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ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLÉAIRE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

COUNCIL

Hundredth Session

Part 1

Geneva - 24 June 1994

**AMENDMENT TO THE DRAFT MINUTES
OF THE HUNDREDTH SESSION - PART 1 OF THE COUNCIL
(on a written proposal of the United Kingdom Delegation)**

The attached Draft Minutes (CERN/2053/Draft, dated 25 August 1994) were approved, with the following amendment, at the Hundredth Session (Part 2) of Council on 16 December 1994.

Page 19, subparagraph 3., (Item 15) of the English version:

Amend to read: "3. that the voting procedure now open could be closed at the second part of the session, preferably in July 1994, or, if necessary, **later in the year.**"

With this amendment the attached document can be regarded as the **final version.**

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Geneva - 24 June 1994

DRAFT MINUTES*

* These Draft Minutes are circulated without having been seen by the President of Council, but with his consent.

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LIST OF PARTICIPANTS

<u>President:</u>	Prof. H. Curien	France
<u>Participants:</u>	Dr A. Herdina	Austria
	Prof. W. Majerotto	
	Mr H. Schacher*	
	Prof. J. Lemonne	Belgium
	Mr P. Levaux	
	Mrs M.J. Simoen*	
	Prof. J. Niederle	Czech Republic
	Mr Z. Venera	
	Mr P. Bratinka	
	Mrs B. Sode-Mogensen	Denmark
	Dr J. Hattula	Finland
	Prof. J. Routti	
	Prof. J. Perez y Jorba	France
	Mr P. Zeller	
	Dr J. Fouan*	
	Mr B. Clerc*	
	Prof. V. Soergel	Germany
	Dr H. Strub	
	Dr H. Schunck	
	Mr K. Mömkes	
	Prof. M. Floratos	Greece
	Prof. E. Pungor	Hungary
	Prof. J. Zimányi	
	H.E. Mr G. Boytha*	
	Prof. G. Pócsik*	
	Dr S. Tóth*	
	Dr G. Vesztergombi*	

* Adviser

H.E. Mr G. Baldocci Prof. L. Maiani Mr A. Balboni* Prof. G. Castro* Dr M. Gigliarelli Fiumi* Prof. F. Menzinger* Prof. C. Orzalesi*	Italy
Mr J. Bezemer Prof. B. de Wit Mr S. Smits*	Netherlands
Prof. A. Graue Dr L. Westgaard	Norway
H.E. Mr L. Dembinski Prof. R. Sosnowski Mr J. Knapik*	Poland
Mr F.D. Bello Mr L. Cristina de Barros	Portugal
H.E. Mr J. Kubis Dr L. Sándor Mrs M. Krasnohorská* Mr B. Sitár* Mr J. Pokorný* Mr I. Trebatický*	Slovak Republic
Prof. C. Lopez Mrs M. Requejo	Spain
Dr C. Nordling Prof. Ö. Skeppstedt Dr J. Gustavsson* Prof. G. Jarlskog*	Sweden
Prof. M. Bourquin Mr J. Vernet Dr M. Gottret* Dr J.-P. Ruder*	Switzerland

* Adviser

Prof. K. Pounds	United Kingdom
Mr R.P. Ritzema	
Prof. A. Donnachie*	
Mr W. Jones*	
Prof. D.H. Saxon*	
Mr J.D. Walsh*	

Observers:

Mr N. Newman	Representative of the European Union
Prof. G. Mikenberg Dr R. Schnitzer	Representatives of Israel
Prof. A.N. Skrinsky	Representative of the Russian Federation
Prof. A. Astbury	Canada
Dr D.D. Bhawalkar Prof. S.N. Ganguli	India
Mr T. Hamaguchi Mr W. Iwamoto Mr H. Takahashi Prof. Y. Yamaguchi Mr K. Yoshio	Japan
Dr J.R. O'Fallon	USA

External Auditors:

Mrs T. Berentzen
Mrs B. Lien
Mrs E. Pedersen

* Adviser.

Also Present:

Dr B. Brandt	Chairman of the Finance Committee
Dr G.E. Wolf	Chairman of the Scientific Policy Committee
Prof. G. Flügge	Chairman of ECFA
Mr M. Borghini	CERN Staff Association

CERN Officials:

Prof. C.H. Llewellyn Smith Director-General

Directors:

Dr P. Darriulat	Director of Research
Dr L.R. Evans	Associate Director for Future Accelerators
Prof. W. Hoogland	Director of Research
Dr K. Hübner	Directors of Accelerators
Dr H. Weber	Head of Administration
Dr H. Wenninger	Technical/Research Director

Invited:

Prof. L. Foà

DRAFT MINUTES

The meeting was called to order at 10.15 a.m.

