EISCAT

EUROPEAN INCOHERENT SCATTER SCIENTIFIC ASSOCIATION

ANNUAL REPORT 1976

S-981 01 KIRUNA, SWEDEN, PHONE (0980) 18740

THE EISCAT ASSOCIATES

THE CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE,
OF FRANCE
(CNRS)

THE SUOMEN AKATEMIA,
OF FINLAND
(SA)

THE MAX-PLANCK GESELLSCHAFT,
OF WEST GERMANY
(MPG)

THE NORGES ALMENVITENSKAPELIGE FORSKNINGSRÅD,
OF NORWAY
(NAVF)

THE STATENS NATURVETENSKAPLIGA FORSKNINGSRÅD,
OF SWEDEN
(NFR)

THE SCIENCE RESEARCH COUNCIL,
OF THE UNITED KINGDOM
(SRC)

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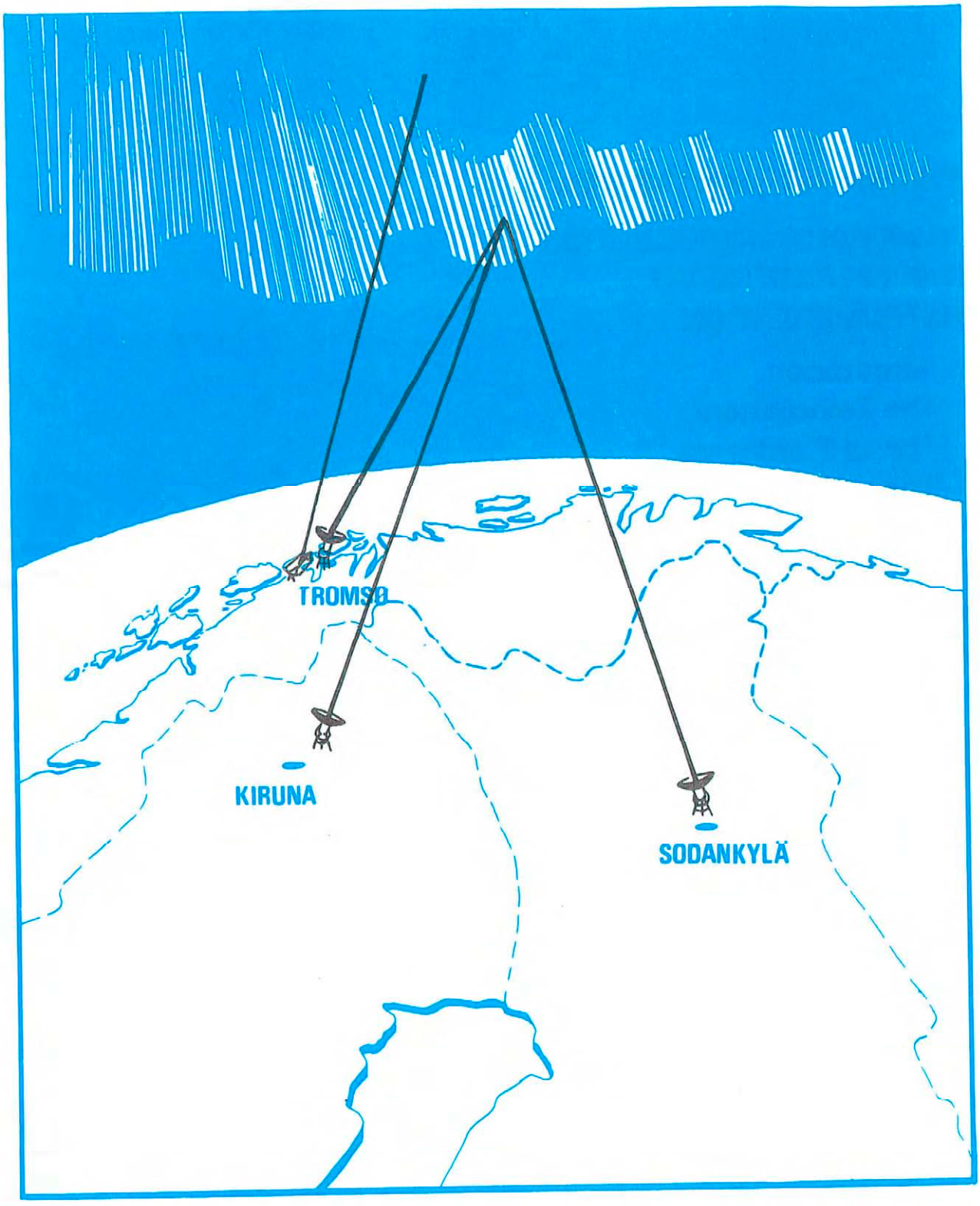

TROMSØ
KIRUNA
SODANKYLÄ

Chairman's introduction

The EISCAT raison d'être is to make significant contributions to our understanding of the physical processes in the magnetosphere and the high latitude ionosphere and thereby to our knowledge of the complex spectrum of interactions between the sun and the earth's upper atmospheric layers.

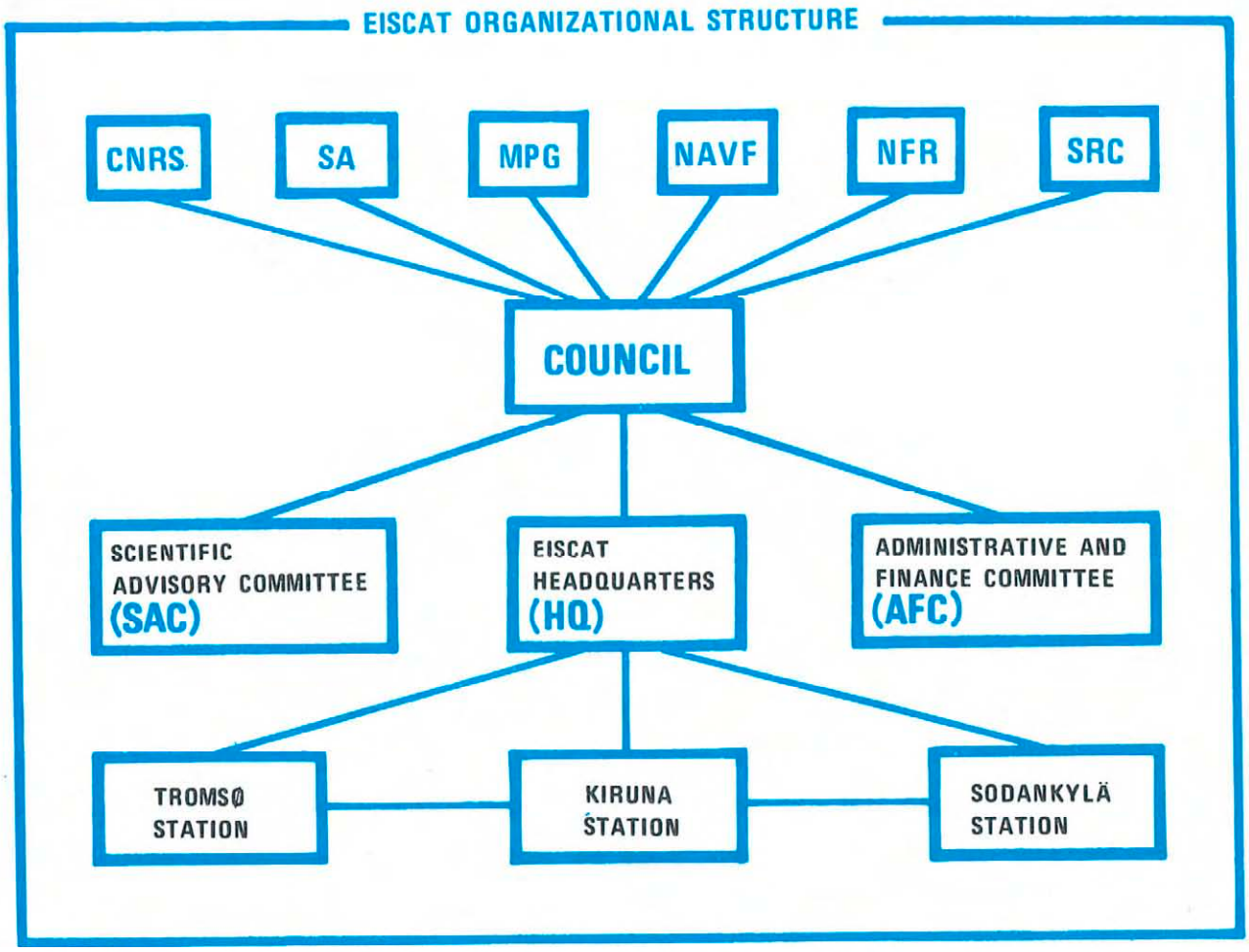
Such studies as are contemplated with the EISCAT project require powerful and highly complex instrumentation and thus very high investments. It therefore appeared necessary from the very beginning that an intereuropean scientific co-operation be established.

