails, as specified in accordance with the alignment method worked out jointly (cf. T.S., pages 2 and 3 (ii), and T.S., page 25 (i));
- Supply, installation and connection of apparatus for measuring travel time of rocket in launching tower (cf. T.S., page 4 (ii)).

b) *Motor hoisting door*

- Reinforcement of pulleys (cf. T.S., page 5 (ii)).
- Fitting of an apparatus for hoisting door, capacity 2 000 kg (cf. T.S., page 5 (ii)).
- Design, supply and fitting of a simple device to lock the door in launching position consisting of two locks controlled from the motor-loading platform (cf. T.S., page 5 (ii)).

c) *Hoisting apparatus*

- Supply and installation of a hoisting apparatus to enable rocket payloads and motors to be loaded and handled in the launching tower (cf. T.S., pages 19 and 20 (i)).
- Supply and installation of a hoisting apparatus on the top of the launching tower (capacity, 2 000 kg).

d) *Working Platforms*

- Transfer of platform from level 2.5 m. to level 4 m. (cf. T.S., page 12 (ii) and T.S., page 21 (i)).
- Fitting a platform at level 6.5 m. complying with the relevant safety conditions and the requirements for the use of the plug extractor, (cf. T.S., page 13 (ii), and T.S., page 21 (i)).
- Safety lock to secure the large platforms in the raised position, (cf. T.S., page 13 (ii)).
- Supervision from launching console of retracted position of all platforms (cf. T.S., page 13 (ii)).

- Retraction of platforms allowing for the position of the plug extractor (cf. T.S., page 13 (ii)).
- Supply and installation of quick-mounting, “unlosable” stirrup-type safety device for securing the platform in the retracted position (cf. T.S., page 13 (ii)).
- e) *Transfer boxes* (cf. T.S., page 14 (ii), and T.S., page 45 (i))
 - Watertightness of existing boxes, and identification.
 - Supply and fitting of seals for cable lead-ins.
 - Supply, fitting and connection of lead-out sockets for flexible cables.
 - Supply and fitting of strips for soldering of conductors.
- f) *Ledex box* (cf. T.S., page 15 (ii))
 - Watertightness of the box and equipment.
 - Supply and fitting of cable seals.
 - Supply and fitting of connection socket for the Ledex safety switch.
 - Supply and fitting of strips for soldering of conductors.
- g) *Plug-extractor case* (cf. T.S., pages 15 and 16 (ii))
 - Watertightness of the box and equipment.
 - Supply of cable seals and connection contacts.
- h) *Launching tower control links*
 - Supply, installation and connection of cables and control equipment for the launching tower (cf. T.S., pages 18, 19 and 20 (ii)).
- i) *Power supplies inside the launching tower* (cf. T.S., page 21 (ii))
- j) *General improvements* such as lighting of the launching area and launching tower for night work and night photography, access to platforms, repainting (cf. T.S., page 25 (i))
- k) *Construction file, diagrams, plans, projects, etc.* (cf. T.S., page 24 (ii))
- l) *Supply of a jig for locating the blocks on the Raven guide shoe* (cf. T.S., page 9 (ii))
- m) *Supply and fitting of a retaining device for the hoisting door* (cf. T.S., page 5 (ii))

I.2 *Masonry work and repair of buildings*

- Repair and repainting of Skylark blockhouses D1 and D2 (cf. T.S., pages 28 and 32 (i)).
- Clearing of all unnecessary equipment from blockhouses (cf. T.S., page 1 (iii)).
- Supply and fitting of “Securit” window glass.
- Heating of buildings used by the Organisation.
- Repairing of roofs, windows and doors of buildings used by the Organisation in order to prevent rainwater leaks.
- Checking of, and possible modifications to, existing “Earths” located near the launching tower (electrical resistance of ignitors 0.9 to 1.6 ohms).

- Supply and positioning of two alignment markers Skylark and Centaure (cf. T.S., pages 27 and 28 (i) and page 5 (iv)).