The PRESIDENT welcomed the following new members: Mr P. Bratinka, Deputy Minister for Foreign Affairs of the Czech Republic; Mr B. Clerc, First Secretary, Permanent Mission of France, Geneva; Professor F. Menzinger, Scientific Attaché, Permanent Mission of Italy, Geneva; Mr S. Smits, Permanent Mission of the Kingdom of the Netherlands, Geneva; Ambassador L. Dembinski, replacing Professor J. Niewodniczanski of Poland; and Mrs M. Krasnohorská, Counsellor, Permanent Mission of the Slovak Republic, Geneva, Head of Delegation of the Slovak Republic.

He was also very happy to welcome Professor A. Astbury from Canada; Dr D.D. Bhawalkar and Professor S.N. Ganguli from India; Mr. T. Hamaguchi, Dr W. Iwamoto, Dr H. Takahashi, Professor. Y. Yamaguchi and Mr K. Yoshio from Japan; and Dr J.R. O'Fallon from the United States of America, in addition to the following representatives enjoying official Observer status: Mr N. Newman, replacing Dr R. Gerold, of the European Union, Professor G. Mikenberg, replacing Professor D. Horn, and Dr R. Schnitzer of Israel; and Professor A. Skrinsky of the Russian Federation.

Apologies had been received from Professor J. Niewodniczanski (Poland), Mr Gerold (European Union), Professors F. Mayor Zaragoza and A. Badran (UNESCO), Professor D. Horn (Israel) and Minister B.G. Saltykov (Russian Federation).

He then announced that, on behalf of her Majesty the Queen of the Netherlands, the Minister of Education and Science had recently honoured Mr J. Bezemer by bestowing on him the title of Officer of the Order of Oranje-Nassau, partly for his activities for and on behalf of CERN. He offered Mr Bezemer his congratulations on behalf of the Council.

Applause.

He had the sad duty to inform the meeting of the death of Odd Dahl, who had died in Bergen (Norway) on 2 June 1994, at the age of 95. A specialist in accelerators, in May 1952 at the first Council session of the interim Organization in Paris he had been appointed head of the Proton Synchrotron Study Group to investigate the design of particle accelerators for energies higher than 1 BeV.

A minute's silence was observed.

1. REPORT OF THE CREDENTIALS COMMITTEE

(Item 1 of the Agenda)

Dr WEBER presented the report of the Credentials Committee.

The report of the Credentials Committee was approved.

2. APPROVAL OF THE DRAFT MINUTES OF THE NINETY-NINTH SESSION

(Item 2 of the Agenda) (CERN/2035/Draft)

On the written proposal of Dr STRUB, it was agreed to amend the third line from the bottom of the penultimate paragraph on page 8 of the English text to read "willingness to grant special substantial contributions".

The Minutes of the Ninety-ninth Session (CERN/2035), as amended, were approved.

3. ADOPTION OF THE AGENDA

(Item 3 of the Agenda) (CERN/2038)

On the proposal of the PRESIDENT, it was agreed to hold the Closed Session immediately after lunch, and under Other Business to hear a statement from the Portuguese delegation on the successful high-energy physics exhibition held in Portugal.

The Agenda (CERN/2038¹), as amended, was adopted.

¹ See Annex 1.

4. PRESIDENT'S REPORT

(Item 4 of the Agenda) (Oral)

The PRESIDENT said that he wished to remember first of all Pierre Auger who had died on 24 December 1993 at the age of 94 and had been one of the founding fathers of CERN, and a very important figure in modern physics. In addition to his scientific work it was important to recall the great energy Auger had invested in setting up international research organizations, the scientific part of Unesco, CERN, and European space research and technology agencies. In the light of his role in establishing CERN, the Director-General had decided to name one of the streets on the CERN site in his honour. The commemoration ceremony would be held as soon as possible.

During the past week, as part of the discussions at respectively the Scientific Policy Committee, the Finance Committee and the Committee of Council, one major question had been arrangements for a final decision on the LHC project. Much progress had been achieved but a few major outstanding matters had still to be resolved, where a convergence of views had not yet been achieved among some delegations. No great obstacle was foreseen but some additional effort and time was needed to reach a satisfactory conclusion. The meetings had produced the conviction that LHC was not only the project most suitable for CERN and European high-energy physics generally, but also for a large proportion of high-energy physicists worldwide. CERN was now ready to have precise discussions with its potential non-European partners, many of whom, he was happy to note, were attending the present Council session.