A group of European scientists met and exchanged views on the project as early as 1970. Since the project was considered to be both interesting and important several further planning meetings between scientists and technical experts were sponsored by research organizations within the six countries which were to participate in the Association.

A steering committee under the chairmanship of Dr. Schneider, general secretary of the Max Planck Society, was established during 1973 and devoted its efforts to solve the problems inherent in such an international co-operation and to establish an administrative and legal structure for the project. The Agreement and the Statutes of the EISCAT Scientific Association were finally signed in December 1975.

An encouraging start has been made during 1976. The organization itself was established, a headquarters set up, the directing staff appointed, the first funds made available, one major contract was placed and another partly negotiated. Part of the facilities will be completed in order for observations to commence during the early part of 1979. Thanks to the efforts and good will of every one concerned, all augers well for this new facility in the auroral zone of Scandinavia.

P. Creyssel
Chairman


EISCAT ORGANIZATIONAL STRUCTURE
CNRS
SA
MPG
NAVF
NFR
SRC
COUNCIL
SCIENTIFIC ADVISORY COMMITTEE (SAC)
EISCAT HEADQUARTERS (HQ)
ADMINISTRATIVE AND FINANCE COMMITTEE (AFC)
TROMSØ STATION
KIRUNA STATION
SODANKYLÄ STATION

The birth of EISCAT

The Association came into being with the signing in December 1975 of an agreement between the six Associates. This agreement, which is a major achievement, is reproduced at the end of this first annual report.

The origin of EISCAT goes back to the General Assembly of URSI in Ottawa in 1969. During that meeting a recommendation was passed urging European research groups to investigate the possibility of establishing an incoherent scatter observatory in the European auroral zone. Several meetings of interested scientists were held during 1970 and 1971 and a proposal for the facility was prepared and presented to European research councils by Dr. F. du Castel of France, Professor O. Holt of Norway, Professor B. Hultquist of Sweden, Dr. H. Kohl of Germany and Professor M. Tiuri of Finland. This proposal was generally well received, but little action resulted before Professor Sir Granville Beynon convened a meeting in 1973 which appointed a steering committee under the chairmanship of Dr. F. Schneider of Germany and charged this steering committee with the drafting of an international agreement to be entered into by the various research councils and with the preparation of detailed technical and administrative plans for the observatory. The report on the organization, operation and implementation of the UHF part of the system was presented by the Steering Committee in mid 1974 and the final Agreement and Statutes at the end of 1975. The agreement to undertake the construction and operation of the facility thus marks the culmination of several years of painstaking scientific, technical and administrative planning within the six associated countries.

As shown on the facing page the organization comprises an international Council of representatives from the Associates. The Council is aided in its work by a Scientific Advisory Committee (SAC) and an Administrative and Finance Committee (AFC). The headquarters (HQ) is in Kiruna in Sweden. Three stations are being established: in Norway (Tromsø), in Sweden (Kiruna) and in Finland (Sodankylä). They will

be operated through contractual arrangements with scientific institutions in the localities. The experimenters will come from research organizations and educational institutions within the associated countries.

During the course of the planning of the facility the level of scientific ambition has steadily been rising. The initial concept involved a fixed UHF beam transmitted from Tromsø and scanned from the two receiving sites at Kiruna and Sodankylä. This would have allowed only for observations along one particular «line» through the ionosphere. It was decided to remove this spatial restriction by making the transmitter antenna fully steerable thereby sacrificing sensitivity. This development was of great importance to all those scientists interested in high resolution studies of extended regions in space and to those wishing to co-ordinate their studies with rocket, satellite and balloon borne experiments. Full steerability is a necessity in most experiments involving ionospheric artificial modification.

The monostatic VHF facility near Tromsø which was made part of EISCAT to maximize sensitivity at very high and very low altitudes was also originally planned as a fixed beam radar. It is now to be made partly steerable in the magnetic meridian plane because of new scientific requirements of several associates. When it became apparent during contract negotiations that the VHF transmitter power could be increased at moderate cost the opportunity to do so was immediately seized.

During 1976 tendering has occurred and contracts have been concluded for the construction of the UHF/VHF transmitter.

Tendering has also taken place for the three UHF antennas and EISCAT is in the final stages of negotiating contracts.

Orders have been placed for the computers needed at each site.
The UHF facility which will transmit at 933.5 MHz is expected to begin operations during early 1979 and the VHF facility at 224 MHz should follow less than a year later. European scientists will then have at their disposal an extraordinarily versatile research tool. This tool

will enable scientific groups in Europe to conduct exciting new investigations into a wide variety of ionospheric and magnetospheric phenomena as well as into many basic plasma problems. Other types of observational facilities are being installed round EISCAT with a view to co-operative experiments in which EISCAT will serve as a unique diagnostic instrument.

Many studies which are planned with EISCAT will be of practical importence for radio communication by ionospherically reflected waves, for communication by satellites and for the accurate navigation and positioning by radio signals from satellites and radio stars. In addition there is growing evidence that a close relationship may exist between the conditions on the sun and in the upper atmosphere on the one hand and the weather and climatic conditions on the other. Hence, in addition to being of great scientific interest the results from the EISCAT facility will be of both immediate and potential practical utility.

There is every reason to expect that major new discoveries contributing to basic knowledge in the fields of ionospheric and magnetospheric science as well as to many applied fields will be end results of EISCAT observations.