I.3 *Modifications to buildings*

a) *“Skylark” blockhouse D1*

- Fitting labels on the wall panel (cf. T.S., page 5 (iii)).
- Installation of existing wall panel below new-type junction box (cf. T.S., page 4 (iii)).
- Wiring of earth circuits (cf. T.S., page 4 (iii)).
- Wiring of electricity supply circuits, i.e.:
 - ordinary lighting circuit;
 - power for technical use : 3 kVA, 220 volts, 50 c/s; required voltage and frequency stability : $\pm 10\%$.

b) *“Skylark” blockhouse D2*

- Fitting labels on the wall panel (cf. T.S., page 8 (iii)).
- Installation of existing wall panel below new-type junction box (cf. T.S., page 7 (iii)).
- Wiring of earth circuits (cf. T.S., page 7 (iii)).
- Wiring on the panel of the specialised connection sockets for the operation of the launching tower and for connection with the launching console (cf. T.S., page 8 (iii)).
- Individual protection of electric power supply to consoles (cf. T.S., page 16 (iii)).
- Wiring of electric power supply circuits (cf. T.S., page 48 (i)), i.e. :
 - ordinary lighting and electric heating;
 - power for technical uses : 3 kVA, 220 volts, 50 c/s; required voltage and frequency stability : $\pm 10\%$.
- Wiring of the launching-range timing system and of the numerical time display (cf. T.S., pages 9 and 10 (iii)).
- Loan of a 24-volt 5-ampere battery for the Ledex safety relay (cf. T.S., page 16 (iii)).
- Installation of equipment in the blockhouse (cf. T.S., page 16 (iii)).

c) *Centaure blockhouse*

- Wiring of earth circuit (cf. T.S., page 33 (i)).
- Wiring of launching-range timing system and of the numerical time display (same as for Skylark blockhouse).
- Provision of special requirements in the blockhouse (cf. T.S., pages 6, 7 and 8 (iv)), except wind-data equipment, to be located in the Nike blockhouse.

d) *Assembly and balancing hall*

- Supply of a set of manilla ropes, slings, chains for handling (cf. T.S., page 35 (i)).

- Installation, after stabilisation of the ground, of special equipment supplied by the Organisation for checking assembly and balancing of the Skylark rockets (cf. T.S., page 17 (iii)).
- Installation and connection of the Organisation's mains supply sockets at each existing distribution point (cf. T.S., page 17 (iii)).
- Installation and connection of two mains supply sockets 220/380 V, 15 A, outside and on both sides of the main door. (cf. T.S., page 17 (iii)).
- Connection of all large metallic surfaces to the existing earth (cf. T.S., page 17 (iii)).
- Modification of the existing lighting installation, to comply with safety requirements (cf. T.S., page 17 (iii)).
- Repairs to the floor (cracks in the cement) after final positioning of the surface plates (cf. T.S., page 17 (iii)).
- Supply and installation of a lightning conductor (cf. T.S., page 17 (iii)).
- Installation of heating apparatus meeting safety requirements (cf. T.S., page 17 (iii)).
- Supply and installation of ordinary workshop fittings (cf. T.S., pages 35 and 36 (i)).

e) *Payload equipment preparation hall*

- Preparation hall to be made completely available (cf. T.S., page 36 (i)).
- Supply, installation and wiring of an earth circuit (cf. T.S., page 38 (i)).
- Loan of a compressor with compressed air distribution system (4 atmosphere).
- Supply of heating apparatus (cf. T.S., page 19 (iii)).

f) *Rocket storage hall*

- To be made completely and permanently available to the Organisation (cf. T.S., page 19 (iii)).
- Clearing of the entrance to allow passage, should the occasion arise of marine transport crates for Raven, dimensions 6.5 × 1 × 1.1 metres (cf. T.S., page 19 (iii)).
- Supply and installation of a lightning conductor (cf. T.S., page 20 (iii)).
- Supply of heating apparatus meeting safety requirements, for use when the ambient temperature is below freezing point.
- Ordinary internal and external lighting of the building.

g) *Test shed for sensitive equipment* (cf. T.S., page 20 (iii) and page 43 (i)).

- Modifications to the blockhouse located near the storage hall, to enable it to take test equipment, i.e. :
 - installation of the test bench facing a window which will be modified to take the inspection chamber tube;
 - supply of a test bench support;

- supply of armour plating outside the blockhouse opposite the inspection chamber tube.
- Repairs to openings and installation of safety glass in windows.
- Modification to electric installation, i.e. :
 - 220 V, 5A supply on a socket supplied by the Organisation;
 - ordinary internal and external lighting of blockhouse;
 - installation of heating apparatus meeting safety requirements.
- Installation of a telephone connected to the launching range system.

