

**ARCHIVES HISTORIQUES
DE LA COMMISSION**

**COLLECTION RELIEE DES
DOCUMENTS "COM"**

COM (80)453

Vol. 1980/0158

Historical Archives of the European Commission

Disclaimer

Conformément au règlement (CEE, Euratom) n° 354/83 du Conseil du 1er février 1983 concernant l'ouverture au public des archives historiques de la Communauté économique européenne et de la Communauté européenne de l'énergie atomique (JO L 43 du 15.2.1983, p. 1), tel que modifié par le règlement (CE, Euratom) n° 1700/2003 du 22 septembre 2003 (JO L 243 du 27.9.2003, p. 1), ce dossier est ouvert au public. Le cas échéant, les documents classifiés présents dans ce dossier ont été déclassifiés conformément à l'article 5 dudit règlement.

In accordance with Council Regulation (EEC, Euratom) No 354/83 of 1 February 1983 concerning the opening to the public of the historical archives of the European Economic Community and the European Atomic Energy Community (OJ L 43, 15.2.1983, p. 1), as amended by Regulation (EC, Euratom) No 1700/2003 of 22 September 2003 (OJ L 243, 27.9.2003, p. 1), this file is open to the public. Where necessary, classified documents in this file have been declassified in conformity with Article 5 of the aforementioned regulation.

In Übereinstimmung mit der Verordnung (EWG, Euratom) Nr. 354/83 des Rates vom 1. Februar 1983 über die Freigabe der historischen Archive der Europäischen Wirtschaftsgemeinschaft und der Europäischen Atomgemeinschaft (ABl. L 43 vom 15.2.1983, S. 1), geändert durch die Verordnung (EG, Euratom) Nr. 1700/2003 vom 22. September 2003 (ABl. L 243 vom 27.9.2003, S. 1), ist diese Datei der Öffentlichkeit zugänglich. Soweit erforderlich, wurden die Verschlussachen in dieser Datei in Übereinstimmung mit Artikel 5 der genannten Verordnung freigegeben.

COMMISSION OF THE EUROPEAN COMMUNITIES

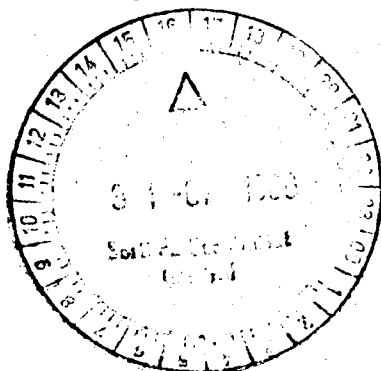
COM(80) 453 final

Brussels, 25th July 1980

COMMUNICATION OF THE COMMISSION
TO THE EUROPEAN PARLIAMENT AND TO THE COUNCIL
ON THE STATUS OF JET

PROPOSAL FOR A COUNCIL DECISION
AMENDING DECISION 80/318/EURATOM OF 13 MARCH 1980
ADOPTING A RESEARCH AND TRAINING PROGRAMME (1979 TO 1983)
FOR THE EUROPEAN ATOMIC ENERGY COMMUNITY IN THE
FIELD OF CONTROLLED THERMONUCLEAR FUSION

(presented by the Commission to the Council)



COM(80) 453 final

I. COMMUNICATION OF THE COMMISSION TO THE EUROPEAN PARLIAMENT AND TO THE COUNCIL ON THE STATUS OF JET.

1. INTRODUCTION

During its consideration of the 1981 budget of the JET Joint Undertaking at its meetings on 27/28 March and 17/18 June 1980, the JET Council discussed the Project Development Plan and Project Cost Estimates submitted to it by the Director of the Project. In the present communication, the Commission wishes to inform the Parliament and Council about these discussions and to submit proposals for solutions to certain problems which have arisen. The present note is linked to an earlier communication of 26 March 1979⁽¹⁾, in which the Commission informed Parliament and the Council of the updating of the Project at that time.