Tor Hagfors
Director

MEMBERSHIP OF COUNCIL AND COMMITTEES AT 31 DECEMBER 1976

	FRANCE	FINLAND	FEDERAL REPUBLIC OF GERMANY	NORWAY	SWEDEN	UNITED KINGDOM
COUNCIL	P CREYSSEL J DELHAYE F DU CASTEL	O RANTA A SIIVOLA	W I AXFORD G HAERENDEL G PREISS	K B DYSTHE A SANDBO	J GUSTAVSSON B HULTQVIST	H H ATKINSON W J G BEYNON F HORNER
SAC	G AUBERT A GIRAUD	J OKSMAN	B H GRAHL H KOHL	E LEER	C-G FÄLTHAMMAR	H RISHBETH R W MEADOWS
AFC	J MIRABEL A SCHWERER	O RANTA	G PREISS M MEINECKE	A SANDBO	J GUSTAVSSON	G ROWE J D WILLCOCK

HEADQUARTERS SENIOR STAFF DURING 1976

T HAGFORS	–	DIRECTOR
K FOLKESTAD	–	ASSOCIATE DIRECTOR
S WESTERLUND	–	ASSOCIATE DIRECTOR
G G HODGSON	–	BUSINESS MANAGER

Instrumentation

Introduction

The specification of equipment and the formulation of the tender documents for the acquisition of the major instruments is a laborious and often lengthy process involving the HQ staff and the SAC and AFC. The preparation of tender documents for the major instruments, (i.e. transmitters, UHF antennas and VHF antenna), therefore, has proceeded in sequence rather than in parallel. The Antenna Working Group under the chairmanship of Mr. R. W. Meadows has particularly played a major role in aiding the HQ staff to define the equipment specifications. Many individuals, too numerous to be mentioned by name, have also contributed valuable and useful comments. The transmitters with the longest lead time, were ordered first. Tenders were then issued for the UHF antennas to be delivered at the time of completion and testing of the UHF section of the transmitter. Because of the limited capacity of the organization little work could go into the preparation of tender documents for the VHF antenna before the contracts had been placed for the UHF antennas. The planning, specification and ordering of the other items, such as computers, receivers and site buildings have progressed simultaneously with the work on the three major items. We shall, in the following, review the status of the instrumentation at the end of 1976.

The Transmitters

The transmitters contract has been placed with Aydin Energy Systems of Palo Alto, California. This firm has long experience in constructing high power radar transmitters. The power amplifier tubes for the transmitters are being constructed by Varian Associates, also of Palo Alto, California. According to the contract, delivery of the UHF transmitter will take place during the late spring of 1978 and of the VHF transmitter during the fall of the same year. The work at Aydin is being monitored on behalf of EISCAT by the Stanford Research Institute.

The transmitters, both to be located near Tromsø, can be operated at single frequencies (224 MHz (VHF) or 933.5 (UHF) at both frequencies simultaneously. They will be very flexible with facilities for phase and stepped frequency modulation as well as for on/off pulsing with a wide range of pulse lengths available. The commands which control the transmitters will derive from the station computer. Pertinent status and performance will be automatically monitored through the EISCAT computer system.

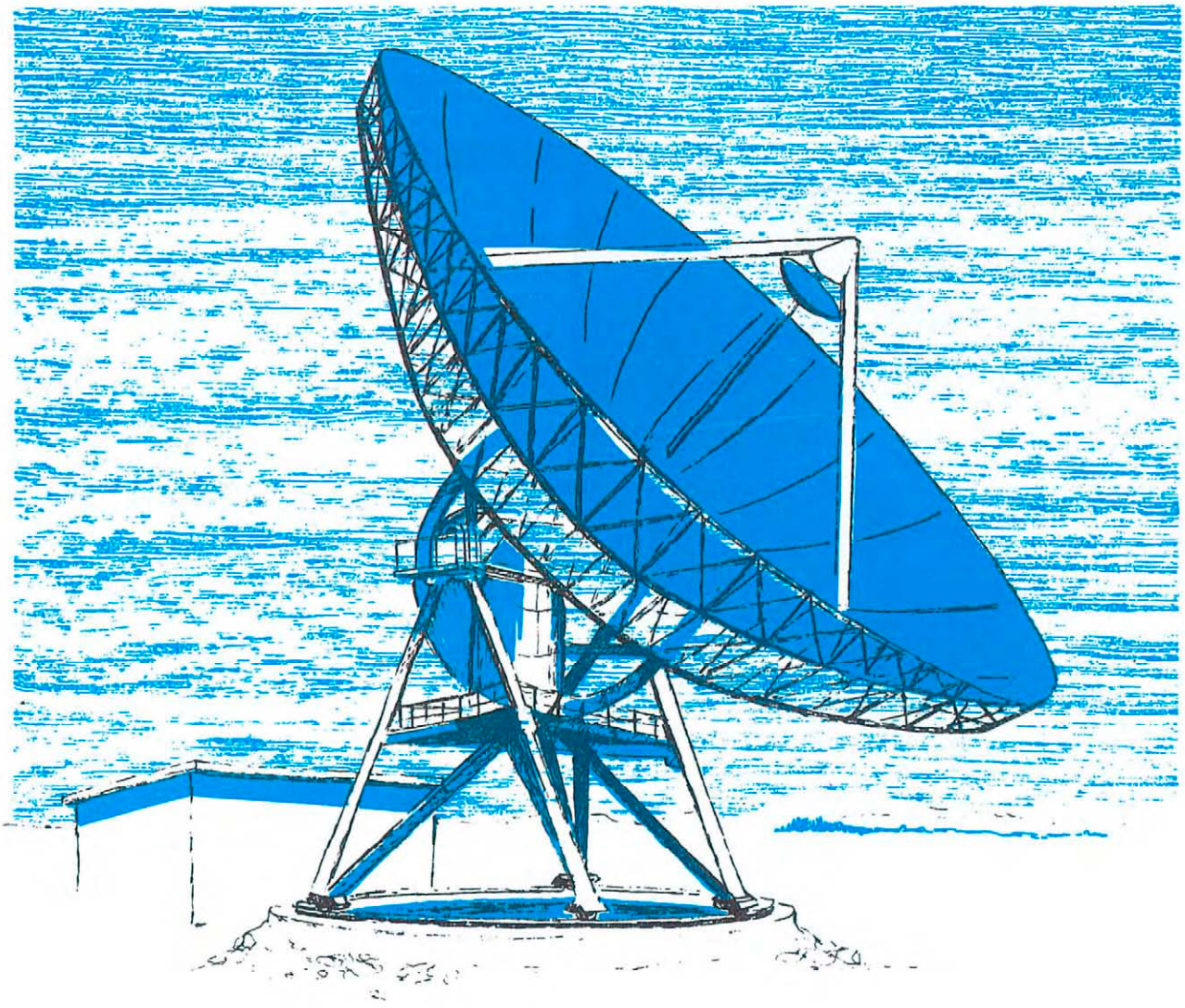
At UHF the peak power will be 2.0 MW with average power of 250 kW. At VHF the peak power will be 5 MW and the average 625 kW.

The UHF Antenna System

At the present stage of contract negotiations it is clear that we shall order three 32 m diameter fully steerable dishes. The efficiency of these dishes will exceed 70 %. They will be fed from a dual polarization horn in cassegrainian configration. The received or transmitted polarization will be remotely controlled to match transmitter and receiver beams.