I.4 *Setting up of wire communication links*

- Setting up of wire communication links : telephone and green signal lights for use with the Skylark and Centaure launchings, including the Radar and Telemetry links. (cf. T.S., page 44, and figure 17 (i)).
- Setting up of a public address system connected to the general launching range public address system, for use with the Skylark and Centaure launchings. (cf. T.S., page 44, and figure 17 (i)), with wiring (cf. T.S. (iii)) :
 - in the launching blockhouses;
 - on the launching pads, near the launchers;
 - in the assembly and preparation halls.
- Setting up of special interphone links between :
 - cable head No. 1 and the Centaure blockhouse,
 - the launching tower and D1
 - the launching tower and D2
 - the launchers and the preparation hall,
 - the launchers and the assembly hall,
 - the blockhouses and the preparation hall on the one hand and the telemetry and radar stations on the other.

The launching-tower terminals of the link shall be at the 5.5 metre platform, and on the motor-loading area.

- Setting up of telephone and interphone links between the D2 and Centaure blockhouses on the one hand and the Launching Controller's console on the other (ESRO (P.C.C.))

I.5 *Electrical wiring in the blockhouses, the preparation, storage and assembly halls* (cf. T.S., pages 48, 49, 50 (i), and T.S. (iii))

I.6 *Radar station*

- Installation of a RIS 3C Radar tracking station within sight of the launching pads and of the payload equipment preparation hall (cf. T.S. (ii), annex No. 1, page 7)
- Supply and installation, of the real-time and delayed-time plotting and recording device.
- Supply and installation, of a digital data recording device (decentralised solution preferred).

- Connection to the general launching-range system (telephones, interphones, authority to launch).
- Checking of general operation of the station.

I.7 Telemetry station

- Installation of a telemetry receiving station and the associated recording facilities at Monte Cardiga.
- Connection to the general launching-range system (telephones, interphones, authority to launch).
- Checking of general operation of the station when connected to the automatic aiming antenna.
- Purchase and installation of a 216-260 Mc/s band telemetry receiver similar to Nems-Clarke No. 1412 receiver (cf. T.S., page 40 (i)).
- Supply and connection of an "Ampex" FR 1200 7-track magnetic recorder (cf. T.S., page 40 (i)) (on tapes supplied by the Organisation, one copy is kept at the base.)
- Supply to the telemetry station of recording equipment similar to that in use at the present "Contraves" station, for use with recording paper to be supplied by the base.

I.8 Vertical Sounding station (which will form the subject of a special agreement between the two parties in accordance with article 13 of the Agreement.)

II. MODIFICATIONS TO, AND CONSTRUCTION OF, LAUNCHING-RANGE FACILITIES BY THE ITALIAN SERVICES FOR THE REQUIREMENTS OF THE ORGANISATION, TO BE PAID FOR BY THE ORGANISATION (article 12, paragraph 2, *b*, of the Agreement)

The facilities below marked "X" will remain the property of the Organisation. The Organisation shall have the right to remove them (article 15, paragraph 2, of the Agreement).

The other facilities will become the property of the Italian Government.

II.1 Modifications to the Gigli tower

a) Tower position control and checking system

- Design and manufacture of a tower position control and checking system to meet the operating requirements and the required accuracy (1° in azimuth and $\frac{1}{2}^\circ$ in elevation). Submission of project files before construction (cf. T.S., pages 7, 8, 9 and 10 (ii), and T.S., pages 17 and 18 (i)).
- Control and checking of the tower position from D2 on the launching console (cf. T.S., page 7 (ii), and pages 17 and 18 (i)).
- It shall be possible to return from the rocket loading position to the vertical in the event of an electric power failure (cf. T.S., page 7 (ii), and page 17 (i)).
- Control and checking in elevation between the vertical and 80° (cf. T.S., page 7 (ii) and page 17 (i)).