2. PROGRESS OF THE CONSTRUCTION PHASE

The agreed timetable for the construction phase remains unaltered. Individual activities within this timetable are proceeding without significant delay, and the JET device is expected to come into operation early in 1983. Industrial contracts have now been let for 60% of the foreseen capital investments including essentially all the buildings and the components of the JET device. The first building is already being occupied and further buildings will be ready for occupation shortly. Assembly of the device itself will begin towards the end of 1980, and the first components have already been delivered. An essential condition for the success of JET is the completion of the difficult and demanding task of developing and constructing systems for heating the JET plasma which is being energetically pursued by the experts in the Associated Laboratories. A further important task facing these laboratories is the development and the construction of diagnostic equipment which is essential for operation of the device and for the scientific evaluation of the results obtained. This point is discussed further in a later paragraph.

(1) Doc. COM (79) 160 final

3. PROBLEM AREAS

The problems with which the JET Council was concerned were in the following areas :-

- a) Inflation
- b) Provision for contingencies
- c) Diagnostic equipment
- d) Staff requirements
- e) Extended performance of JET
- f) Operational phase of JET

3.1 Inflation

a) Background to the previous Communication of the Commission

The previous communication of the Commission was presented in March 1979. At that time, the effective annual rate of inflation experienced by the JET Project, calculated in accordance with the procedure agreed by the JET Council appeared to be decreasing - the figures for 1977 and 1978 being 8.46% and 4.48% respectively. Using these figures, the Director of the Project proposed to the JET Council an overall Project Cost Estimate for the construction phase of 207.65 MEUA at the price level ⁽²⁾ of January 1979. This was equivalent to the Initial Project Cost Estimate of 184.6 MEUA at the price level of January 1977 ⁽³⁾. At its meeting on 8/9 February 1979, the JET Council decided to round down the figure from 207.65 MEUA to 200.00 MEUA. This decision was reasonable at the time, having regard to the trend in inflation and the fact that the unutilised provision for contingencies then stood at a level of 19.0 MEUA. Accordingly the Commission communicated the figure of 200.00 MEUA to Parliament and the Council ⁽⁴⁾, and this formed the basis for the Programme Decision of 13 March 1980 ⁽⁵⁾ at the level of 201.25 MEUA ⁽⁶⁾.

(2) The phrase "X MEUA at the price level of January of year Y" means : X is the value at current prices if it is assumed that inflation ends in January of the year Y.

(3) Doc. R 1227/78 (ATO 25), Annex, par. B (i)

(4) Doc. COM (79) 160 final, par. 1.2

(5) O.J. Nr. L 72, 18.3.1980, p.18

(6) Community appropriation 1978 : 16 MEUA
 Community appropriation 1979/83 : 145 MEUA
 Total : 161 MEUA

Community participation : 80%, thus 161 : 0.8 = 201.25 MEUA

b) Subsequent developments and present position

Since the previous communication of the Commission, inflation has increased dramatically in the Community as a whole, and the effective rate experienced by the JET Project for 1979, as confirmed by the JET Executive Committee and the JET Council, was 15.2%. Such rates of inflation constitute a specially severe problem for a project such as JET, with well-defined objectives in which capital costs form a large proportion of the total. In contrast to a broad research programme, in the case of the JET Project, inflation affects its costs directly and inescapably, and there is essentially no scope for counteraction by rationalisation or concentration of the programme. Accordingly the JET Council was obliged to update the Project Cost Estimates for the effects of inflation during the years 1979 and 1980. For the year 1980, an estimated rate of 15.2% has been taken. This figure has been accepted by the JET Executive Committee and the JET Council as a simple extrapolation of the trend in 1979, while recognizing that on the evidence of the trend in the first half of 1980, it is probably an under-estimate. If the Programme Decision of 13 March 1980 is taken as a basis, and the figures for the years 1980-83 are uplifted using the above inflation rates, the revised total at the price level of January 1981 would be 246 MEUA. However, at its meeting on 17/18 June 1980, the JET Council agreed that the inflation calculation should be based on the original Project Cost Estimate of 184.6 MEUA at January 1977 price levels, since the assumptions underlying the previous Programme Decision are no longer valid. In particular, (as discussed in the following section), the provisions for contingencies within the original Project Cost Estimates are now almost exhausted, and the rounding-down process previously applied can no longer be justified by reference to the contingencies. Furthermore a recalculation of the equivalent of 201.25 MEUA at the price level of January 1977 now gives a figure of only 170 MEUA and the JET Council did not believe that the Council intended to reduce the original cost estimates agreed in the Council decision of 30 May 1978. Consequently, at its meeting on 17/18 June 1980, the JET Council confirmed that according to the latest information on the effects of inflation, the figure of 184.6 MEUA at January 1977 price levels corresponds to 253 MEUA at January 1981 price levels.

