



European Communities

**EUROPEAN PARLIAMENT**

# **WORKING DOCUMENTS**

English Edition

1985-86

30 September 1985

A SERIES

DOCUMENT A2-108/85

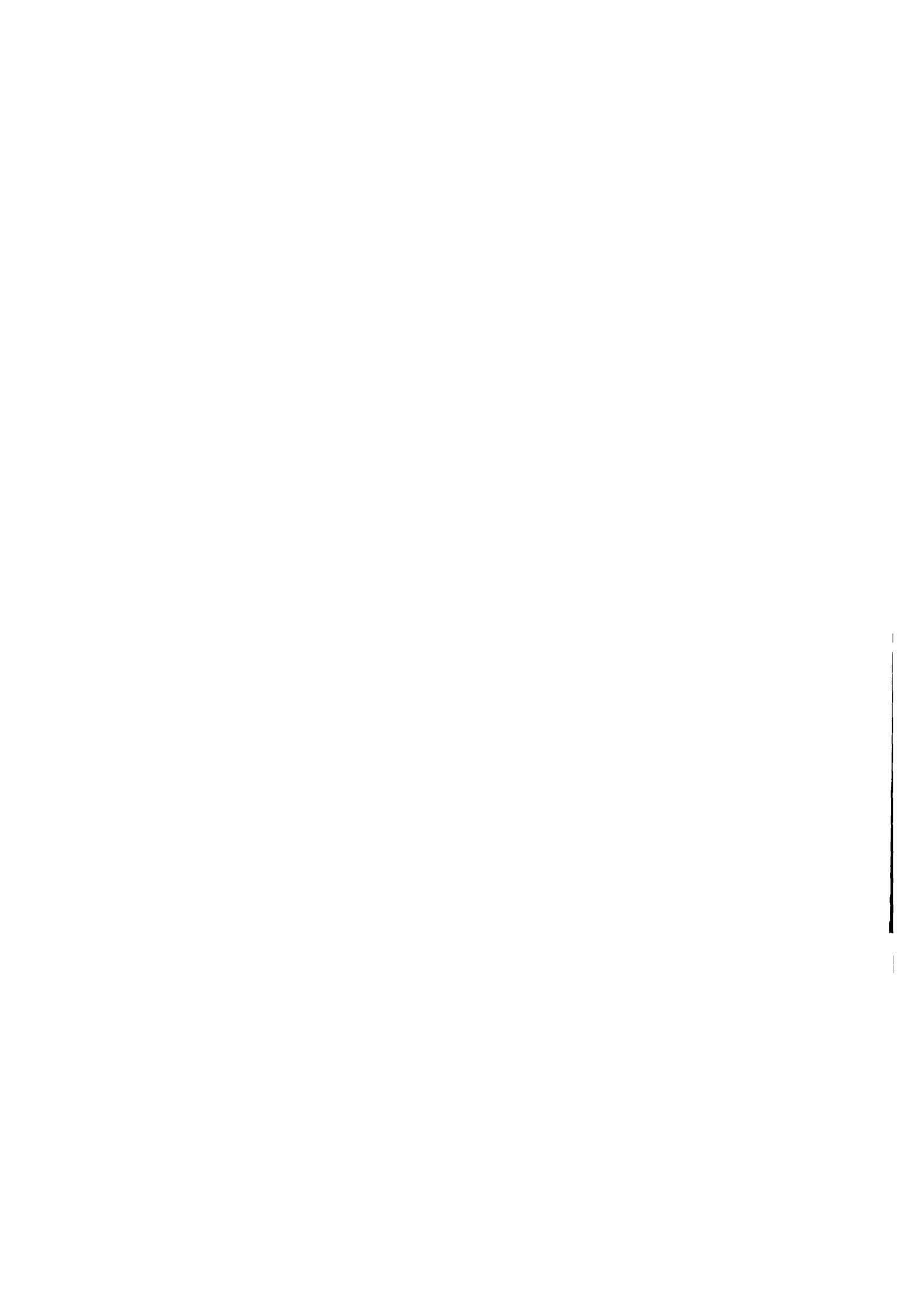
REPORT

drawn up on behalf of the Committee on Energy, Research  
and Technology

on European space policy

Rapporteur : Mr C. TOKSVIG

PE 95.639/fin  
Or.En



At its sitting of 14 January 1985, the European Parliament authorised the Committee on Energy, Research and Technology to draw up a report on the Community's space policy. The Committee on Economic and Monetary Affairs and Industrial Policy and the Committee on Transport were asked for an opinion.

The motions for a resolution tabled by Mr FORD on the preparation of a draft Treaty on the ownership of space and peaceful exploitation of the resources of space (Doc. 2-729/84), Mrs NIELSEN on European space policy (Doc. 2-769/84), Mr FORD on satellite remote sensing and world development (Doc. 2-925/84), Mr BATTERSBY on a European space laboratory (Doc. 2-962/84) and Mrs CHARZAT and others on establishing a European space policy including a manned European space shuttle and space station (Doc. 2-1554/84), pursuant to Rule 47 of the Rules of Procedure, which had been referred to the Committee on Energy, Research and Technology, were also taken into consideration.

At its meeting of 22 November 1984, the Committee on Energy, Research and Technology decided to draw up a report and appointed Mr TOKSVIG rapporteur.

The committee considered the draft report at its meetings of 21 March 1985, 20 June 1985 and 27 September 1985. At the last meeting it adopted the motion for a resolution as a whole by 14 votes to 13 with no abstentions.

The following took part in the vote: Mr PONIATOWSKI (Chairman); Mr SÄLZER (Vice-Chairman); Mr ADAM (Vice-Chairman); Mr SELIGMAN (Chairman); Mr TOKSVIG (rapporteur); Mrs BLOCH VON BLOTTNITZ; Mr BONACCINI (deputizing for Mr IPPOLITO); Mr de CAMARET (deputizing for Mr PETRONIO); Mr CHANTERIE (deputizing for Mr SPÄTH); Mr CIANCAGLINI; Mr CROUX (deputizing for Mr RINSCHÉ); Mr FORD (deputizing for Mr WEST); Mr HABSBERG (deputizing for Mr MÜNCH); Mr KILBY; Mr KOLOKOTRONIS; Mr LINKOHR; Mrs LIZIN; Mr LONGUET; Mr MALLETT; Mr METTEN (deputizing for Mrs LIENEMANN); Mr MÜHLEN (deputizing for Mr ESTGEN); Mr PAPA PIETRO (deputizing for Mr VALENZI); Mrs ROTHE (deputizing for Mr SCHINZEL); Mr SMITH; Mr STAES; Mr TURNER; Mrs VIEHOFF

The opinion of the Committee on Transport will be published separately. The Committee on Economic and Monetary Affairs and Industrial policy has decided not to deliver an opinion.

The report was tabled on 27 September 1985.

The deadline for tabling amendments to this report will be indicated in the draft agenda for the part-session at which it will be debated.

## C O N T E N T S

	<u>Page</u>
A. MOTION FOR A RESOLUTION	7
B. EXPLANATORY STATEMENT	13
I. INTRODUCTION .....	13
II. PREVIOUS REPORTS BY THE EUROPEAN PARLIAMENT .....	15
III. THE STRUCTURE OF EUROPEAN SPACE ACTIVITY .....	17
IV. SPACE ACTIVITIES IN THE US AND JAPAN .....	20
V. THE INVOLVEMENT OF THE EUROPEAN COMMUNITY IN SPACE .....	21
VI. POSSIBLE USE OF THE EUROPEAN SOCIAL FUND .....	24
VII. THE QUESTION OF A LINE FOR SPACE STUDIES IN THE EC BUDGET ..	25
VIII. EUROPEAN QUALIFICATIONS IN ASTRONAUTICS AND THE CREATION OF A EUROPEAN SPACE INSTITUTE .....	26
IX MICROGRAVITY RESEARCH .....	28
X THE DEMOCRATIC CONTROL OF SPACE ACTIVITIES .....	29
XI THE NEED FOR THE COMMUNITY TO DEFINE ITS ROLE .....	30
XII THE TWIN CHALLENGE OF EUREKA AND SDI .....	30
XIII THE CONCEPT OF THE 'PAYBACK PAYLOAD' .....	32
XIV THE OBJECTIVE OF A MOON BASE .....	33