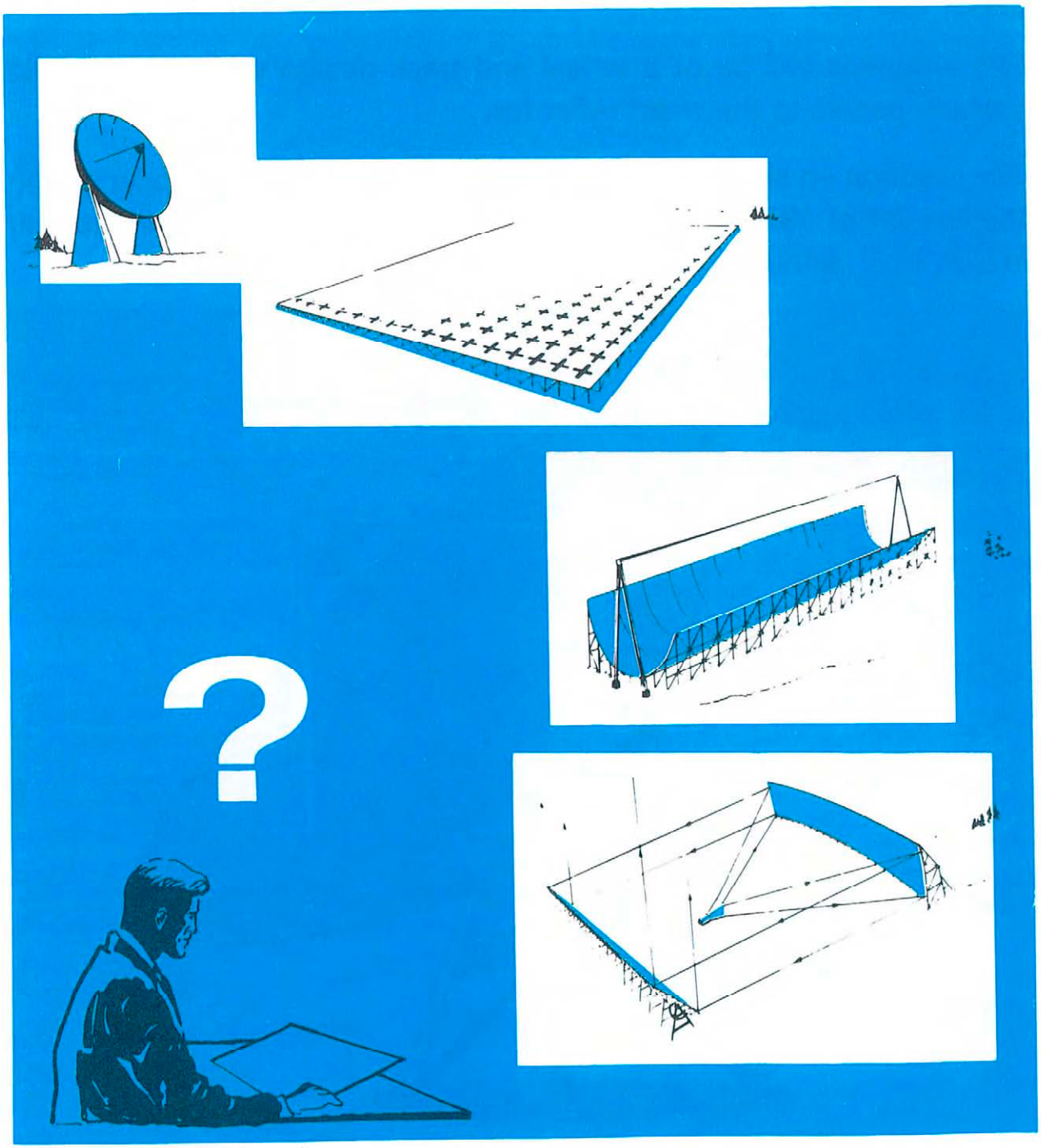
The antennas will be of a wheel and track design with heated solid surface panels in the main reflector.

The erection on site of the three antennas is expected to occur during the late fall of 1978. A detailed account of these antennas will appear in our 1977 Annual Report.



The VHF Antenna

The final configuration of the VHF antenna has not yet been determined. The scientific requirements call for a very large antenna (aperture of 5000 to 10 000 m^2) capable of supporting two orthogonal circular polarizations and being steerable in the magnetic meridian plane by 20° to 30° in either direction from the zenith.



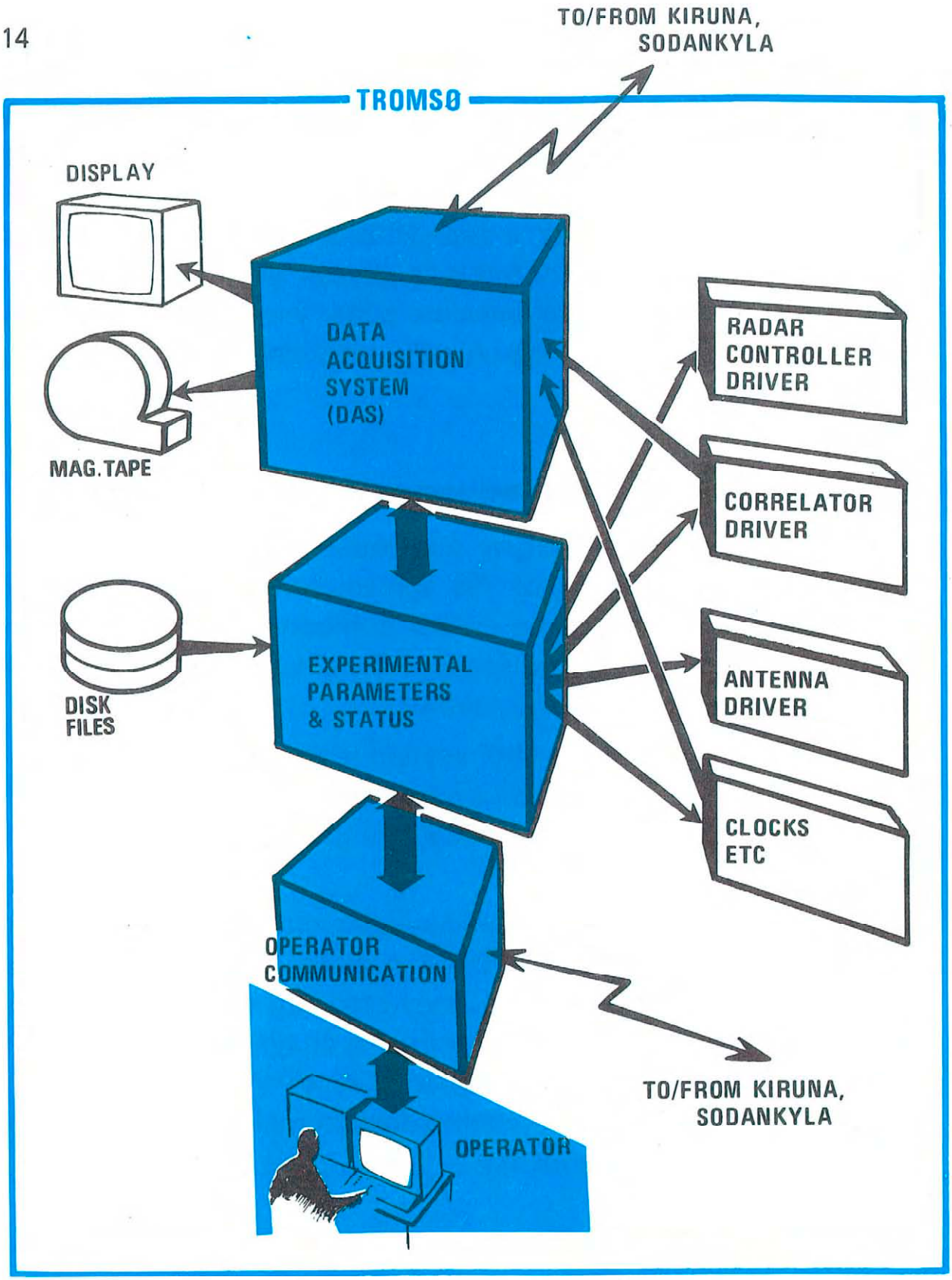
The grid antenna originally favoured by the organization has been abandoned as a serious contender particularly because of bandwidth problems. Other contenders considered are the parabolic reflector antenna, the Krauss antenna, a two-dimensional phased dipole array or a fixed cylindrical reflector fed by a phased linear arry. Extgensive studies of the various alternatives are under way in order to narrow the choice and to simplify the ultimate tendering.

Receivers, time and frequency systems

The receiver design was largely completed during the preparatory phase prior to the signing of the agreement. Only the number of channels has changed. Some critical components of the receiving system have been tested and some of the circuits for the final receiver have been assembled and studied.