3.2 Provisions for contingencies

The magnitude, complexity and novelty of the JET Project make it necessary for cost estimates to include a provision for unforeseen expenditure on individual items. Within the original Project Cost Estimates of 184.6 MEUA, this provision was generally at the level of 20%, giving a total contingency figure of 17.2 MEUA on items of capital expenditure. This figure was intended to cover unforeseen increases in cost due to technical errors and omissions in the original estimates, and was not intended to cover the effects of inflation. Following a closer specification of certain components of the JET device and its buildings and ancillary equipment, a number of such cost increases have been identified. The JET Executive Committee has examined and confirmed the need for these increases; as a result, only 4.4 MEUA at January 1977 prices remain unutilised. This sum corresponds to less than 8% of the uncommitted capital investments. At its meeting on 17/18 June 1980, the JET Council approved the re-instatement of the provision for contingencies at the level of 20% of the uncommitted capital investments. This requires the addition of 6.8 MEUA at January 1977 price levels, which corresponds to 10.1 MEUA at January 1981 price levels.

3.3 Summary of position on inflation and provision for contingencies

As a result of the considerations given in paragraphs 3.1 and 3.2, the overall Project Cost Estimate, expressed at the price level of January 1977, is to be increased from 184.6 MEUA to 191.4 MEUA. The corresponding figure at the price level of January 1981 is 263.1 MEUA. Taking into account expenditure already incurred, and budgets already adopted, the foreseen timetable for commitments and payments, at the price level of January 1977, can now be expressed in MEUA as :

Year	1977/79	1980	1981	1982	1983(part)	Total
Commitments	74.328	47.76	47.1	16.7	5.512	191.4
Payments	43.66	43.03	41.25	47.65	15.81	191.4

3.4 Diagnostic equipment

Early in 1980, the Director of the Project identified a list of items of diagnostic equipment which he regarded as essential in order to operate JET safely and to obtain meaningful scientific results. The total estimate for the design, procurement and installation of this

equipment is 19.0 MEUA at January 1977 prices (28.2 MEUA at January 1981 prices). In the original Project Cost Estimates only 4.7 MEUA was foreseen for this purpose. The reasons for this discrepancy are :

- a) The 4.7 MEUA was intended to cover only capital costs, whereas the 19 MEUA also covers planning, detailed design and specification preparation.
- b) The original Cost Estimates were prepared on the basis of experience with diagnostic equipment on much smaller devices than JET. Differences due to the size of JET, and the need for radiation protection were not sufficiently taken into account.
- c) The current diagnostic system is significantly more complex and advanced than that planned five years ago.

The Director of the Project proposed to the JET Council that the provision for diagnostic equipment be increased by 19.4 MEUA at January 1981 price levels. At its meeting on 17/18 June 1980 the JET Council referred the proposal back for the following reasons :

- a) To a significant extent the preparation of diagnostic equipment is a task of the Associated laboratories, which alone possess the knowhow to develop this complicated equipment. Under the contracts of Association they are expected to accept part of the costs. The extent to which they participate can only be determined when the new Contracts of Association have been negotiated within the framework of the 1979/83 Fusion Programme.
- b) Although the JET Scientific Council and the JET Executive Committee have agreed that the diagnostic equipment listed by the Project management is necessary, further scientific workshops during the coming months will define priorities in this area more closely.