XV	THE MAGNITUDE OF THE CHALLENGE: INTERNATIONAL COMPARISON OF SPACE EXPENDITURE .....	36
<u>Annex 1:</u>	Arianespace - the shareholders .....	38
<u>Annex 2:</u>	Select bibliography .....	39
<u>Annex 3:</u>	Motion for a Resolution on the preparation of a draft Treaty on the ownership of space and peaceful exploitation of the resources of space (Doc. 2-729/84) .....	42
<u>Annex 4:</u>	Motion for a Resolution on European space policy (Doc. 2-769/84) .....	44
<u>Annex 5:</u>	Motion for a Resolution on satellite remote sensing and world development (Doc. 2-925/84) .....	47
<u>Annex 6:</u>	Motion for a Resolution on European space Laboratory (Doc. 2-962/84) .....	49
<u>Annex 7:</u>	Motion for a Resolution on establishing a European space policy including a manned European space shuttle and space station (Doc. 2-1554/84) .....	51

The Committee on Energy, Research and Technology hereby submits to the European Parliament the following motion for a resolution (together with explanatory statement)

A

#### MOTION FOR A RESOLUTION

on European space policy,

#### The European Parliament,

- having regard to the motion for a resolution by Mr FORD on the preparation of a draft Treaty on the ownership of space and peaceful exploitation of the resources of space (Doc. 2-729/84),
- having regard to the motion for a resolution by Mrs NIELSEN on European space policy (Doc. 2-769/84),
- having regard to the motion for a resolution by Mr FORD on satellite remote sensing and world development (Doc. 2-925/84),
- having regard to the motion for a resolution by Mr BATTERSBY on a European space laboratory (Doc. 2-962/84),
- having regard to the motion for a resolution by Mrs CHARZAT and others on establishing a European space policy including a manned European space shuttle and space station (Doc. 2-1554/84),
- having regard to its resolution of 18 September 1981 on European space policy, (Doc. 1-326/81),<sup>(1)</sup>
- having regard to the decisions of the Conference at Ministerial Level of the European Space Agency of 31 January 1985,
- having regard to the report of the Committee on Energy, Research and Technology and the opinion of the Committee on Transport (Doc.A2-108 /85),

A. Whereas the need for Europe to mobilise its intellectual and material resources in order to create or encourage the growth of industries based on the latest achievements of science and technology has been demonstrated;

---

(1) OJ No. C 260 of 12 October 1981, p. 102.

- B. Whereas the EUREKA proposal for a plan of European scientific and technological cooperation remains to be defined and must involve vital activities in many technical areas;
- C. Whereas EUREKA provides an opportunity for programmes to be undertaken which must command cooperation and a common purpose;
- D. Whereas large ambitious technological projects demand massive scientific engineering managerial and financial effort which alone can bring about the full mobilisation of Europe's intellectual and material resources;
- E. Whereas chosen objectives must be daring enough to fire the imagination of all those called upon to work for its achievement;
- F. Whereas the exploration of space offers scope for projects of the required magnitude;
- G. Whereas there is a need to establish what direct benefits can be derived for mankind by the exploitation of space;
- H. Whereas the achievements of the European Space Agency have shown that European countries, when working together, have the knowledge and wealth necessary for the execution of major space projects;
- I. Whereas the European Community has no coordinated policy on space matters;

I Main proposals and recommendations

- 1. Calls for pursuit of scientific and industrial research development and manufacture of new materials, biotechnology, pharmaceuticals and satellite energy in space using micro-gravity facilities and lunar based facilities;
- 2. Calls for the use of EUREKA projects to promote technological developments required for European space activities while entrusting programme leadership to the European Space Agency;



3. Recommends to the Governments of the Member States of the European Space Agency that the budget of the Agency be substantially increased for this purpose;
4. Proposes that the European Community assume responsibility for those objectives which are not characteristically space activities but relate rather to the development and application of the very wide range of new industrial products and processes which would be required for the programme's fulfilment;
5. Proposes that provision be made for states which are not Member States of the European Community to be associated with these objectives as partners, where such an association can be justified on the basis of geographical, economic, cultural or other important considerations;
6. Proposes that executive responsibility for the European Community's participation in the objectives be entrusted to the Commission;
7. Calls for adequate financial resources to be made available for these objectives, whether from the budget of the European Community, from European Investment Bank or New Community Instrument funds, or, if necessary, from new forms of European Community 'own resources' or from national contributions;
8. Insists that these objectives be conceived on a large enough scale to stimulate European industry to the vast efforts needed to attain and defend a competitive position in world markets for the goods and services created by the emergence of new technologies in both innovative and established sectors of industry;
9. Considers, with respect to the basis for participation by the various individual states concerned, that a balance could be struck between a programme 'core', to which all participants would be required to contribute, and optional elements, which could give rise to the application of the principle of 'variable geometry';

II. Fundamental principles of European Community space policy

10. Affirms that the space policy of the European Community must serve the following ends:
  - to improve the living and working conditions of the peoples of Europe;
  - to assist the Community's efforts in the sphere of development and cooperation;
  - to satisfy the Community's energy objectives.
11. Affirms that space should be the common heritage of mankind and not the private property of any nation or group of nations;
12. Affirms that space activity undertaken by the European Community as such must be of a purely civilian character;
13. Affirms the principle of the 'payback payload', which requires that space activity by the European Community must in principle be designed to yield demonstrable benefits on a cost-effective basis and must not be undertaken solely for political prestige or in a manner which involves a disproportionate application of financial and other resources;
14. Affirms that European space research, development and operations must be aimed at achieving European autonomy in certain space activities;
15. Recognises the large U.S. lead in space technology and the fact that the Japanese are in a similar stage of development to ourselves. Notes the value in cooperative projects of being an equal rather than subordinate partner;
16. Affirms that, as a matter of principle, the European Community must promote international cooperation in space matters and show itself ready to participate in international projects whenever this may be done without prejudice to its independence;

17. Confirms that the principles of democratic accountability and parliamentary control apply as much to space activities as to any other activity of the European Community and declares its intention to be vigilant in upholding those principles;

### III Proposals concerning space qualifications and training

18. Requests the Commission to give favourable consideration to the use of the Social Fund for the training of workers for jobs in high-technology industries where such industries are located in regions of high unemployment, and to report to the European Parliament at an early date on the action which it has taken, or plans to take, in this sense;

### IV European space operations now and in the short to medium-term

19. Expresses appreciation of the efforts of all those governments, organisations, undertakings and individuals whose cooperation has played a vital role in Europe's space achievements;
20. Welcomes the adoption in Rome on 31 January 1985 by the Council Meeting at Ministerial level of the European Space Agency of the new ten-year plan for the Agency;
21. Disturbed that the invitation by the United States to cooperate in the construction of an in-orbit infrastructure ('space station') will inevitably put Europe in a client relationship vis à vis the United States;
22. Believes that any space development in Europe should maximise autonomy;

### V Matters relating to European Community institutions and the EC budget

23. Requests the Commission to propose to non-governmental and voluntary organisations the initiation of a coordinated plan for the collection in Europe of used television sets for distribution to local communities in developing countries which could benefit from schemes for the transmission of educational and information broadcasts by satellite;

VI Final provisions

24. Instructs its Committee on Energy, Research and Technology to monitor developments in the space sector in Europe with a view to presenting another report to Parliament in twelve months' time evaluating the action taken by the Commission and other bodies concerned on the proposals and recommendations contained in the present resolution;
  
25. Instructs its President to forward this resolution to the Council, the Commission, the Governments of the Member States, the Director General of the European Space Agency and the President of the European Investment Bank.

EXPLANATORY STATEMENT

I. INTRODUCTION

1. The decision to draw up a report on European space policy was one of the first major initiatives taken by the European Parliament at the start of its second mandate, following the elections in June, 1984.

2. The Committee on Energy, Research and Technology saw that, both as a science and as a business, space endeavour in Europe had made significant progress. A point had now been reached at which no serious discussion of European research and technology could afford to ignore it.

3. At the same time, the European Community itself had hardly started to become an actor in space affairs. As will be shown in this report, the Community is involved in certain space-related activities, notably in the sectors of remote-sensing and telecommunications, but this involvement has grown up in a piecemeal way. The European Community has not yet undertaken the major analysis of its space policy options which alone could have cleared the way for a coherent definition of its goals.