The most critical part in the UHF system is the low-noise parametric amplifier which determines the system sensitivity. The final specifications were agreed upon and invitations to submit bids were issued close to the end of 1976.

In order to synchronize the tristatic system, clocks are needed which can maintain the time at the three stations to within one microsecond. One Cesium beam frequency standard was purchased and subjected to extensive tests. Other means of synchronizing the three stations may be by means of Loran C receivers and by television synchronizing signals. It is contemplated to make all three systems avaiable to increase redundancy.



DATA FLOW DURING AN EXPERIMENT

Computers and Data Handling

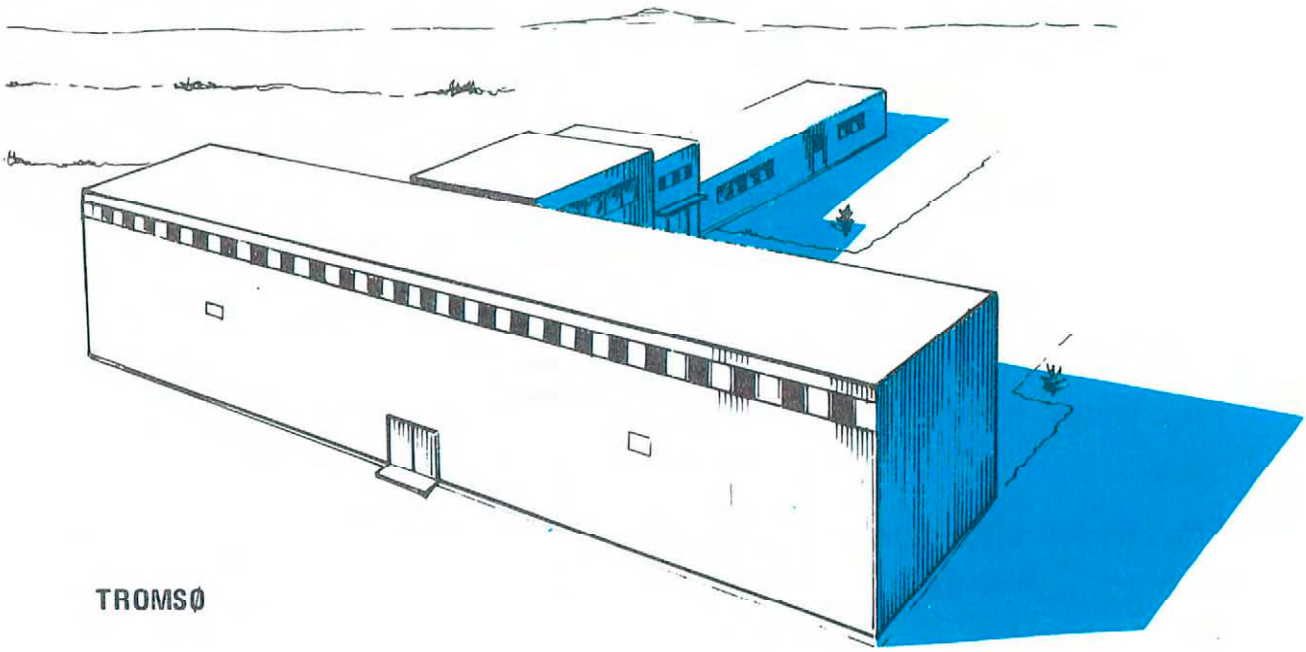
Computes are needed in the EISCAT observatory at each site to control the experiments, to monitor and log the state of the equipment and to integrate and smooth the observational data. In addition the organization must have a computer for the extraction and recording of physical parameters.

As a result of international tendering four NORD-10 computers manufactured by Norsk Data A/S of Norway were ordered. Three of these were purchased for EISCAT, whereas the fourth computer is a joint acquisition, between EISCAT and Kiruna Geophysical Institute. The latter computer is equipped with more peripherals than the others.

The three site computers will be interfaced with the equipment through a standard CAMAC system bought from Nuclear Enterprises Ltd. of the UK.

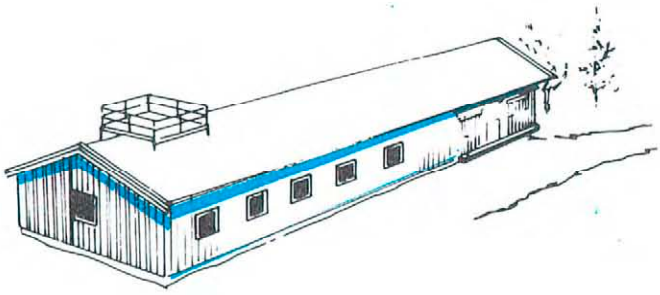
The initial handling of the fast data input sequence takes place in a digital correlator which is under development at the University of Trondheim. Those real time control signals which must be timed to microsecond accuracy are derived from a spesial device referred to as «radar controller». This unit is under construction at the University of Tromsø.

THE PROPOSED BUILDINGS FOR THE THREE EISCAT STATIONS



TROMSØ

SODANKYLÄ



KIRUNA

The operating arrangements and site facilities

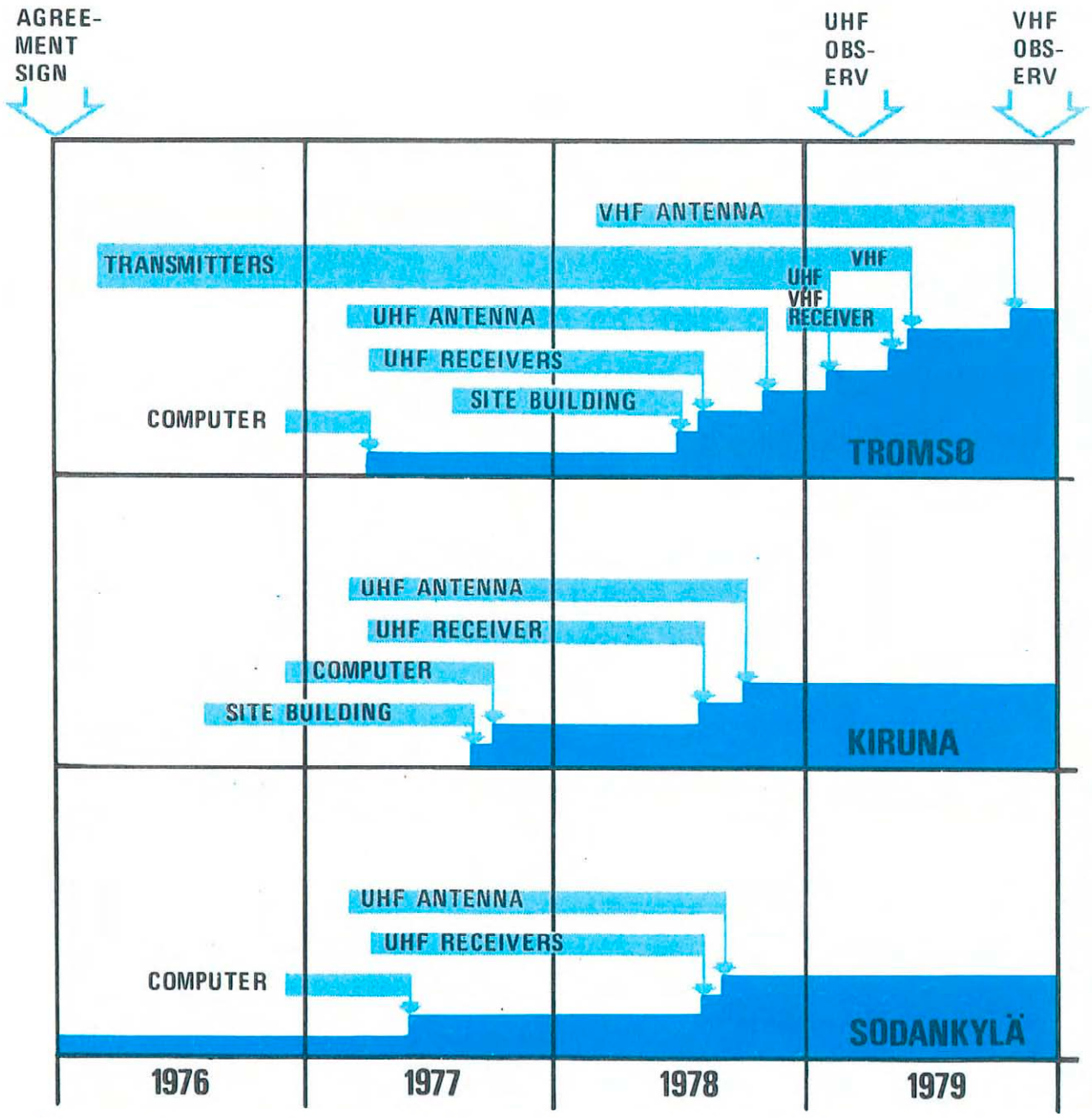
At three EISCAT sites in Tromsø, Kiruna and Sodankylä contracts have been negotiated with local scientific institutions which are to place personnel and facilities at the disposal of EISCAT. These institutions are, respectively, the University of Tromsø, the Kiruna Geophysical Institute and the Geophysical Institute of Sodankylä. Each year EISCAT will specify the personnel, the facilities and the services which must be supplied and the subtractors will then meet this request and be reimbursed at a rate which will be negotiated each year. Planning and design of the operations buildings in Tromsø have been progressing during all of 1976. This work has been particularly difficult because of the complexities of the interfacing with the transmitter manufacturer. The construction work in Tromsø will begin during the spring of 1977 to allow the buildings to be ready in time for the installation of the transmitters.