— Control and checking in azimuth between true north and south, that is 180° plus 10° on either side of these limits (cf. T.S. page 8 (ii) and pages 17 and 18 (i)).

b) *Other modifications*

- Supply and installation of gang planks on both sides of the hoisting door guide rail (cf. T.S., page 6 (ii)).
- Supply, installation and adjustment of guide rails (cf. T.S., pages 14 and 15 (i)).
- Design and incorporation of modifications to a hoisting door (including the stop device in the launching tower) (cf. T.S., pages 15 and 16 (i)).
- Construction and installation of a removable platform for “Cuckoo” equipment, 0.5 m level (cf. T.S., page 12 (ii)).
- Modification to 5.5 m platform (cf. T.S., page 12 (ii)).
- Hoisting appliance for large platforms, operated manually by winch (cf. T.S., page 13 (ii)).
- Modifications to working platforms (cf. T.S., page 21 (ii)).
- Supply and installation of angle-section supports to be mounted on the rails to take payload equipment at three different levels (cf. T.S., page 4 (ii)).
- Construction in the launching tower, at the upper-platform level, of an access door for payload equipment (cf. T.S. page 20 (i)).
- Construction of a 70 cm. diameter opening, directly above the dolly with payload equipment. Opening to be provided with a hinged cover (cf. T.S., page 13 (ii)).
- Supply, installation and connection of four transfer boxes level with the umbilical plugs (cf. T.S., page 14 (ii)).
- Moving of four transfer boxes and wiring (cf. T.S. page 14 (ii)).
- Supply, installation and connection of four 30-conductor cables of 2m/m² cross-section (length to be determined in the launching tower), sheathed, faradised separately, together with spare cables (cf. T.S., page 14 (ii)).
- Installation of umbilical-plug cables (cf. T.S., page 14 (i)).
- Supply, installation and connection of a waterright box known as “Ledex” box (cf. T.S., page 15 (ii)).
- Supply, installation and connection of a box known as “plug extraction” box (cf. T.S., pages 15 and 16 (ii)).
- Design, manufacture and connection of an extractor device for two umbilical plugs after agreement on the manufacturing plan (cf. T.S., pages 16, 17 and 18 (ii)).
- Construction and installation of a cable duct, or any other protective system placed externally on launching tower (cf. T.S., page 20 (ii)).
- Construction of cable trenches provided with covers, or cable covers, from the foot of the launching tower through the D1 blockhouse to the D2 blockhouse (cf. T.S., pages 20 and 21 (ii)).

- Supply, installation and connection of a safety box located on the wall of the D1 blockhouse sheltered from the rocket blast.

II.2 *Masonry work*

- Levelling of the road between the sensitive-equipment test blockhouse and the payload preparation hall.
- Levelling of an area 3 × 3 m. near the payload equipment preparation hall.
- Checking and wiring to the D1 and D2 blockhouses, and on the Skylark launching tower, of an existing earth near the launching pad. (cf. T.S., page 27 (i)).
- Modifications to an existing slab for the Centaure launching pad (cf. T.S. page 26 (i)).
- Construction of cable trenches for the cables connecting the Centaure launching area and the blockhouse (cf. T.S. page 26 (i)).
- Installation of an “earth” near the Centaure launching pad (cf. T.S., page 26 (i)).

II.3 *Modifications to buildings*

a) *Skylark blockhouse D1*

- Supply, installation and connection of a box called “junction box” with a capacity of 220 inputs and 220 outputs (cf. T.S., page 2 (iii)).
- Installation of control cables (cf. T.S., pages 2, 3, 4 and 5 (iii)).
- Supply, installation and connection of a panel with equipment (cf. T.S., page 4 (iii)).
- Installation of wiring of the wall panel located at the base of the junction box (cf. T.S., pages 4 and 5 (iii)).

b) *Skylark blockhouse D2*

- Supply, installation and connection of a box called a “junction box” with a capacity of 220 inputs and 220 outputs (cf. T.S., pages 5 and 6 (iii)).
- Installation of the wiring (cf. T.S., pages 6 and 7 (iii)).
- Supply, installation and connection of a panel with equipment (cf. T.S., pages 7, 8, and 9 (iii)).
- Installation of the wiring of the wall panel located at the base of the junction box on launching console connector (specified by the Italian Authorities) (cf. T.S., pages 8 and 9 (iii)).
- Supply, installation and connection of the sockets required for the connection of all the launching console cables, excepting the ignition circuit which is connected directly. (cf. T.S., page 30 (i)).

X

- Supply, installation and connection to the wall panel of a launching console (cf. T.S. page 10 (iii)) including :
 - 1 inclined front panel;
 - 1 writing shelf;
 - 1 ignition power supply drawer;
 - 1 ancillary power supply drawer.

c) *Centaure blockhouse*

— Supply, installation and connection of two wall panels for connection of launching and operating consoles (cf. T.S., pages 32, 33 and 34 (i)).

d) *Rocket assembly and balancing hall*

X — Supply and installation of an electrically-controlled travelling gantry crane (cf. T.S., page 17 (iii) and page 35 (i)).

e) *Payload preparation hall and associated antenna*

— Modifications to the hall (partitions modified) (cf. T.S., page 36 (i)).