4. The situation is admittedly complicated by the fact that the primary instrument of European cooperation in space is the European Space Agency, which is neither an institution of the European Community, nor has exactly the same membership.

5. This does not mean, however, that there is no need for the Community to have a clear idea of its options and its goals in space policy. The issue is far greater than a mere question of finding a convenient administrative infrastructure for cooperation. It is a matter of the Community deliberately and resolutely accepting the challenge implicit in one of the biggest new areas of opportunity which have ever been offered to the imagination, ingenuity and industry of mankind.

6. The Committee on Energy, Research and Technology was confirmed in its view of the importance of this matter by the fact that several individual Members of the European Parliament were independently impelled to table

motions for resolutions on aspects of space policy. These have been taken into account in the preparation of the report and are attached to it as annexes.

7. In drawing up the report, the rapporteur has engaged in as wide a range of consultations with interested persons and organisations as possible. He wishes to thank all those who have helped him. Especial thanks are due to the European Space Agency and to its Director General, Professor Reimar Lüst.

8. Since work on the preparation of this report began, two important initiatives have been made which, potentially, imply a major change in the international context of space activity. These are the Strategic Defence Initiative of the United States and the Eureka project initiated in Europe at the instigation of the French Government. The present report will consider the implications of these initiatives, but it should be made clear that the report will be concerned only with the peaceful uses of space. Military issues as such have been deemed to be outside the terms of reference of the report. This conceptual division of the problem at European level is feasible, as long as one remains aware that governments inevitably retain the right to take, at national level, the security measures they think fit.

9. To summarise the considerations which have guided the preparation of this report, five main reasons might be given why the European Parliament should clarify its position on European space policy now:

- (i) Europe - that is, Europe in general, and not specifically the European Community - at last finds itself in a position to play an important role in space. The years of hesitation and false starts are behind it. Europe is now a force to be reckoned with in space, equally formidable as a collaborator or, where appropriate, a competitor for other countries with space capability.
- (ii) Against this general background of opportunity and challenge there is a need to sort out priorities and to make decisions among available options.

- (iii) The European Community as such has no significant role in the space sector. Eight of the ten EC Member States are members of the European Space Agency (ESA)<sup>1</sup>, but space does not at present hold a well-defined place on the agenda of European Community concerns. However, the implications of space activities are important for many sectors of the economy, including telecommunications, meteorology, agriculture, the environment, materials processing and information technology.
- (iv) As the world's first international elected parliament, it is appropriate that the European Parliament should help to initiate discussion of broad issues such as democratic control of space activities, the rule of international law, guarantees of freedom of scientific research, the care of the space environment, and so on.
- (v) Industries related to space activities are potentially of great importance to the European economy. They offer a rare example of an industrial sector in full expansion, and they foster the development of new technology.

## II PREVIOUS REPORTS BY THE EUROPEAN PARLIAMENT

10. The present document should be read in conjunction with the two earlier reports on European space policy drawn up for the European Parliament by the Committee on Energy, Research and Technology. These were the RIPAMONTI Report (1979)<sup>2</sup> and the TURCAT Report (1981)<sup>3</sup>

---

<sup>1</sup> The exceptions are Greece and Luxembourg. The countries outside the EEC which belong to ESA are: Spain, Sweden and Switzerland. Austria and Norway, which are associated members, have begun the procedure for becoming full members. Canada has an agreement for close cooperation.

<sup>2</sup> Doc. 2/79; Resolution of 25.4.79, OJ C127 of 21.5.79, pp 42-43

<sup>3</sup> Doc. 1-326/81; Resolution of 18.9.81, OJ C260 of 12.10.81, pp 102-104

11. These reports provided valuable summaries of the current situation as regards activities in space and offered welcome encouragement to European participation in these activities. The TURCAT Report, in particular, called for "the immediate formulation of a powerful and coherent long-term policy on space applications" by the European Community.

12. In its resolution on the TURCAT Report, Parliament, *inter alia*, urged the Council to call a European Space Conference at ministerial level, and called on the Commission to submit "within six months" proposals for a more ambitious space policy which would be formulated by the European Space Agency, as well as "for more effective cooperation between the organs of the Community". It called "for all the necessary financial instruments to be placed at the disposal of European space projects".

13. It will be seen that the resolution in the TURCAT Report was quite specific in its terms. It even went so far as to call on the Commission to begin feasibility studies on a project for a European space shuttle.

14. As well as asking the Commission to prepare policy proposals, it asked it to report to Parliament "if possible within a year" on a further list of areas of action which might be undertaken by the European Community in the fields of space research and exploitation.

15. Four years have now gone by since the European Parliament adopted the TURCAT Report. Nothing which has happened since then has diminished the contribution which that report made in the following three important areas: alerting the European Parliament and public opinion to the need to clarify current thinking on developments in space, stimulating the Commission to meet the challenge of formulating a space policy for Europe, and encouraging European space activity in general.

16. Speaking in the debate in the European Parliament on the TURCAT Report on 14 September 1981, Commissioner DAVIGNON said that, in broad terms, he interpreted the motion for a resolution in that report as a sign to the Commission that it could no longer avoid the task of analysing the issues thrown up for Community policy by development in space, and he said that, for its part, the Commission accepted this. At the same time, he expressed the



view that it would be wrong to "put the horse before the cart" by making policy choices immediately, without waiting for the systematic analysis of the situation which it was so necessary to undertake.

17. In the event however, the Commission did not come forward with the kind of analysis and proposals asked for in the resolution of 18.9.1981.

### III THE STRUCTURE OF EUROPEAN SPACE ACTIVITY

18. The following are some of the most important organisations and undertakings operating at European level in the space sector:

19. **European Space Agency (ESA):** On 31 January 1985 the Council of ESA meeting at ministerial level in Rome made a series of extremely important decisions:

- (i) It adopted a ten-year outline programme for ESA, which provides for the Agency's annual budget to be raised by 70% over the next five years to 1.65 billion ECU;
- (ii) It accepted the invitation of the United States to take part in the construction of a manned orbit space station; details are to be negotiated in the coming months;
- (iii) It approved the Columbus project, a manned laboratory module which could be integrated into the planned space station but could also have an independent role and could therefore, in the long term, lead to the development of an autonomous European space station;
- (iv) It gave the go-ahead for the development of the next generation of Ariane launcher - Ariane 5 - equipped with the large cryogenic engine HM60, with a view to completing it by 1995;
- (v) It agreed to a 5% annual increase in the budget of ESA's science programme over the next five years. This was a relatively good result for ESA, which had made it clear that the 3% increase being advocated by some national delegations was below the minimum required for the long-term programme;

(vi) Although it did not give the go-ahead for the development by ESA of a manned space vehicle, it agreed that studies should continue on the French Hermes project and on HOTOL ('horizontal take-off and landing'), the newly-announced British project for a vehicle which could take off and land like an aeroplane and yet also undertake spaceflight, giving it the capacity to lift payloads into orbit, or to take passengers from London to Sydney, Australia, in a flight time of 45 minutes (67 minutes allowing for take-off and landing procedures).

20. ESA, which has its headquarters in Paris, is the coordinator of Europe's civilian space activity - a task which it took over, when it was founded in 1975, from the pioneering bodies ELDO (European Launcher Development Organisation) and ESRO (European Space Research Organisation). Its organisational and budgetary structures present points of interest when compared with those of the EC. Its work is divided between mandatory and operational programmes. The mandatory programmes are (i) the administration, organisation and finance of the agency, and (ii) the scientific programme. These programmes are paid for out of the budget to which all Member States make a certain contribution. The optional programmes, which are programmes for carrying out specific space projects, such as developing new hardware or putting communications satellites into orbit, are paid for by those Member States which decide to participate in the relevant programme.

21. As in other sectors of European activity, it is often difficult to decide whether a space programme should be executed on a national level or in the context of ESA. However, the very large cost of many space projects makes their "Europeanisation" inevitable. Moreover, the success of this year's ministerial conference was a clear sign that the various Member State governments are ready to place their confidence in ESA as the means for achieving their civilian space objectives.

22. **Arianespace:** This is a consortium of companies involved in the development and production of the European launcher, Ariane. To begin with Ariane was developed under the aegis of ESA. Eventually, it was hived off to a new undertaking created especially for the purpose. This was Arianespace.