The receiver building in Kiruna was well advanced at the end of 1976 and it will be available for EISCAT occupancy during the first part of 1977.

In Sodankylä space has been made available within an existing building where som alteration and remodelling has taken place in order to satisfy EISCAT requirements.

Schedule of major investments

The diagram on this page shows the gradual build-up of facilities from the time of the signing of the agreement until the commencement of observations. It is expected that all the hardware necessary for full operation should be available by the end of 1979.



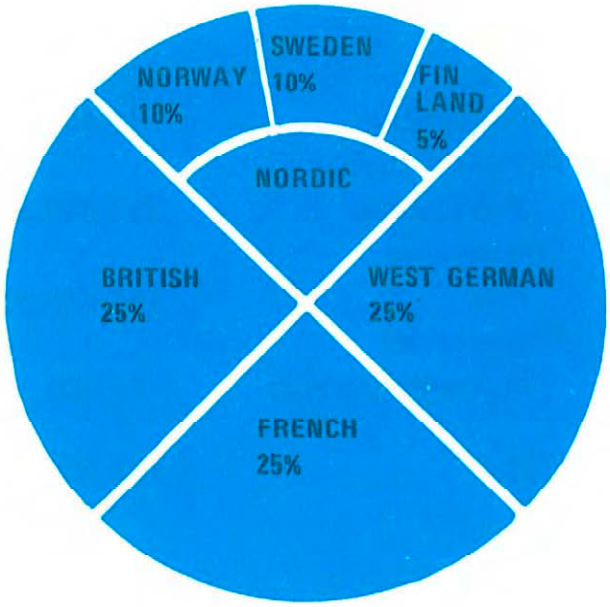
Finance and accounts

The agreement between the Associates provides for a capital investment of approximately 83.5 million Swedish Crowns, at December 1975 price levels. This figure is to be comprised of «in kind» contributions by the Nordic associates, totalling approximately 16 million crowns, and cash contributions of 67.5 million crowns from the Associates.

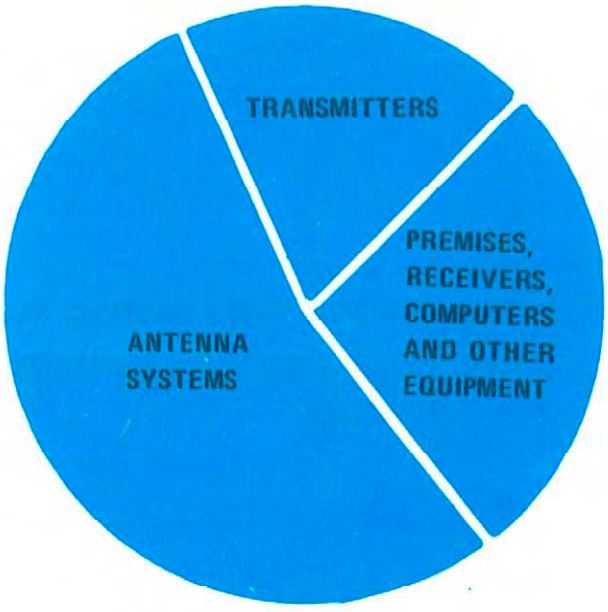
The agreement further provides for the operating funds to be financed from cash contributions by the Associates and within an annual limit of 5.7 million crowns, at December 1975 price levels.

As the initial Balance sheet and Operating amount show, the respective requirements for cash investment and operating funds to 31 December 1976 amounted to approximately 7.8 and 1.5 million crowns. At that date, the Nordic national organizations had not charged EISCAT for expenditure on «in kind» contribution.

FINANCE



SOURCES



INVESTMENT PLAN

Operating account for the period ending 31 December 1976

Expenditure		Income	
Personnel	510,728.50	Contributions from Associates	1,360,000.—
Travel	404,493.72	Sundries	5,987.10
Expendables	40,447.56	Operating deficit — to Balance Sheet	158,973.86
Administration and finance	353,440.58		
Consultants fees	141,850.60		
Provision for accounts payable	74,000.—		
Total	1,524,960.96	Total	1,524,960.96

Note on the Operating Account:

Travel: Includes the costs for the four Council meetings and for all the committee meetings.

Balance sheet at 31 December, 1976

Assets

Fixed Assets (at cost)	
Transmitters	
— work in progress	5,588,675.40
Computing equipment	218,908.50
Office furniture	
and equipment	44,195.—
Vehicles	79,041.—
Housing	19,000.—
	5,949,820.35
Current Assets	
Debtors	320,848.—
Cash at Banks	1,521,357.79
Reserves	10,185,632.34
Miscellaneous	158,973.86
Total	18,136,632.34

Liabilities

Contributions	
from Associates	7,779,000.—
Reserves	
Advance contributions	10,283,632.34
Provisions	
for accounts payable	74,000.—
Total	18,136,632.34

Notes on the Balance Sheet:

Transmitters under construction: Refers to milestone payments to the Contractor responsible for design, manufacture and supply of the UHF/VHF transmitters for Tromsø.

Computing equipment: Includes advance payment for a NORD-10 general purpose computer.

Reserves: Relates to special deposits by Associates against future EISCAT call-up requirements.