Council took note of the oral report by the President.

5. PROGRESS REPORTS PRESENTED TO COUNCIL

(Item 5 of the Agenda) (CERN/2043)

The PRESIDENT introduced the document.

The Council took note of document CERN/2043.

6. SPANISH CONTRIBUTION

(Item 6 of the Agenda) (CERN/2054)

The PRESIDENT reported that the discussions between representatives of CERN and the government of Spain had now been completed. The compromise agreement reached had been hard to achieve but was finally ready to be implemented. The formal Resolution in document CERN/2054 was needed to give effect to it.

Dr STRUB thanked the CERN Management and President for their efforts. His delegation knew how difficult it had been to reach a compromise, and was ready to support the Resolution in order to assist Spain whose problems his delegation was aware of and could sympathize with. However, its vote in favour had to be conditional on Spain's compliance with the steps specified in subparagraph (a) of the operative part of the Resolution. Once they had been taken the reservation would be dropped.

Professor LOPEZ expressed his gratitude for the appreciation shown by Council for Spain's difficulties, which he hoped were temporary. The problem had been studied by the Spanish Cabinet, which had backed all the points in the document to be voted on. The payment of the debt would satisfactorily solve the problem without detriment to the Organization since the latter would receive the whole amount corresponding to the non-payment of contributions for the years 1992-94 through the bank loan to be paid off by the Kingdom of Spain. In the coming week an officer of the Budget Office of the Spanish Ministry of Finance would visit CERN to settle the finer technical details so as to comply totally with the provisions of paragraph (a).

One aspect of the agreement related to Spain's need to improve its domestic high-energy programmes and infrastructure in order to avoid a recurrence of the same difficulties in years to come. As part of his government's formal commitment to the agreement, Spain's scientific research authorities were examining specific measures such as the establishment of a National Institute for High-Energy Physics, to provide backing for research in the universities and laboratories which at present often lacked technical and applied resources. It would assist existing and new experimental groups with funds, personnel and technical support, and would promote links with the industrial sector, and generally coordinate all activities relating to high-energy physics. Council would

be kept informed of the progress of the measures. There were many problems along the way and the Spanish community was scientifically and technologically too weak to tackle them all at once. The most urgent need was to settle the relationship with CERN so as to ensure the problem of the Spanish contribution did not recur. His country was striving to be a fully active member of CERN and carry out its obligations but also needed to be able to obtain good scientific and industrial return on its contribution.

The PRESIDENT recalled that the arrangements made could only come into force if they were accepted unanimously. However, a conditional vote in favour did not infringe that unanimity so long as the condition was subsequently waived.

Council unanimously adopted, by 18 votes in favour and one vote in favour *ad referendum* (Germany) the Draft Resolution concerning the Spanish contribution to CERN (CERN/2054) and further took note that the German delegation would lift its reservation once all the stages specified in paragraph a) of the document had been completed.

7. ACCOUNTS FOR 1993

(Item 7 of the Agenda)

- Accounts for the Financial Year 1993
(CERN/2040 – CERN/FC/3696)
- Auditors' Report on the Accounts of the European Organization for Nuclear Research (CERN) for the Financial Year 1993
(CERN/FC/3697)
- Auditors' Report for the Financial Year 1993 – Comments by the Management
(CERN/FC/3698)

Dr BRANDT, speaking as Chairman of the Finance Committee, reported that the latter body unanimously recommended to Council adoption of the accounts and expressed its appreciation for the work of CERN. In that regard, he wished to quote from page 1 of the Auditor's Report: "The financial problems

remained during 1993. Nevertheless, as a result of sound and prudent management the financial situation has improved." An informal meeting with the external auditors had been held the day before the Finance Committee meeting and had been attended by a number of delegations. Items discussed had included consolidation, industrial support and outstanding commitments. A full report of the discussions had been given to the Finance Committee.

Mrs LIEN said she would like to emphasize that as it was the first year of the present External Auditors' term of office, it had been essential for them to learn the budgeting and accounting systems of the Organization and acquire a more comprehensive knowledge of its *modus operandi* in order to have the right groundwork for carrying out their duties. They were satisfied that their remarks had been listened to by the Management constructively and positively. She expressed her gratitude for the help and support afforded to the Auditors by the Management's representatives, the Chairman of the Finance Committee, the Head of the Internal Audit, and the CERN staff they had come in contact with.