The transfer was effected by an agreement signed on 15 May 1981 between ESA and Arianespace. The shareholders in Arianespace, which are listed in full in an annex to the present document, are drawn from 11 countries.

23. **Eurospace:** This is an umbrella organisation of companies involved in all sectors of space activity, not merely launchers. The companies are drawn from almost all the ESA Member States, plus one from Finland. There is a small number of associate members, which comprise certain banks plus a potential user of space systems, the news agency Reuters.

24. **Société Européenne de Propulsion (SEP):** This company, which was formed in 1969, has sites at Vernon, Bordeaux, Melem-Villaroche and Istres, as well as a head office in Paris. It is a subsidiary of the French state-owned SNECMA (Société nationale d'étude et de construction de moteurs d'aviation) Group. It makes the rocket engines for Ariane. This is an activity of European scope, since different parts of the engines are made elsewhere by companies such as, for example, Fiat and Volvo.

25. **National space agencies:** The following should be noted:

(i) **CNES** (Centre national d'études speciale) - The French space agency CNES was set up by a law of 19 December 1961. In 1984 it had a budget of 4.763 million francs (compared with 3.013 million francs in 1982). Its activities are located at Paris, Toulouse and Kourou, Guyane.

(ii) **DFVLR** (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt) - The DFVLR is not solely a space agency, but it does fulfil this function. Its headquarters are near Cologne. DFVLR is responsible for the D1 Spacelab mission which will be in space in late October or early November 1985 and will involve one Dutch and two German astronauts. This mission will be launched by the Americans, but the mission control for the Spacelab component of the mission will be at Munich. This will be the first time that a manned space mission has been controlled from Europe.

(iii) **British National Space Centre** - the UK Minister for Information Technology, Mr Geoffrey Pattie, announced on 29 January 1985 that a British National Space Centre was to be set up to coordinate the United Kingdom's efforts in space technology. He said it would probably be based at the Royal Aircraft Establishment (RAE) at Farnborough, Hampshire, England.

#### IV SPACE ACTIVITIES IN THE US AND JAPAN

26. **United States.** In the USA, the principal space body is NASA, the National Aeronautics and Space Administration, which was founded in 1958. Its achievements are well known, and include the development of the space Shuttle, which is remarkable both for being a manned vehicle and for being re-usable. Europe now finds itself in competition with the Shuttle for contracts to launch satellites for third parties. The 12th Ariane Launch in Kourou on 8 February 1985 was the first time anybody other than the Americans had fulfilled such a commercial contract of this type. Meanwhile NASA has experienced difficulty in keeping to the planned launch schedules for the Shuttle.

27. Leaving this commercial rivalry aside, the most important issue in relations between ESA and NASA is that of cooperation. There has already been an important level of cooperation between the two sides, notably over Spacelab, the manned space laboratory put into space on board the Shuttle. Another Spacelab mission is due this autumn, under German management in cooperation with the Americans.

28. As regards cooperation over the construction of a manned space station, one of the chief issues here is that of technology transfer. Before finally agreeing to involvement in the project, ESA will need to be assured that it will be able to share fully in the know-how required for, and generated by the venture.

29. **Japan.** The main body for space development is the National Space Development Agency (NASDA), which is responsible for the development of satellites and launch vehicles. Turning specifically to space science, the Institute of Space and Astronautical Science (ISAS) of the Ministry of Education also develops satellites and launchers, and performs launches.

30. Space activities are, therefore, considerably far advanced in Japan. The first Japanese satellite 'OHSUMI' was launched by the University of Tokyo in 1970 by the L-4S-5 vehicle. This was five years after the launch of the first French satellite 'A-1' by the Diamant rocket. As of 1984, Japan had launched a total of 27 satellites. Japan's present launchers are the M(Mu)-family of launchers for scientific satellites, developed by ISAS and the N-I and N-II launchers developed by NASDA for satellites with practical applications. NASDA is also developing a new, more powerful H-I vehicle.

#### V THE INVOLVEMENT OF THE EUROPEAN COMMUNITY IN SPACE

31. In recent years the Commission has gradually become more involved in space activities. As has already been seen, the Commission did not present the strategy document on space policy which Parliament asked for in its Resolution on the TURCAT report in September 1981. However, a significant degree of space-related activity has built up on a more or less piecemeal basis.

32. Speaking to Parliament's Committee on Energy, Research and Technology on 21 January 1985, Vice-President NARJES, the Commissioner responsible for research and technology, said that the Commission was determined to become more involved in space in future. He believed space-related activities had an important role to play in the context of Community research policy.

33. The Community's present space-related activities include the following:

- (i) Application of remote-sensing by satellite to agriculture,
  - (a) in the Community and (b) in the developing countries;
- (ii) Remote-sensing as a means of monitoring the environment,
  - including
    - ecological cartography,
    - action against hydrocarbon pollution (oil-slicks),
    - action against other air and water pollution.

- (iii) Mineral exploration using remote-sensing;
- (iv) Satellite communications, in connection with the RACE programme in advanced communications and other planned Community measures, and also in connection with the improvement of telecommunications in developing countries;
- (v) Meteorology.

34. With regard to many of these activities it is clear that a Community involvement could usefully complement the work of ESA. The latter's role is mainly devoted to R & D activities, and it does not possess the means available to ensure that the most efficient use is always made of its programmes or their results. Good coordination between the EC and ESA, combined with a modest provision of financial resources by the former, could substantially improve the present situation. (This point is dealt with more fully in Section VII of the present report entitled 'The question of a line for space studies in the EC budget' on page 26.)

35. As regards the Commission's internal organisation of its space related activities, the time has come for these to be coordinated in a more logical way in the interests both of operational efficiency and of administrative transparency. The following Directorates-General of the Commission are at present involved in such activities :

- DG I External relations
- DG III Industrial Affairs
- Task Force Information and Telecommunications Technology
- DG VI Agriculture
- DG VII Transport
- DG VIII Development
- DG XII Service Research and Development
- DG XIII Information market and
- DG XIV Fisheries.

36. The European Investment Bank is able to finance projects involving aerospace technology. For example, on 18 February 1985 it announced a loan of 200 million French francs to the Caisse Nationale des Telecommunications (CNT)

in France for the acquisition of three satellites for a system of satellite communications which was, in part, designed to improve communications with the French overseas departments.

37. The EIB has informed the rapporteur that, at their annual meeting in June 1984, the Bank's Board of Governors agreed that space and aviation technology form part of the advanced technology sector eligible for EIB loans. Although demand for finance in this sector was still limited, the EIB said it had already provided funds for satellite communications in Italy and Greenland, and for Ariane. The Bank said future developments in the high technology sector would be viewed with equal favour by the EIB in terms of eligibility for its loan finance.

38. Not all the measures which the Community needs to take in connection with space activities are on a large scale. Two examples of small-scale action which should be undertaken are given below:

(i) Provision of television sets for remote communities in the developing countries

The development of satellite communications is creating opportunities for educational and information broadcasting to remote communities in developing countries which could be of the greatest importance. However, these opportunities are often not being exploited for want of the necessary infrastructure. One contribution which the Community could make is to sponsor and coordinate a campaign by voluntary and non-governmental organisations to collect used, unwanted television black-and-white television sets in Europe for distribution in the areas where they were needed.

(ii) Ground-station industry

There is a need to conduct a study on the reasons why European countries, with the exception of Finland, have failed to take up an appropriate share of the market for the supply of ground-stations which has grown quickly in the wake of the development of satellites.

## VI POSSIBLE USE OF THE EUROPEAN SOCIAL FUND

39. Some people may have the impression that the number of job opportunities available in the space related industries is marginal when viewed against the great problem of unemployment which faces Europe today. This is a mistaken view. The important thing to remember about the space industries at the present time is that they represent one of the few industrial sectors in Europe enjoying great success, and great opportunities. Bearing in mind that this is an industrial sector which involves the highest of high technology, it is easy to see how important it will increasingly be for the European economy. However, there is a potential problem of a lack of trained manpower. It would be absurd to waste this golden opportunity by failing to train the men and women needed for the jobs which this sector is in the process of creating.