Addresses

HQ

The registered address is:
EISCAT Scientific Association
S-981 01 KIRUNA
Sweden
The telephone number - Kiruna (0980) 18 740
The telex address - 8754 GEOFYSK S

Sites

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EISCAT
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SF-99600 SODANKYLÄ
Finland
The telephone number - Sodankylä (993) 1134
The telex address 37 254

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Nordlysobservatoriet
P.O. Box 953
N-9001 TROMSØ
Norway
The telephone number - Tromsø (083) 86 944
The telex address - 64 124

KIRUNA:
EISCAT
Kiruna Geophysical Institute
S-981 01 KIRUNA
Sweden
The telephone number - Kiruna (0980) 29 010
The telex address - 8754 GEOFYSK S

AGREEMENT

between

The Centre National de la Recherche Scientifique,
The Max-Plank Gesellschaft of the Federal Republic of Germany,
Norges Almenvitenskapelige Forskningsråd,
The Science Research Council of the United Kingdom of Great Britain and Northern Ireland,
The Statens Naturvetenskapliga Forskningsråd of Sweden,
The Suomen Akatemia,
Concerning the installation and operation of an incoherent scatter facility, operating at both very high and ultra high frequencies in the auroral zone, called EISCAT.

Taking into account the development of atmospheric, ionospheric and magnetospheric research, the quality and range of the work carried out in European universities and specialized research centres,
Having regard to the necessity of possessing a second generation of instruments meeting the requirements of research workers in this field,
Having regard to the basic scientific value of the study of high latitude regions and the considerable possibilities of the incoherent scatter sounding technique,
Having regard to the specially favourable Northern Europe, and the existence in countries of observatories suited for the installation under the best possible conditions of powerful means for obtaining geophysical data,
Having regard to the value of international co-operation when a large scale facility is to be installed and put to scientific use,
The Centre National de la Recherche Scientifique of France (hereinafter referred to as CNRS), the Max-Plank Gesellschaft of the Federal Republic of Germany (hereinafter referred to as MPG), the Norges Almenvitenskapelige Forskringsråd (hereinafter referred to as NAVF), the Science Research Council of the United Kingdom of Great Britain and Northern Ireland (hereinafter referred to as SRC), the Statens Naturvetenskapliga Forskningsråd of Sweden (hereinafter referred to as NFR), and the Suomen Akatemia (hereinafter referred to as SA), have reached agreement on the following provisions.

I. General Provisions

Name, Legal framework, Seat, Sites and Statutes

1.1 TheCNRS, the MPG, the NAVF, the NFR, the SA, and the SRC (hereinafter referred to as the Associates) hereby establish an educational and scientific association with a view to the installation and operation of a multistatic incoherent scatter facility in the auroral zone, comprising a system of stations at Tromsø, Norway, Kiruna, Sweden and Sodankylä, Finland, called «the EISCAT Scientific Association» (hereinafter referred to as the Association).

1.2 The seat of the Association shall be located in Kiruna

1.3 The Association shall be established as a «stiftelse», a nonprofit-making foundation governed by Swedish law, by the provisions of this Agreement and by the Statutes. The Association shall not be under supervision according to the law (No. 116) of 1929. Swedish law shall govern this Agreement.

1.4 The Statutes of the Association shall initially be adopted by a unanimous decision of the Associates. The Council may change the Statutes by a unanimous decision of its members. In the case of conflict between the provisions of this Agreement and of the Statutes, the former shall prevail.

2. Objects and Means

2.1 The aim of the Association shall be to make significant progress in the understanding of physical processes in the high latitude upper atmosphere by means of experimental programmes including:

— a programme common to the Associates;
— particular programmes carried out by each of the associates;
— particular programmes proposed by third parties.

2.2 In all cases, access to the data obtained shall remain under the control of the Association; however, a privilege of first use shall be granted to the Associate or third party which obtained the data within the framework of a particular programme.

2.3 The technical specification of the system is set out in Appendix A, which shall form an integral of this Agreement.

2.4 It is the wish of the Associates that scientific work of the highest class shall be carried out at the facility for the duration of its existence. At the appropriate time the Associates shall use their best endeavours to enable the facility to be modified or developed to meet this objective.

3. Organs

3.1 The organs of the Association shall be the Council and the Director. The Council shall be assisted by a Scientific Advisory Commitee and by such other committees as may be established by the Council by a unanimous decision of its members.

3.2 Council

3.2.1 The Council shall consist of 15 members, who shall be appointed as follows: 3 by the CNRS, 3 by the MPG, 2 by the NAVF, 2 by the NFR, 2 by the SA and 3 by the SRC.

3.2.2 The Council shall be responsible for the generel direction of the Association; it shall determine the administrative, financial and scientific regulations of the Association; in particular, it shall ensure that the design and operation of the scatter facility and its ancillary installations are satisfactory.

3.2.3 The Council shall be responsible for the use to which the Association's funds are put.

3.2.4 The Council shal elect a chairman for a period of two years and shall appoint the Director.

3.2.5 The Council, on the recommendation of the Scientific Advisory Committee, shall determine how the whole available observation time will be shared and lay down the conditions under which third parties may have access to the observation facilities, in accordance with the provisions of the Statutes.

3.2.6 The Council shall be competent to take decisions when at least all save one of the Associates are represented. However, for decisions requiring a majority of two-thirds or more, at least one member appointed by each Associate must be present.

3.2.7 Except where otherwise stated in this Agreement decisions shall be taken in accordance with the voting provisions in the Statutes.

3.2.8 The Council shall meet not less than twice a year and shall be convened by the Chairman as and when he deems it necessary. The Council shall meet at the written request of any Associate setting out the agenda.

3.3 Scientific Advisory Committee

3.3.1 There shall be a Scientific Advisory Committee which shall consist of not more than 12 members, 9 of whom shall be appointed as follows: 2 by the CNRS, 2 by the MPG, 1 by the NAVF, 1 by the NFR, 1 by the SA and 2 by the SRC; and not more than 3 who shall be selected and appointed by the Council from the international scientific community on the recommendation of the Scientific Advisory Committee.

3.3.2 The Scientific Advisory Committee shall advise the Council on the scientific programme and other scientific and technical matters, in accordance with the provisions of the Statutes.

3.4 Director

3.4.1. The Association shall be managed by a Director assisted by two Assistant Directors and a Business Manager.

3.4.2 The Director shall be appointed for a given period by a two-thirds majority of the members of the Council. His appointment may be terminated by the same majority.

3.4.3 The powers and responsibilities of the Director and Assistant Directors shall be defined in the Statutes.

II. Financial Provisions

4. Investmet budget and contributions

4.1 The Association's infra-structure at Tromsø, Kiruna and Sodankylä, as specified in Appendices A and B, shall be provided by the NAVF, the NFR and the SA.

4.2 The data acquisition and processing equipment, the UHF and VHF receivers and other equipment shall be provided by the NAVF, the NFR and the SA, as specified in Appendices A and B.

4.3 The estimated costs of the items to be provided under paragraphs 4.1 and 4.2 of this article are set out in Appendix B, which shall form an integral part of this Agreement. The total cost of these items is estimated at 16.2 MSKr at December 1975 prices. The contributions of the NAVF, the NFR and the SA in Swedish Crowns to the cost of such items shall be in the following proportions: the NAVF 40 %, the SA 20 %.

4.4 The UHF and VHF transmitters and antennae shall be built as specified in Appendix A at a cost not exceeding 67.4 MSKr at December 1975 prices. The estimated costs of the items to be provided under this paragraph are set out in Appendix B. The contributions of the Associates, in Swedish Crowns, to the cost of such items shall be in the following proportions:

the CNRS	31.70 %
the MPG	31.70 %
the NAVF	1.96 %
the NFR	1.96 %
the SA	0.98 %
the SRC	31.70 %

4.5 If the specification of any item covered by this Article cannot be met from within the sums referred to in paragraphs 4.3 and 4.4 of this Article, adjusted, according to procedures to be decided by the Council, for price changes according to relevant indices and for changes in exchange rates between the Association's accounting unit and other currencies in which the Association incurs expenditure, then the Council shall decide, by a unanimous decision of its members, whether the contributions of the Associates shall be increased or whether the specification shall be changed.
4.6 The funds allocated to the UHF/VHF transmitters, the UHF antennae, and the VHF antenna shall be in proportion to the estimates for these items set out in Appendix B, unless otherwise agreed unanimously by the members of the Council.
4.7 By unanimous agreement of the Associates the contribution of any Associate under this Article may be varied.