Council took note of documents CERN/FC/3697 and CERN/FC/3698 and, on the recommendation of the Finance Committee, unanimously decided to approve the Accounts for the 1993 financial year set out in document CERN/2040– CERN/FC/3696.

8. CERN PENSION FUND

(Item 8 of the Agenda)

- Annual Report 1993 of the CERN Pension Fund
(CERN/2042 – CERN/FC/3702)
- Report on the Audit of the Accounts of the Pension Fund of the European Organization for Nuclear Research (CERN) for the Financial Year 1993
(CERN/FC/3703)

- Report on the Audit of the Accounts of the Pension Fund of the European Organization for Nuclear Research (CERN) for the Financial Year 1993 – Comments by the Administration of the Fund
(CERN/FC/3704)

Mr CUÉNOUD introduced documents CERN/2042 – CERN/FC/3702 and CERN/FC/3704².

Mrs LIEN introduced document CERN/FC/3703.

Dr BRANDT reported that the Finance Committee had congratulated the Administrator of the Pension Fund and unanimously recommended to Council approval of the Annual Report and Accounts of the CERN Pension Fund.

Council took note of documents CERN/FC/3703 and CERN/FC/3704 and, on the recommendation of the Finance Committee, unanimously decided to approve the Annual Report of the Pension Fund for the 1993 financial year set out in document CERN/2042 – CERN/FC/3702.

9. PROPOSAL FOR NEW STAFF EMPLOYMENT CONTRACTS
(Item 9 of the Agenda) (CERN/FC/3701 – CERN/2041)

Dr BRANDT reported that the Finance Committee had recommended to Council that it should approve the proposals set out in document CERN/FC/3701 - CERN/2041 on the understanding a) that implementation of that decision would require a further decision by the Finance Committee concerning approval of the appropriate amendments to the Staff Regulations and a further recommendation by the Finance Committee to the Council to approve the modifications to the Staff Rules and b) that delegations to the Finance Committee would submit any written comments on the proposals to the Chairman of the Finance Committee as soon as possible.

It was so decided.

² See Annex 2.

10. PROPOSAL FOR A NEW DEFINITION OF CATEGORIES OF MEMBERS OF THE PERSONNEL

(Item 10 of the Agenda) (CERN/FC/3710 – CERN/2047)

Dr BRANDT reported that the Finance Committee had recommended to Council that it should approve the proposals set out in document CERN/FC/3710 - CERN/2047 on the understanding a) that implementation of that decision would require a further decision by the Finance Committee concerning approval of the appropriate amendments to the Staff Regulations and a further recommendation by the Finance Committee to the Council to approve the modifications to the Staff Rules and b) that delegations to the Finance Committee would submit any written comments on the proposals to the Chairman of the Finance Committee as soon as possible.

It was so decided.

11. PROPOSAL TO CREATE A SPECIAL CATEGORY OF ASSOCIATED MEMBERS OF THE PERSONNEL CALLED "PROJECT ASSOCIATES"

(Item 11 of the Agenda) (CERN/FC/3711 – CERN/2048)

Dr BRANDT reported that the Finance Committee had recommended to Council that it should approve the proposal set out in document CERN/FC/3711 - CERN/2048 on the understanding a) that implementation of that decision would require a further decision by the Finance Committee concerning approval of the appropriate amendments to the Staff Regulations and a further recommendation by the Finance Committee to the Council to approve the modifications to the Staff Rules and b) that delegations to the Finance Committee would submit any written comments on the proposals to the Chairman of the Finance Committee as soon as possible.

It was so decided.

12. REPORT FROM THE RESTRICTED TRIPARTITE GROUP ON THE REMUNERATION AND EMPLOYMENT CONDITIONS OF CERN STAFF

(Item 12 of the Agenda) (CERN/RTG/8)

Mr WALSH introduced the document.

The PRESIDENT stressed the importance of having a forum for discussion with the CERN personnel, which the Tripartite Employment Conditions Forum (TREF) would provide. It was a good proposal which had been well accepted by the CERN staff.

Mr VERNET said that as the matter had been pending for such a long time, his delegation wished to support the proposal, which represented a compromise. However, his delegation's fears still persisted: a consultative body in which all Member States were represented ran the risk that though delegations might adopt one position in TREF they might receive different instructions for discussions of the same matter at Council or its committees.