— Provision for an access ramp, a platform, and an access door (cf. T.S., page 36 (i)).

X — Supply of a road transport flat truck for use with Centaure rocket and Skylark payload dolly (for transport in laboratory) (cf. T.S., pages 36 and 37 (i)).

— Supply, installation and connection of a coaxial wall panel with equipment (cf. T.S., page 37 (i)).

X — Supply, installation and connection of a Yagi antenna fitted with its feeder (cf. T.S., pages 18 and 19 (iii)).

— Supply and installation of an antenna pylon near the preparation hall (cf. T.S., page 27 (ii)).

— 3-phase 15-A wiring on the mains supply distribution panel with protection on each phase (cf. T.S., page 19 (iii)).

— Supply and installation of a winch mounted on the roof girders, manually controlled from a wall position (capacity 300 kg—height below hook 4 metres), to hoist into a vertical position payload equipment of up to 3.70 metres in length (cf. T.S., page 37 (i)).

II.4 *Control links*

— Supply, installation and connection of all the control links required for the operation of Skylark rockets (cf. T.S., pages 18, 19 and 20, and figure 9 (ii); T.S., pages 45 and 46 (i)).

X — Supply, installation and connection of all the control links between the launching blockhouse and the Centaure launching pad (cf. T.S., pages 32, 33, 34 and 46 (i)).

X — Supply, installation and connection of two Centaure cable heads placed on either side of the launcher (cf. T.S. pages 47 and 48 (i)).

II.5 *Miscellaneous*

— Supply, installation and operation of photographic facilities, fixed and mobile high-speed cameras to film the behaviour of the rocket in the launching tower, and during the first few yards of its flight (cameras to be located near the launching tower).

III. ACCEPTANCE CONDITIONS

In order to carry out the acceptance inspection of the modifications and installations described in Sections I and II, the necessary facilities shall be placed at the disposal of the Organisation by the Italian authorities.

During acceptance inspection the Italian authorities shall submit all construction files, plans and inspection forms relating to the materials, as well as the official detailed estimates concerning the costs.

Acceptance tests shall cover :

- checking of materials;
- dimensional checks;
- checking of electrical circuits;
- checking of general operation and of the operation of individual parts;
- construction conditions;
- checking of rail alignment;
- checking of conformity with the Technical Specifications;
- conformity of equipment with safety regulations.

The checking of general operation will cover :

- accuracy of alignment of the reference rails with respect to a vertical axis (in accordance with the text of Technical Note No. 8 published by the Organisation and approved by the Italian authorities). The inspection equipment for the rail alignment shall be supplied by the Organisation and shall remain its property;
- X — the accuracy of adjustment of the other rails with respect to the reference rails (in accordance with the text of Technical Note No. 8 published by the Organisation and approved by the Italian authorities);
- the possible bending of the launching tower;
- the accuracy with which the launching tower is positioned and the constancy of this accuracy;
- the speed with which the launching tower can be manoeuvred in azimuth and in elevation;
- the loading of a rocket onto the door, hoisting, positioning, and its return on the dolly;
- readings of the general power consumption;
- tests of electric protections when short-circuited;
- the speed of operation of the hoisting apparatus;
- the positioning of subsidiary equipment.

The checking of individual operation will cover :

- the compliance of the umbilical plug extractor with the conditions laid down in the Technical Specifications with regard to :
 - ease of removing;
 - protection (tropicalisation, special paint, etc.);
 - smoothness of positioning;
 - retractability;
 - operation;
 - endurance;

- the installation of the wire control links and the power cables, as regards :
 - the continuity of the conductors;
 - the insulation of the conductors from each other and with reference to the earth;
 - the protection of the cables and equipment, which must withstand :
 - operating temperatures from -10° to $+50^{\circ}$ C.;
 - salt spray;
 - humidity;
 - rain, freezing, frost, snow, ice and acid vapours given off by the rocket jet.
- design-conformity and functional testing of the launching console.
- checking the finish and conformity with specifications of all equipment and accessories to be used in sheds and halls, and for the transport and handling of the rockets.