5. Operating contributions

5.1 The operating costs of the Association shall be provided by the Associates in Swedish Crowns in the following proportions:

the CNRS	25 %
the MPG	25 %
the NAVF	10 %
the NFR	10 %
the SA	5 %
the SRC	25 %

5.2 Unless otherwise agreed by the Council by a unanimous decision of members the annual operating budget shall not exceed 5.7 MSKr at December 1975 prices, adjusted for price changes according to relevant indices and for changes in exchange rates, according to procedures to be decided by the Council. The operating budget shall include the funds required for the meetings of the Council and its Committees, for the missions of research workers and for the operating of equipment as well as for the payment of the personnel working for the Association, according to rules to be agreed by the Council.
5.3 By unanimous agreement of the Associates the contribution of any Associate under this Article may be varied.

Exemption from duties and taxes

6.1 The NAVF, the NFR and the SA shall endeavour to obtain exemption from or refund of customs duties and taxes on imports for the Association, intended to be used for activities falling within the scope of this Agreement.
6.2 They shall also endeavour to obtain exemption from or a refund of internal duties and taxes.

7. Balance of appropriations

7.1 Appropriations included in an annual budget shall in principle be utilized only in the year in which the budgetary provision is made.
7.2 The balance of appropriations not utilized by the end of the financial year shall normally be cancelled.
7.3 However, that part of the balance referred to in paragraph 2 of this Article which relates to approved capital investment projects may be carried forward to subsequent financial years if the Council so decides.

Financial year and accounting unit

8.1 The financial year shall correspond to the calender year.
8.2 The accounting unit of the Association shall be the Swedish Crown, hereinafter referred to as «S Kr». This may be changed by the unanimous agreement of the Associates.

9. Auditing

The Council shall each year appoint one or more authorised auditors («auktoriserad revisor») to submit a report. Auditors may be reappointed. Any Associate shall have the right to send its own auditor at its own expense to investigate the Association's accounts.

III. Final provisions

10. Amendments

10.1 This Agreement may be amended by a unanimous decision of the Associates. Such amendments shall not be in conflict with Swedish law, or with the general aims of the Association.
10.2 The Council may, by a unanimous decision of its members, amend the Appendices to this Agreement, provided that such amendments do not conflict with the Articles of this Agreement.

11. Failure to fulfil obligations

Should an Associate fail to fulfil any of its obligations under this Agreement, the Council shall, by unanimous decision of the members appointed by the other Associates, decide what measures shall be taken.

12. Disputes

12.1 The Associates shall endeavour, as far as possible, to settle by agreement any dispute which may arise in the interpretation or application of this Agreement.
12.2 Any dispute which cannot be settled by agreement shall, on the request of a party to the dispute to the other(s) referred to a Committee of Arbitration, set up in accordance with paragraph 12.3 of this Article, for decision.
12.3 Each party to the dispute, whether consituted by one or more Associates, shall appoint one member of the Committee of Arbitration within one month of the date on which the request referred to in paragraph 12.2 of this Article is received. These members shall, within one month of the appointment of the last member, appoint an additional member who shall be the Chairman of the Committee, and who shall not be of the same nationality as any Associate which is a party to the dispute. If the appointment of any of the members of the Committee has not been made within the prescribed period, any party to the dispute may request the Director General of the United Nations Educational, Scientific and Cultural Organisation to make the appointments not yet made.
12.4 The Committee of Arbitration shall take decisions by a majority. In the event of an equal number of votes being cast, the Chairman shall have a casting vote. Each party to the dispute shall bear the costs of the member of the Committee appointed by it and those relating to its representation at proceedings before the Committee. Each party to the dispute shall bear an equal share of the costs relating to the Committee and any other expenses, unless the Committee decides otherwise. The Committee shall determine its other rules of procedure.
12.5 The Committee shall send a certified copy of its award to each of the Associates.

13. Admittance of new Associates

Other Associates may be admitted to the Association by unanimous decision of the Associates.

14. Duration

14.1 This Agreement shall come into force between the signatories when those Associates which contribute at least 92 % of the total capital costs specified in Article 4 have signed it.
14.2 The duration of the Association shall be for a period of 13 years from the entry into force of this Agreement.
14.3 At the expiration of the 13 years period referred to in paragraph 14.2 of this Article, the Association shall continue in existence from year to year unless one of the Associates objects. Such objection must be communicated in writing to the

other Associates before 31 December of the current financial year to take effect on 31 December of the second full financial year following the objection. However the Association may be continued in existence if the other Associates by unanimous agreement so decide on condition that the withdrawing Associate shall be paid an indemnity which shall be determined by agreement but may nevertheless not be greater than the rights possessed by the Associate in the current book value of the assets of the Association on the date of its withdrawal from the Association. Such rights shall be in proportion to the Associate's contribution to the construction and operation of the Association's facilities from the date of entry into force of this Agreement up to the date of its withdrawal. A withdrawing Associate shall retain all its rights and obligations up to the date of its withdrawal.

14.4 In the event of dissolution of the Association, the net proceeds of the liquidation shall be distributed among the Associates at the time of dissolution in proportion to the contributions which they have made to the construction and operation of the Association's facilities from the date of entry into force of this Agreement up to the date of dissolution. Any deficit shall be met by the Associates in proportion to their contributions to the operating budget which has been fixed for the current financial year.

14.5 With a view to the liquidation of the Association's assets the Associates shall, after considering a recommendation of the Council, lay down the method of liquidation and shall appoint one or more liquidators whose powers they shall define.

14.6 Should an Associate providing a site withdraw, it shall be obliged to ensure that the site shall continue to be available to the Association on reasonable terms to be agreed.

15. Property of the Association

15.1 The funds contributed by the Associates, all property acquired or manufactured with the Association's funds, and all property forming an accepted contribution in kind by an Associate shall vest in the Association, unless decided by the Council by the unanimous decision of its members at the time the contribution is accepted or as is specified in Appendix B.

15.2 Except as provided under Article 14 of this Agreement, any income arising from the sale of property owned by the Association, shall, unless the Council decides otherwise, be off-set against the operating budget of the Association.

Opened for signature on 19 December 1975, in the English and French languages, each text being equally authentic.

SIGNED ON BEHALF OF
THE CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE
THIS 30 DAY OF December 1975

.....
P. CREYSSEL

SIGNED ON BEHALF OF
THE MAX-PLANCK-GESELLSCHAFT
THIS 23 DAY OF December 1975

.....
Friedrich SCHNEIDER

SIGNED ON BEHALF OF
THE NORGES ALMENVITENSKAPELIGE FORSKNINGSRÅD
THIS 23 DAY OF December 1975

.....
A. SANDBO

SIGNED ON BEHALF OF
THE STATENS NATURVETENSKAP-LIGA
FORSKNINGSRÅD
THIS 23 DAY OF December 1975

.....
Martin FEHRM

SIGNED ON BEHALF OF
THE SUOMEN AKATEMIA
THIS 23 DAY OF December 1975

.....
Helge GYLLENBERG

SIGNED ON BEHALF OF
THE SCIENCE RESEARCH COUNCIL
THIS 23 DAY OF December 1975

.....
R. St. J. WALKER

The Appendices referred to in the text are not reproduced in this Annual Report

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