40. Your rapporteur is anxious to explore the possibility of aid from the European Social Fund being used for vocational training in the space-related industries. These industries include, for example, the manufacture of space launchers, rocket engines and satellites. There is, principally, a need for two types of manpower. First, there is a need for space engineers: usually with a university degree. Second there is a need for workers trained in relevant technical skills. They work as workshop or laboratory technicians, as fitters in the assembly of space vehicles, and on similar tasks. It is the second category that one is concerned with here.

41. The operation of the Social Fund is governed by Council Regulation (EEC) No. 2950/83 of 17 October 1983<sup>1</sup>. The actual management of the Fund is subject to specific guidelines. The guidelines for the years 1986-1988 were adopted by the Commission on 30 April 1985.

42. Assistance is available from the Social Fund, in principle, to cover the incomes of persons undergoing vocational training and the costs of preparing and running vocational training measures. The current guidelines lay down two types of criterion for the granting of assistance: one geographical, and the other related to the kind of operation envisaged.

---

<sup>1</sup>OJ No. L289 of 22.10.1983. p1



43. As far as geographical criteria are concerned, it might be invidious to make specific mention here of particular regions where space-related activities do or could exist, and which come within the terms of the Social Fund guidelines. It is permissible to note, however, that the French overseas departments - especially relevant in this context because of the importance to the European space effort of Kourou in Guyane - come within the highest priority category.

44. As regards the type of activity, vocational training measures in this sector could well meet the requirement that they should further the employment of young people under 25 and lead to real prospects of stable employment. Such measures, to be eligible for Social Fund assistance, have to include work experience in the framework of a programme lasting a total of at least 6 months. This would appear feasible.

#### **VII THE QUESTION OF A LINE FOR SPACE STUDIES IN THE EC BUDGET**

45. The line for these proposed space studies (Article 726) was adopted by the European Parliament in its first reading of the 1985 budget, at the initiative of the Committee on Energy, Research and Technology, on 14 November 1984, but it was not incorporated in the budget at second reading. It is imperative that it should be entered in the 1986 budget.

46. The idea is that this should be a way of helping to make the fullest possible use of data obtained as a result of space projects operated by ESA. Space projects tend to have an exploratory and experimental character, even when designed for a clearly specified purpose. For instance, a satellite sent up to gather meteorological data may well yield information that has unforeseen uses in other spheres, such as the measurement of water-levels in river systems, or, conceivably, the prediction of earthquakes.

47. Again, it is highly unlikely that scientists have yet thought of all the possible ways in which the conditions of microgravity which can be obtained in space flight may be made to serve the purposes of research or indeed industrial manufacture (e.g. in the pharmaceutical industry). One could call these the "secondary applications" of the data yielded by space projects. However, the projects themselves are only normally conceived, and financed, with a view to the primary applications.

48. Accordingly, it could be to the mutual advantage of the European Community and ESA to collaborate in studies on potential secondary applications. From the Community point of view, such applications would be of potential interest both to the EC itself and to the ACP countries.

49. Since it would not be a question of paying for actual space projects (at least, within the terms of reference of the idea being suggested here) but only for studies on the use of information gained from such projects, the amount of money needed need not be at first very large. This is why, during the discussions on the EC 1985 budgetary procedure last year, our Committee suggested an appropriation for the year of just 50.000 ECU. It was felt that this would be enough for initial steps to be taken in the direction outlined above.

50. Apart from the direct benefits which studies of this type could be expected to yield, there would be another reason for embarking on this activity. This would be to create a new opportunity for constructive cooperation between the European Community and ESA. It would not be the first time that such cooperation had taken place. At the present time, for example, a senior ESA official is on secondment to the Commission's information technology Task Force. It is fair comment, however, that cooperation has hitherto been somewhat fragmented and sporadic. It would be a good idea to provide a budgetary and administrative locus around which experience and expertise could accumulate, with a view to space activities eventually taking their rightful place within the framework of the European Community's scientific and technical research.

51. A particular project which ought to be undertaken is the up-dating of a study undertaken some years ago by the University of Strasbourg on the economic impact of the spin-off from space activities.

#### **VIII EUROPEAN QUALIFICATIONS IN ASTRONAUTICS AND THE CREATION OF A EUROPEAN SPACE INSTITUTE**

52. The rapporteur has ascertained that more needs to be done to promote the training of highly qualified experts in space engineering or in other words "astronautics". One way to solve this problem would be to create a European qualification, probably at the doctoral level, which would be awarded to

candidates achieving academic standards set down at European level, but based on study and research at universities and similar bodies in the Member States of the EEC and ESA.

53. There is at present no specific doctoral-level qualification in astronautics. This is therefore an ideal opportunity for European collaboration. In older-established academic sectors, where national qualifications already exist, there arises the difficult problem of mutual recognition of qualifications. In the present case, this should be not so much of an obstacle.

54. There is a case for the establishment of a European space institute to create and monitor academic standards in various branches of space study, as well as to promote and coordinate European research in space science. This ought to be a comparatively small body, which would not take on the role of a university, nor to grow into a large bureaucratic organisation. It ought not to duplicate the activities of ESA, but add a new dimension to the European space effort by encouraging academic education and research.

55. Your rapporteur believes that the creation of a European doctoral qualification in astronautics and the establishment of a European space institute would be suitable initiatives for the European Parliament to champion. The same case can be made for BA and MA qualifications in the same discipline.

56. A European Institute of Space Studies need not be a very large administrative structure. The major responsibility for coordinating Europe's space effort is already very well undertaken by the European Space Agency. However, ESA is naturally oriented towards operational activities. It would be inappropriate to burden it with responsibilities in the area of maintaining academic standards and supervising the publication of learned works. Hence the present proposal.

## IX MICROGRAVITY RESEARCH

57. A questionnaire was sent by the rapporteur to selected pharmaceutical manufacturing companies in order to discover how seriously they were taking the idea of using the microgravity conditions of space for manufacturing certain drugs more cheaply.

58. The idea that economies can be made by using the apparently expensive method of conducting such processes in space may seem strange, but it becomes less so when one realises that certain pharmaceuticals are at present exceptionally expensive to produce. In his book The Future for Space Technology, Geoffrey Pardoe lists no fewer than twenty-two pharmaceuticals which currently have a market value of at least one billion dollars per kilogram. The most expensive item on the list is the alpha-Feto Protein (AFP) human derivation, for which Pardoe cites a price of 20 billion dollars per kilogram, although he points out that a dose of the substance would only amount to a few micrograms.<sup>1</sup>

59. The replies to the questionnaire varied in detail, but they showed that serious interest certainly exists, although no evidence was received that the matter had proceeded beyond the research and development stage. One respondent doubted the existence of a large enough market to justify microgravity production. Another, while expressing the view that for economic reasons the applications of microgravity conditions in space in the development and production of medicinal products was limited, nevertheless said that it would be prepared to invest in this area, and would be prepared to establish links with other European undertakings for joint R & D and/or production in space.

60. There was distinct evidence of a willingness to invest in this area if some contribution from public funds were simultaneously made available.

---

<sup>1</sup> Geoffrey K. C. Pardoe, The Future for Space Technology, Frances Pinter, London, 1984, p. 101

X THE DEMOCRATIC CONTROL OF SPACE ACTIVITIES

61. The rapid pace of expansion of space activities of a scientific, economic and military character has not been matched by the development of corresponding legal and political structures. Issues relating to the international politics of space use are the subject of another report being drawn up for the European Parliament concurrently with the present one. That other report has been drawn up by Mr PENDERS on behalf of the Committee on Political Affairs.<sup>1</sup> In the context of the present report, however, it is necessary to bear in mind the problems of political accountability arising from space activities. It is already doubtful whether, in Europe at least and arguably elsewhere, the means and instruments of democratic supervision of space activity are adequate. It is appropriate that a body such as the European Parliament should consider this issue.

62. The modern high-tech revolution has already yielded important examples of sectors of technological development which have been hampered by public mistrust, if not outright opposition. It is wrong in principle, as well as inexpedient, to allow the impression to be created that any particular sector of technological development is being treated as if it were privileged by comparison with other economic activities.

63. It is an obvious fact that both the exploration and exploitation of space require the investment of vast sums of money, much of which is supplied by tax payers. They have a right to require that those who formulate and execute space policy should be politically accountable for their decisions.