In taking this decision, the JET Council recognised that the Project Cost Estimate of 263.1 MEUA contained provision which permitted this work to be started, and sufficient flexibility for the Project to make adjustments to allow it to continue until the revision of the Pluriannual Programme.

It remains certain however that the JET Project will require further provision for diagnostic equipment. Depending on the extent of Association participation in the costs, the additional figure is likely to be in the region of 16-20 MEUA at January 1981 price levels.

3.5 Staff requirements

At 1 July 1980, the Project team consisted of 200 staff in post, of which 103 were Euratom employees. A further 14 team posts were the subject of offers to selected applicants and a further 6 Euratom posts were to be the subject of offers as soon as permitted by the release of the 1980 Community Budget. In addition, approximately 80 staff were working for JET under industrial contracts, because the Associations had been unable to provide staff with the specific skills required. The number of Euratom posts is subject to a ceiling of 150 set by the Council decision (excluding Euratom staff coming from the Fusion programme) and the JET Council has hitherto adopted an overall figure of 320 team posts as a ceiling for planning purposes. The Director of the Project proposed that this ceiling should be raised to 400, and that an additional provision of 8.1 MEUA at January 1981 price levels should be included in the estimate for personnel costs. The JET Council decided to defer a decision on this proposal but stated that it was prepared to consider some increase in the non-Euratom posts within the 1981 Budget, provided that the financial volume of 263.1 MEUA was not exceeded.

3.6 Extended performance of JET

The figure of 263.1 MEUA at January 1981 prices covers the cost of the construction of JET in its basic performance, and excludes any provision for the enhancements required to achieve its extended performance. A preliminary estimate of the cost of these enhancements was presented by the Director of the Project to the JET Council in February 1979. This estimate, updated to January 1981 prices is equivalent to 82.3 MEUA. The JET Scientific Council will examine the question of the extended performance of JET in the Autumn of 1980, and the Director of the Project will subsequently present a more detailed estimate to the JET Council.

3.7 Operational phase of JET

The figure of 263.1 MEUA at January 1981 prices does not contain any provision for the cost of the operational phase of JET. In the records of the Council session on 30 May 1978 at which the decision on the establishment of the JET Joint Undertaking was taken, it is said that the annual cost of the operational phase was expected to approximate to the annual cost incurred during the construction phase. No revised estimate is yet available.

3.8 Summary of decisions of the JET Council

a) Additional funds (all figures MEUA at January 1981 price levels)

Item	Proposed by the Director of the Project	Approved by JET Council
Inflation up to January 1981	51.75	51.75
Contingency	10.1	10.1
Diagnostics	19.4	-
Staff	8.1	-
Extended performance	-	-
Operational phase	-	-
	89.35	61.85
b) Additional Euratom posts	10	0

4. PROPOSALS OF THE COMMISSION

4.1 Inflation and Contingencies

In agreement with the decisions of the JET Council, the Commission proposes that the participation of the Community in the financing of the JET Project should be increased from 145 MEUA as authorised by the decision of the Council on 13 March 1980, to 195 MEUA to cover the effects of inflation up to January 1981 and the reinstatement of provisions for contingencies. The Community participation of 195 MEUA is calculated as follows :

	MEUA
Total cost of construction phase	263.1
Deduction in respect of 1978	20.0
Cost of construction phase 1979/83	243.1
Community participation at 80%	194.48
rounded up to	195.0

A decision proposal to change the Council decision of 13 March 1980 is given in section II.

This decision is needed urgently, because the ceiling set by the current Programme Decision does not permit the incorporation of sufficient commitments into the JET 1981 Budget to allow completion of the device as foreseen in the timetable.

The Commission proposes that in applying paragraph B (iii) of the records of the Council session on 30 May 1978, the Council takes note of the revised timetable for commitments and payments at price level January 1977 shown in paragraph 3.3 of the present communication and shows the approval of that timetable in the records.