ANNEX III

TO THE AGREEMENT CONCERNING THE LAUNCHING OF SOUNDING ROCKETS FROM THE SALTO-DI-QUIRRA RANGE AT SARDINIA

Part I

CALCULATING THE COST OF A CAMPAIGN

a) The cost of a campaign that has involved the use of all or part of the equipment and personnel listed in the table of this Annex shall be calculated by applying the following unit prices to the operations actually carried out :

	<i>Lire</i>
Non-operational day	380 000
Operational day, 1st to 10th days, inclusive	2 000 000
Operational day, 11th and subsequent days	2 800 000
Actual launching, rockets 1 to 4, inclusive	2 100 000
Actual launching, 5th and subsequent rockets	2 800 000

b) By operational day is understood any day on which a count-down has proceeded beyond H-7 hours, involving activation of the operational equipment and the safety arrangements.

c) By non-operational day is understood any day on which the launching range has been opened to meet the Organisation's requirements, but there has been no count-down beyond H-7 hours to cause the operational equipment and safety arrangements to be activated.

d) An operational day shall not be counted as such if the count-down has been stopped at the request of the Italian authorities or as the result of malfunctioning of equipment that belongs to the Italian authorities or is maintained by them; it shall be counted as such in all other cases, including those where the count-down has been stopped because weather conditions do not meet the needs of the campaign, or because apparatus belonging to the Organisation or the scientific teams has malfunctioned.

e) For the execution of its campaigns, the Organisation shall comply with the normal working hours of the range. If the range services are used outside those normal working hours, the Organisation shall make the following fixed payments to the Italian authorities :

Lire

700 000 for each night during the week.

1 000 000 for each Sunday or public holiday.

1 000 000 for each Sunday night or public holiday night.

Every night or day, as defined above, once started shall count for payment. The times of starting and finishing work shall be those at which the Range Commander and the Campaign Director nominated by the Organisation jointly declare operations started and stopped.

f) If, during a campaign, two rockets are launched within a period of less than four hours, this double launching shall, for financial purposes, count as a single launching, provided that this method of calculation does not lead to the total number of rockets financially accountable being less than four.

Part II

TYPICAL CAMPAIGN

A typical campaign as defined in article 3 of the Agreement is expected to last for four to six weeks and to involve the launching of four to ten rockets. It will involve the use of all or part of the equipment and personnel listed in the table of this Annex.

The cost of such campaign—evaluated on the basis of four rockets being launched and the range services being used for twenty non-operational and ten operational days (consecutive or otherwise), and with no working outside normal range hours—will amount to 36 million lire. The Organisation shall make every endeavour, in agreement with the Italian authorities, to group its launchings in such a way as to ensure that the risks of the cost of a campaign calculated in accordance with the provisions of part I of this annex falling below 36 million lire are reduced to the minimum.

Nevertheless, if the Organisation is unable to group its launchings in this way, or if a campaign that has been started has to be cancelled, or lasts a shorter time than planned, or if fewer than four rockets are launched, the cost shall be reduced by virtue of the provisions of part I of this annex, but the total shall not be less than 25 million lire.

TABLE TO ANNEX III TO THE AGREEMENT CONCERNING THE LAUNCHING OF SOUNDING
ROCKETS FROM THE SALTO-DI-QUIRRA RANGE AT SARDINIA

COST OF A TYPICAL CAMPAIGN

*Table regarding operational equipment to be provided by the Italian Government and total
number of Italian personnel required*

<i>Description of equipment</i>	<i>Number of Personnel</i>
1. <i>Firing Center</i>	
1.1 P.C.C. (C.C.P.)	15
1.2 Timing	5
1.3 Countdown	5
2. <i>Tracking</i>	
2.1 Radar	12
2.2 Telemetry	4
2.3 Processing Center (trajectory restitution)	4
2.4 No. 4 Cinetheodolites	12
2.5 Meteo-Wind calcul	6
2.6 Photocameras and Film development	8
2.7 Interference control	4
3. <i>Firing zone</i>	
3.1 Gigli tower (hydraulics technician, electrician)	3
3.2 Firing site	3
3.3 Power generators	2
4. <i>Logistical support</i>	
4.1 Communications	4
4.2 Safety (15 days)	80
4.3 Range clearing (15 days)	10
4.4 Motor vehicles :	
— 6 light trucks	6
— 2 heavy trucks	4
— 2 buses	4
— fire engine with team of firemen	7
— mobile crane	3
4.5 Medical aid station (ambulance on the range)	3
TOTAL :	204