64. There is a much wider consideration than this. The opening up of space to human ingenuity and enterprise is a turning point comparable to the great journeys of exploration and discovery which marked the history of our terrestrial development in earlier centuries. It is therefore right that, faced with this great opportunity, the people of Europe should be able to exercise options democratically and to have at their disposal the usual instruments of parliamentary control.

---

<sup>1</sup>PE 97.081/res.

## XI THE NEED FOR THE COMMUNITY TO DEFINE ITS ROLE

65. At the beginning of this interim draft report, it was stated that there was a need for the European Community to analyse its options in space policy, with a view to defining its future role.

66. The question is what action should be taken now. The present report has been drawn up as a contribution to that process. It has not been conceived as an end in itself, but as one step in the desired direction. Europe's involvement in space is not just another issue in Community research policy, and the needs of the situation cannot be met simply by instituting one more Community programme. What is required is a major re-assessment of all that the space revolution, as it deserves to be called, can and will mean for the development of the European idea. This requires a major political initiative, which could benefit from an inter-institutional perspective.

## XII THE TWIN CHALLENGE OF EUREKA AND SDI

67. The context of discussion about the future of space activities has recently been transformed by the emergence of two entirely new issues: the strategic defence initiative (SDI) and Eureka.

68. This report has always been designed to deal exclusively with the non-military aspects of space. It seemed obvious that the natural focus was space as a major challenge to Europe's capabilities in scientific research and in technology. It is worth noting that ESA is in no way active in the military side of space. Indeed, it is not allowed to be under its constitution.

69. There are aspects of SDI, however, which cannot be ignored, and these are the aspects which touch on research policy. One of the most positive aspects of the SDI plan is that it is supposed to give an enormous boost to research with important non-military applications. For example, in order to make the new weaponry work, even more spectacular steps will have to be taken towards the miniaturisation of computers. The same is probably true of the development of better electric batteries, so that one of the spin-offs of SDI could well be a new type of electric car.

70. Something of particular interest is the energy research which is going to be stimulated. It has been said that, in order for the planned laser weapons to be viable, the electricity cost of powering the lasers must be reduced to one-fiftieth of what it is at present. This can only be achieved - if at all - by revolutionary new techniques of electricity generation.

71. On the other hand there is the possibility that if and when European concerns are given contracts for SDI research they will be made subject to the same security constraints as are applied to defence contractors in the U.S. and this would include the security vetting of personnel. It will be necessary to decide if it is really acceptable that European firms doing research into such things as the development of computers, of batteries, of new, more powerful space-launchers, or of new energy-production techniques, may be subject to controls on technology transfer and security imposed by the government of one of Europe's major competitors.

72. SDI will require entirely new space launchers and other vehicles - even more sophisticated than the Shuttle, much more powerful than our own Arianes. Payloads of up to 150 tons have been mentioned.

73. This puts Europe in a dilemma. It can join in, perhaps, and become the junior partners of the Americans, but, if it does it may sacrifice the main element of the philosophy which has guided ESA towards its greatest success. This is the philosophy of the development of an autonomous European space capacity. Yet, if Europe goes it alone, it cuts itself off from the giant funding which is promised for the SDI programme.

74. This, in a nutshell, is the logic of the European alternative, the logic behind Eureka. There is a need for a project of equivalent magnitude, and it must be a European project.

75. As European countries with a life-or-death interest in our technological competitiveness, whether it be in space or in other vital sectors, we have to remember that our most powerful instrument for survival is our membership of what is now by far the world's largest trading bloc: the European Community of twelve.

76. This is why the three things - Eureka, an autonomous space capability and our Community identity - are indissolubly linked.

77. It is therefore proposed in this report that an ambitious space project should form the centre-piece of the Eureka initiative.

78. To this extent, Europe would be emulating the American SDI. But there would be vital differences. The European project would be non-military and would be geared to the achievement of real, tangible benefits for Europe's people, instead of prestige or strategic advantages.

### XIII THE CONCEPT OF THE 'PAYBACK PAYLOAD'

79. The load which a space launcher lifts into space is called the "payload". Up to now a great deal of ingenuity has gone into increasing the payload which can be put up there. This will continue, of course, but it is time to pay more attention to the "payback". There are two main reasons.

80. First, if Europe carries on spending ever-greater amounts of money on space programmes, the public will increasingly - and rightly - demand an economic justification of this expenditure.

81. Second, if space is really a serious area of economic activity, it ought to start paying for itself.

82. Therefore, as a first step, it is proposed that Europe should adopt the concept of the "payback payload" as the criterion for future European space endeavour, i.e. in planning for the next phase of European space activity which will succeed the ESA ten-year programme that is just beginning.

83. It is implicit in this that, before that time, the European Community as such will have decided to become a fully active participant in space activities. This is not meant to imply a devaluation of the role of ESA: far from it.



84. What is being referred to now is the logic behind the decision, which the European Community should now make, to use a major space objective as the challenge which it sets itself to achieve the goal of Eureka: to mobilise and enhance its technological and industrial capabilities.

85. To return to the concept of the "payback payload", what forms could the payback take? The answer is under four headings:

1. Resources
2. Commerce
3. Stimulation
4. Science

86. Resources. Here is meant things like the large-scale exploitation of solar energy by means of giant solar panel arrays, and also the raw material potential inherent in space exploitation.

87. Commerce. This means the trade in space equipment and services, whether located in space (for example, contracts to launch satellites for third parties) or located on earth (such as the sale of satellites, ground-stations and other equipment).

88. Stimulation. This word is preferable to "spin-off", which seems to give too superficial and inadequate an idea of the potential impact of a major space effort. Industries are indeed stimulated by space development; inventions are stimulated and the imaginations of researchers, entrepreneurs and potential customers are also stimulated. Moreover, the word "stimulation" has already found a place in Community research terminology.

89. Science. This means the fact that an effort of the kind advocated will itself yield a great deal of scientific knowledge, and will facilitate the collection of much more.

#### XIV THE OBJECTIVE OF A MOON BASE

90. There is only one space objective that Europe could consider setting at the present time which would be on a sufficiently ambitious scale to create the type of major challenge to Europe's capabilities that has been discussed

here: an objective which is very ambitious, yet not unimaginably so. This is the goal of creating a base on the moon with a view to subsequently developing a capability for manned planetary exploration.

91. The idea of a moon base is a natural progression from that of a man-made in-orbit infrastructure. The construction of the latter would make it easier to establish the former. However, apart from other considerations, there would be an enormous increase in the scale of the undertaking. Existing and planned space projects like Spacelab and Eureka (ESA's concept of an unmanned orbital platform) offer the possibility of conducting experiments in space, whether of a purely scientific nature, or with an industrial purpose in view. The manned in-orbit infrastructure, together with the development of Columbus and Hermes, will greatly increase the scope and range of these possibilities. The establishment of a lunar base, however, could lead to the 'quantum leap' whereby the activities which space operations permit genuinely began to become larger, more numerous and more important than the space operations themselves.

92. At the present time, a technologist going to his daily work at an establishment in the local science park gives no thought to the problems involved in operating the bus which takes him there. In the current state of space activities, however, it is the 'bus-ride' which is the all-important challenge. This is a state of affairs which will change at some point in the future. When that point is reached, most of the civilian activity undertaken in space will be not so much 'space activity' as an accepted extension of the industrial and scientific work which is carried on normally in the terrestrial environment.

93. It is this which makes it appropriate that the European Community as such should associate itself with the moon base project. While those aspects of the programme which were characteristically space activities, such as the development and operation of space transport systems, would naturally be entrusted to the European Space Agency, a project of the kind envisaged here would involve industrial policy considerations which went far beyond the terms of reference of the ESA Convention. Even the provisions of the Convention which relate to industrial policy merely relate to the Agency's policy with regard to the industrial activity occasioned by its own activities.

94. For example, if ESA undertakes the development of a new type of space vehicle, then, in awarding contracts, it is obliged to follow certain rules laid down in its Convention. On the other hand, if, say, it enters into a contract to transport into space an object belonging to a university or an undertaking, then the conditions of the manufacture of the object in question do not concern it. In other words, the provisions of the ESA Convention relate to industrial policy in a narrow sense, whereas the execution of a moon base programme on the lines advocated here would involve considerations of industrial policy in the widest possible sense. This would make the involvement of the European Community desirable and indeed necessary, subject only to the proviso that other European countries, and possibly certain non-European countries, should also have the chance to collaborate in the project.