4.2 Diagnostics, extended performance, operational phase and personnel

For the time being the JET Council has not included any additional provision for these items in the Project Cost Estimates. The JET Organs and their supporting and advising bodies will continue discussions on these subjects, and the Commission will press for these discussions to be concluded in time for proposals to be incorporated into the Revision of the Programme which is to be submitted to the Council by 1 July 1981 at the latest. In determining the need for Euratom posts, it will be necessary to take into account the Community character of the Project.

The statement entered in the records of the Council session on 13 March 1980⁽⁷⁾, authorizing the advanced use of up to 10 MEUA on the extended performance of JET, remains valid.

5. IMPACT ON THE 1981 BUDGET OF THE COMMUNITY

Both the Commitments and Payments provisions within the Community Budget in respect of JET are calculated on the basis of the Payment provisions foreseen in the JET Budget, taking into account the Community participation at 80%. The JET Council adopted a preliminary draft JET Budget including payment provisions of 62.0 MEUA, and the Commission correspondingly included a provision of 49.6 MEUA in the preliminary draft Budget of the Community. The Director of the Project has confirmed that he will not seek any increase to this figure as a result of the increase in the overall Cost Estimate now being proposed.

6. INFLATION BEYOND JANUARY 1981

The figure of 263.1 MEUA is at January 1981 price levels, and makes no provision for inflation beyond that date. The annual inflation rate which should be assumed for future years is still unknown. If inflation continues at a significant rate, it will be necessary for the Commission to make a further proposal to Parliament and Council on this point.

(7) Doc. 5426/80 ATO 32 - last paragraph of point 5

II. PROPOSAL
for a
COUNCIL DECISION
of

amending Decision 80/318 Euratom of 13 March 1980 adopting a research and training programme (1979 to 1983) for the European Atomic Energy Community in the field of controlled thermonuclear fusion.

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

HAVING REGARD to the Treaty establishing the European Atomic Energy Community, and in particular to Article 7 thereof,

HAVING REGARD to the proposal from the Commission, submitted after consultation with the Scientific and Technical Committee,

HAVING REGARD to the opinion of the European Parliament⁽¹⁾,

HAVING REGARD to the opinion of the Economic and Social Committee⁽²⁾,

WHEREAS by decision 78/471 Euratom⁽³⁾ the Council has established the "Joint European Torus (JET), Joint Undertaking",

WHEREAS under Article 9 of its Statutes, 80% of the expenditure of the Joint Undertaking shall be borne by Euratom,

WHEREAS the Commission must notify to the Joint Undertaking an appropriation relating to the Commission's financial contribution to the Joint Undertaking as shown in the finally adopted budget of the European Communities,

WHEREAS the Commission proposed to the Council a research and training programme (1979/1983) in the field of controlled thermonuclear fusion⁽⁴⁾,

(1) OJ Nr. C

(2) OJ Nr. C

(3) OJ Nr. L 151, 7.6.1978, p.10

(4) COM(79) 160 final

WHEREAS in the second paragraph of Article 2 of that proposal the global needs for the construction phase of JET during the programme period were estimated at 145 million European units of account,

WHEREAS in its decision 80/318 Euratom⁽⁵⁾ the Council adopted a research and training programme (1979 to 1983) in the field of thermonuclear fusion and fixed the upper limit of expenditure commitments for JET at 145 million European units of account,

WHEREAS the most recent examination has shown that because of changes in economic conditions, the estimated figure would not be sufficient,

HAS DECIDED AS FOLLOWS :

Sole Article

Paragraph 2 of Article 2 of Decision 80/318 Euratom is replaced by the following paragraph :

"The global needs for the construction phase of JET in its basic performance during the programme period are estimated at 195 million European units of account including a minimum of 86.40 million European units of account from the amounts referred to in the second paragraph of Article 4, and 150 temporary servants within the meaning of Article 2 a) of the conditions of employment of other servants of the European Communities. These figures are of an indicative nature only."

(5) OJ Nr. L 72, 18.3.1980, p. 18.