95. The European moon base programme, therefore, should be for a permanent, manned base for industrial and scientific purposes which could be extended as required until it became, in effect, a science park on the moon.

96. This would create the need for the development and application of a very wide range of new industrial products and processes, which could in turn be expected to stimulate new industries and promote the growth of training and employment opportunities.

97. Since so many of the technologies involved would be very new, and would be based on the latest scientific advances, it is to be hoped that one effect of the programme would be to strengthen links between universities and industrial undertakings by making this trend not merely desirable, but an imperative necessity.

98. The successful accomplishment of the moon base programme would, in addition, give Europe the capability to progress to manned exploration of the planets.

XV THE MAGNITUDE OF THE CHALLENGE: INTERNATIONAL COMPARISON OF SPACE EXPENDITURE

99. Although Europe can claim today that, in terms of quality, its space science and much of its space technology bear comparison with any in the world, the size of its space effort, in terms of money spent, lags far behind that of the United States. When considering the economic impact on the high technology industries, this fact is clearly of capital importance.

100. The position is that in 1985 the United States will have spent some 19 billion dollars on space, of which 12 billion was earmarked for the Department of Defense and 7 billion for NASA. The total budgets of the European countries in 1984 totalled somewhat over one billion dollars, of which about three-quarters of a billion were committed to the European Space Agency.<sup>1</sup>

101. The space budgets of individual European countries went as follows: France (400 million dollars), Germany (300 million), United Kingdom (120 million), Italy (100 million) and the Netherlands (50 million). By comparison, the budgets for certain other non-European countries were as follows: Japan - nearly 500 million dollars, with about 400 million of this going to the NASDA; Canada - over 100 million; India - almost 100 million.

102. Expressed as a percentage of GNP, it has been estimated that the United States spends at least ten times as much as the average for other countries which are involved in space: 0.47%, as against 0.04%. The country other than the US with the highest percentage figure is France, with 0.08%. This compares with 0.04% for Germany and Japan, and 0.03% for the United Kingdom.

103. Attention has already been drawn to the expected economic stimulation effect of the American SDI venture. Here again the figures are instructive. On 9 May 1984, Lt.-Gen. James Abrahamson, Director of the SDI Organisation (SDIO), told the Subcommittee on Defense of the US House Appropriations Committee that the four-year research phase (1986-1989) would require 24

---

<sup>1</sup> Figures: Euroconsult, World Space 85, pp. 2-4.

billion dollars (i.e., 24 thousand million dollars). This is approximately equivalent now to 32 billion ECU, and works out therefore at 8 billion ECU a year for the next four years.

104. In 1985, the total budget of the European Community amounts to about 30 billion ECU. In other words, for the next four years, the United States will be spending on SDI research alone a sum equivalent to a quarter or more of the entire European Community budget.

105. This fact is all the more striking when one considers the hopes which are placed in the stimulation effect of the existing EC budget, small as it is. For example, the Community's ESPRIT programme represents a valiant attempt to enhance the competitiveness of Europe's information technology industries. The commitment appropriation entered for this programme in the 1985 budget, however, amounts to only 223 mECU. This figure, which represents Europe's financial contribution to a life-or-death effort to preserve one of the most vital sectors of its economy, amounts to only about 2.8% of the sum which the United States plans to spend next year on SDI research.

106. Even the entire research budget of the EC in 1985, at 821.7 mECU,<sup>1</sup> represents only 10.3% of what the United States plans to spend next year on SDI research alone.

107. It is against this background that the present report advocates the adoption of a space project on a truly massive scale as a means of motivating European industry within the context of EUREKA.

---

<sup>1</sup> Chapter 73

**ANNEX 1**

**ARIANESPACE - THE SHAREHOLDERS**

The shareholdings break down as follows:

**German shareholders 19.60%**

DORNIER  
MBB/ERNO  
MAN  
BAYERISCH VEREINSBANK A.G.  
DRESDNERBANK  
WESTDEUTSCHE LANDESBANK GIROZENTRALE

**Belgian shareholders 4.40%**

ETCA  
FABRIQUE NATIONALE  
SABCA

**Danish shareholders 0.70%**

ROVSING  
COPENHAGEN HANDELSBANK

**Spanish shareholders 2.50%**

CASA  
SENER

**French shareholders 59.25%**

AEROSPATIALE  
AIR LIQUIDE  
COMSIP-ENTERPRISE  
CNES  
CROUZET  
DEUTSCH  
INTERTECHNIQUE  
MATRA  
SAFT  
SEP  
SFENA  
SFIM  
SODETEG  
CREDIT LYONNAIS  
BNP  
BANQUE VERNES  
SOCIETE GENERALE  
BANQUE DE PARIS ET DES PAYS BAS

**British shareholders 2.40%**

AVICA  
BADG  
FERRANTI  
MIDLAND BANK LTD

**Irish shareholders 0.25%**

ADTEC  
AER LINGUS

**Italian shareholders 3.60%**

AERITALIA  
SNIA - BPD  
ISTITUTO BANCARIO SAN PAOLO DI  
TORINO  
BASTOGI SISTEMI

**Dutch shareholders 2.20%**

FOKKER  
ALLGEMENE BANK NEDERLAND

**Swedish shareholders 2.40%**

SAAB-SCANIA  
VOLVO

**Swiss shareholders 2.70%**

CIR  
CONTRAVES  
F & W  
UNION DES BANQUES SUISSES

Source: Ariane V12 Press Dossier, Kourou, February 1985

## ANNEX 2

Select bibliography - a select list of books, papers, speeches etc. consulted in preparation of the present report

1. OECD, Trade in high-technology products - the space products industry: markets, industrial structure and government policies, organisation for economic cooperation and development, Directorate for science, technology and industry, Paris, 20 August 1984
2. Report by an EEC/ESA working group to the European Communities for development cooperation and to the Director General of the European Space Agency on the prospects for the use of space techniques by certain developing countries
3. Remote sensing from space, Summit of Industrial Nations, working group on technology, growth and employment, 20 March 1985
4. Background paper on European Community activities which make use of satellite technology, submitted by the EEC to the Second United Nations Conference on the Exploration and Peaceful Uses of Outer Space, 7 July 1982, 7 July 1982 (A/CONF.101/BP/IG 0/11)
5. Speech to the second conference on the exploration and peaceful uses of outer space, by Dr. J.P. CONTZEN, head of the European Community Delegation
6. Compton J, Tucker, John R.G. Townshend, Thomas E. Goff, African land-cover classification using satellite data, Science, 25 January 1985, Vol 225, No. 4685
7. CNES (Centre nationale d'études speciale), rapports d'activité, 1983 and 1984

8. CNES, L'espace en France, May 1983
9. GIFAS (Groupement des industries francaises à aeronautique et spatiale), La Formation dans le domaine aeronautique et spatial, May 1983
10. GDTA (Groupement pour le développement de la télédétection aérospatiale), Formation, Toulouse, undated
11. ESA (European Space Agency), 20 Year of European Cooperation in Space, Paris, 1984
12. ESA, Annual Report 1982
13. ESA Bulletin
14. ESA Council, Outline of a Long-Term European Space Plan, Paris, 21 November 1984 (ESA/C (84) 46 rev I)
15. ESA, Space Science Horizon 2000, Paris, July 1984
16. Eurospace, Towards a Long-Term European Space Programme, Paris, 1985
17. Geoffrey K.C. Pardoe, The Future for Space Technology, Frances Pinter, London, 1984. (Note: Mr Pardoe's company, General Technology Systems Limited, has submitted to the rapporteur a proposal to study the factors and opportunitites in support of establishing and implementing a European space policy. This document is available to members on request.)
18. Keidanren, Space in Japan 1983-1984, Tokyo, 1984
19. Space Activities Commission, Outline of Japan's Space Development Policy, revised 23 February 1984
20. NASA (National Aeronautics and Space Administration), Information Kit, Le Bourget, May-June 1985