In the Annex to Decision 80/318/Euratom the first sentence of paragraph 6 is replaced by the following sentence :

"The global needs for the construction phase of JET in its basic performance during the programme period are estimated at 195 million European units of account and 150 temporary servants."

Done at Brussels,

For the Council

The President

FINANCIAL RECORD SHEET

1. RELEVANT BUDGET HEADING CODE : 3351
2. TITLE OF BUDGET HEADING : JET Project.
3. LEGAL BASIS : Article 7 of the EAEC Treaty,
Council Decision 78/470/Euratom of 30 May 1978
(O.J. L 151 of 7 June 1978, page 8) Council Decision
80/318 Euratom of 13 March 1980 (O.J. L 72 of
18.3.1980, page 18) and Council Decision expected
before 1981.
4. DESCRIPTION, OBJECTIVES AND JUSTIFICATION OF THE PROJECT :
There have been no changes to the scientific and technical programme of the project since the last programme decision of the Council on 13 March 1980.
 - 4.1 Description
Construction, operation and exploitation, as part of the Community fusion programme and for the benefit of the participants therein, of a large torus facility of the Tokamak type and its auxiliary facilities (Joint European Torus - JET) in order to extend the parameter range applicable to controlled thermonuclear fusion experiments up to conditions close to those needed in a thermonuclear reactor.
 - 4.2 Objectives
To obtain and study a plasma in conditions and dimensions approaching those needed in a thermonuclear reactor. Four main areas of work are required to achieve this aim:
 - (i) the scaling of plasma behaviour as parameters approach the reactor range ;
 - (ii) the plasma-wall interaction in these conditions ;
 - (iii) the study of plasma heating ;
 - (iv) the study of α -particle production and confinement and consequent resultant plasma heating.

4.3 Justification

Execution of the JET Project is an essential stage in the development of the Community's fusion programme.

5. OVERALL FINANCIAL IMPLICATIONS OF THE PROJECT FOR THE WHOLE OF ITS EXPECTED DURATION (EUA)

Because of changes in the economic conditions during the years 1979 and 1980 the cost estimates of the project increased from MEUA 201.25 at January 1979 prices to MEUA 263.1 at January 1981 prices.

5.1 Implications in respect of expenditure (period 1976-83)

5.1.1 Costs incurred by :

The budget of the European Communities (80%) 211 000 000 EUA

National administrations and other sectors at national level (20%) 52 100 000 EUA

Total cost : 263 100 000 EUA
=====

This cost has been estimated at January 1981 prices.

5.1.2 Multiannual timetable of the Community participation of 211 MEUA

Years	1976 to 79	1980	1981	1982	1983	Total
Commitments (M EUA)	71.22	42.46	22.20	50.76	part. 24.46	211.00
Payments (M EUA)	41.60	44.58	49.60	50.76	24.46	211.00

5.2 Method of calculation

The cost of the JET Project in the construction phase has been estimated at 263.1 MEUA at January 1981 prices. In accordance with article 9.1 of the JET Statutes the Community bears 80% of the expenditure of the JET Joint Undertaking. Thus appropriations required to cover the Community's participation are 80% of 263.1 = 211 MEUA. An amount of 16 MEUA was spent before 1979. The amount to be covered in the fusion programme 1979 to 1983 is therefore 211 - 16 = 195 MEUA.

The amount of 263.1 MEUA does not take into account :

- (a) Variations in economic conditions after 1980.
- (b) The cost of the necessary capital investment for extended performance.

(c) The cost of operating the facility during 1983 and the subsequent years.

5.3 Implications in respect of revenue

Community taxes on the salaries of temporary staff.

6. PROJECT FINANCES FROM :

Appropriations entered in the budgets of the European Communities for 1976, 1977, 1978, 1979 and 1980.

Appropriations to be entered in future budgets.

7. TYPE OF CONTROL TO BE APPLIED

(a) Scientific control : JET Council

(b) Administrative and
Financial Control : JET Council

Court of Auditors.