21. Walter Froehlich, Space Station - The Next Logical Step, NASA, Government Printing Office, Washington, 1984
22. British Aerospace, HOTOL, pamphlet produced by the Space and Communications Division, Stevenage, 1985
23. Office of Technology Assessment, Congress of the United States, Civilian Space Stations and the United States Future in Space, Washington, November 1984
24. CNES, SPOT-système de télédétection par satellite, Toulouse, September 1982
25. CNES, SPOT newsletter, Paris/Toulouse, twice yearly

# European Communities

---

EUROPEAN PARLIAMENT

# Working Documents

1984-1985

---

15 October 1984

DOCUMENT 2-729/84

MOTION FOR A RESOLUTION

tabled by Mr FORD

pursuant to Rule 47 of the Rules of Procedure

on the preparation of a draft Treaty on the ownership  
of space and peaceful exploitation of the resources of  
space

The European Parliament,

- A. recognising the decisive importance for the peace of the world of avoiding the extension into space of the arms race,
- B. recognising the enormous economic and technological potential available through the exploitation of the resources of space,
- C. noting with concern the absence of a satisfactory comprehensive international agreement on the ownership of space which would correspond to the contemporary state of technology, both military and non-military,
- D. considering that space should be the common heritage of mankind and not the private property of any nation or group of nations,

calls on the responsible Committee to elaborate guidelines for a draft Treaty on this subject which should serve as the basis of an initiative of the European governments meeting within the framework of the European Political Co-operation and which should subsequently be put forward to the United Nations.

EUROPEAN PARLIAMENT

**Working Documents**

1984-1985

---

18 October 1984

DOCUMENT 2-769/84

MOTION FOR A RESOLUTION

tabled by Mrs Tove NIELSEN

on behalf of the Liberal and Democratic Group

pursuant to Rule 47 of the Rules of Procedure

on European space policy

The European Parliament,

- having regard to its resolution on European space policy, OJ No. C 260, 12 October 1981,
- having regard to its resolution on Community participation in space research, OJ No. C 127, 21 May 1979,
- A. believing that Community firms and research establishments possess the technological skills to enhance their own and their coordinated contribution to the exploitation of space in the service of its citizens, since space activities are by their nature international and global,
- B. applauding the work of the European Space Agency and the success of the European launcher ARIANE,
- C. regretting the absence of a response by Council and Commission to its request for the definition of a European space policy,
- D. noting the progress in certain Member States in the exploitation of communication and broadcasting satellites, thus establishing new services to the Community's citizens and new traditions in cooperation,
- E. convinced that the scale of space projects and the variety of services that they can render call for industrial and technological cooperation in an international environment;
- F. aware of the invitation by the US National Aeronautics and Space Administration for European and Japanese cooperation in the development, construction and manning of a space station, and the statement by President Reagan on 25 January 1984, calling for the achievement of this objective within a decade,
- G. noting that in response to this invitation the Japanese Space Activities Commission indicated 38 requirements for any cooperation with NASA in the categories of scientific observation, earth observation, communications, new materials testing and manufacturing, life sciences and engineering and its

subsequent decision to allocate Y 3,000 million to develop an independent manned experimental module, a cooperative project involving MITI, the Japanese Ministries of Education, Transport and Posts and Telecommunications, the Keidanren and the Society of Japanese Aerospace Firms,

1. Calls for the definition of a European space policy;
2. Instructs the committee responsible to conduct an enquiry, in conjunction with the European Space Agency and Eurospace and its member firms, and the relevant departments of Member States, and to report its conclusions for a European space policy, including its financing;
3. Requests the committee responsible to assist the European Space Agency in formulating a European response to the initiatives by NASA for international cooperation in manned space flight;
4. Expresses its concern for the long-term competitive position of Community firms in the high technology sector :if the commercial advantages of space are not exploited in timely fasion, and the risk of US and Japanese domination of this sector;
5. Instructs its President to forward this resolution to the Commission and the Council.

European Communities

---

EUROPEAN PARLIAMENT

**Working Documents**

1984-1985

---

5 November 1984

DOCUMENT 2-925/84

MOTION FOR A RESOLUTION

tabled by Mr FORD

pursuant to Rule 47 of the Rules of Procedure

on satellite remote sensing and world development

The European Parliament,

recognizing

- the recent failure of the American Congress to support adequately the Landsat system,
- that certain American private enterprises, such as Kodak and Fairchild, have now withdrawn their bid to develop Landsat and that others have only agreed to proceed on the basis of severely cutting back the programme,
- that, in consequence, developments of remote sensing will be oriented towards narrow commercial interests, rather than towards non-profit making projects vital to many Third World countries,
- the existence of commercial activities in this field by companies within the Community,
- the long-term commercial possibilities from the development of remote sensing satellites equipped with better sensors providing higher resolution in more spectral bands,

Asks that the relevant committees of the Parliament consider the need for European initiatives in this field of technical development.



# European Communities

---

EUROPEAN PARLIAMENT

# Working Documents

1984-1985

---

9 November 1984

DOCUMENT 2-962/84

MOTION FOR A RESOLUTION

tabled by Mr BATTERSBY

pursuant to Rule 47 of the Rules of Procedure

on a European Space Laboratory

The European Parliament,

- Having regard to its resolution on European Space Policy, OJ No. C260 of 12 October 1981
  - Having regard to its resolution on Community participation in space research OJ No. C127, 21 May 1979
  - A. Recognizing that key decisions are going to be taken in the near future on the future scope and magnitude of the European Space Programme,
  - B. Recognizing the work already carried out by the European Space Agency and its contractors in developing the Spacelab as a tethered space station in the United States Shuttle,
  - C. Recognizing that EEC Member States have already expended considerable funds on participation in the Spacelab project and have so far gained little benefit from this expenditure,
  - D. Recognizing the increasing commercial importance of space, especially in such areas as material processing in Space Station micro-gravity environments, biopharmacy, semi-conductor manufacture, robotic development etc.,
  - 1. Calls on the Commission to
    - a) Sponsor a further flight of the European Spacelab in the US Shuttle programme,
    - b) Provide as a matter of urgency effective support to potential industrial users to enable them to participate in a Community sponsored Spacelab facility utilization programme which will enable them to gain vital experience in this field,
- Instructs its President to forward this resolution to the Commission and the Council.

# European Communities

---

## EUROPEAN PARLIAMENT

# Working Documents

1984-1985

---

1 February 1985

DOCUMENT 2-1554/84

### MOTION FOR A RESOLUTION

tabled by Mrs CHARZAT, Mr GLINNE and Mr SABY

pursuant to Rule 47 of  
the Rules of Procedure

on establishing a European space policy  
including a manned European space  
shuttle and space station

The European Parliament,

- A. whereas the time factor is proving to be vital to the rapid rise of a genuine European community capable of making its weight felt in international negotiations by virtue of existing in its own right and possessing its own identity,
- B. whereas a Europe committed to space will give the European Community a capacity for economic and industrial power and a political cohesion fundamental to maintaining peace and security in the world,
- C. whereas in the context of the race to control and exploit space launched by the United States and the Soviet Union the establishment of a European commitment to space could be an effective means of countering the military use of space while encouraging its use for peaceful purposes,
- D. affirming that the idea of a Europe committed to space would entail a process of multilateral consultation with the United States and the Soviet Union, involving the European States, with a view to introducing a proper system of supervision and checks to limit the development of the new military technologies in space,
- E. Deeply concerned at the refusal by the Government of the Federal Republic of Germany to finance the European space shuttle Hermes designed for manned flights,
  1. Calls for the European Economic Community to speed up its research work in order, by means of a common area for industry and the development of high-technology industries, particularly communications, to establish a common space policy;
  2. Declares that such a common space policy must constitute a coherent whole through the building of a manned space station based on Ariane 5 and the financing and construction of a Hermes space shuttle designed for manned flights;
  3. Declares that a Europe committed to space must find its own identity and that in this connection the Hermes space shuttle is one of the essential bulwarks of Europe in space, to such a degree that a refusal to finance and construct Hermes would shake the European Space Agency to its foundations;
  4. Deplores the present monetarist-inspired attitudes towards budgetary restrictions on the part of certain Member States, attitudes which are incompatible with their stated wish to speed up European political union, their inability to equip Europe with a grand design for political and technological power for the young people and the workers of Europe;
  5. Instructs its President to forward this resolution to the EEC Foreign Ministers, the President-in-Office of the Community, the President of the Commission and the Commission.

120

120  
120  
120  
120  
120  
120  
120  
120