On the recommendation of the Finance Committee, Council unanimously decided to approve the report of the Restricted Tripartite Group on the Remuneration and Employment Conditions of CERN Staff set out in document CERN/RTG/8 provided that:

a) the European Molecular Biology Laboratory (EMBL) was included in the list of organizations to be approached for data given in paragraph 2 (iv) of the document; and

b) paragraph 4 (iv) of the document was amended to read:

"(iv) Conciliation mechanism: If an amended proposal submitted following the procedure outlined in paragraph 4 (iii) is again rejected by Council, Council *could* ask a restricted tripartite group, chaired by the Chairman of TREF and composed of three members of Council or of the Finance Committee, three representatives from the Management and three representatives from the Staff Association, to study the matter and to make a recommendation to Council through Finance Committee."

On the recommendation of the Finance Committee, Council also unanimously decided to adopt the resolution set out in Annex C concerning the creation and terms of reference of the Tripartite Employment Conditions Forum (TREF).

Council further unanimously decided to appoint Mr Walsh Chairman and Mr Bezemer Vice-Chairman of TREF.

13. THE SCIENTIFIC ACTIVITIES OF CERN AND BUDGET ESTIMATES FOR THE YEARS 1995-1998

(Item 13 of the Agenda) (CERN/SPC/685 – CERN/FC/3695)

The DIRECTOR-GENERAL introduced the document and provided additional information³.

Dr WOLF, Chairman of the Scientific Policy Committee, said that the long-range plan presented by the Director-General contained two main components: completion and exploitation of LEP2, and construction of LHC. To build LHC with the available resources, staff would have to be reduced substantially and personnel and budgetary resources shifted to the LHC project. The Scientific Policy Committee had discussed and agreed to the plan because with LEP2 and subsequently LHC, physics would be able to make great progress.

Dr BRANDT reported that the Finance Committee had decided, by 18 votes in favour and one against (Germany), to recommend Council to approve a firm budget estimate for 1994 of 918.7 MCHF, in accordance with Tables 8 and 9 of document CERN/SPC/685 – CERN/FC/3695, on the understanding that if the estimated amounts for other income were not achieved, Member States' contributions would not be affected. Moreover, in the light of the decision concerning the Spanish contribution taken by Council under Item 6 of the Agenda, there was no need for further adjustment of the Budget for 1995.

The Finance Committee had also taken note of the provisional budget estimates for the years 1996-1998 on the understanding that any subsequent decisions by Council concerning the LHC project and Member State contributions

³ See Annex 3.

might lead to a need to recalculate the data. The German delegation had also argued that the Finnish contribution, which would reach its full level in 1995, should be used to decrease the contributions of the other Member States. That interpretation, after consultation with CERN's legal adviser, had not been accepted by the other Member States, who had all voted in favour of the Management proposal.

Taking note of the recommendation of the Finance Committee, Council unanimously decided:

- (a) to approve the global figures proposed for 1995 as set out in Tables 8 and 9 of the document CERN/SPC/685 – CERN/FC/3695 on the understanding that if the estimated amounts for other income were not achieved Member States' contributions would not be affected;
- (b) to take note of the provisional determinations for 1996, 1997 and 1998 set out in the document on the understanding that any subsequent decisions by Council concerning the LHC project and Member State contributions might lead to a recalculation of the data.

14. PRELIMINARY INFORMATION ON THE COST-VARIATION INDEX FOR 1995

(Item 14 of the Agenda) (CERN/FC/3699)

Dr WEBER introduced the document.

Dr BRANDT said that the Finance Committee had taken note of the document without comment.

The Council took note of the preliminary information set out in document CERN/FC/3699.

The meeting was adjourned at 11.35 a.m. and resumed at 12.05 p.m.

15. LHC MATTERS

(Item 15 of the Agenda)

- The Large Hadron Collider Project
(CERN/2039)
- Resolution concerning the Large Hadron Collider and the Long-term Scientific Programme of CERN, Adopted at the 99th Session of the CERN Council on 15 April 1994
(CERN/2036)

The DIRECTOR-GENERAL, presenting documents CERN/2039 and CERN/2036, provided additional information⁴. Prefacing his remarks by saying that he stood on the shoulders of giants and that CERN was at the threshold of a momentous decision for its future and that of world particle physics, he pointed out that the LHC project was the result of many years of work by numerous people, in which he personally had played a relatively small part. The idea of putting a hadron machine in the LEP tunnel had been first proposed in 1977 by the late Sir John Adams, four years before the approval of LEP, then still a dream for the distant future. Professor Carlo Rubbia had later been responsible for convincing the HEP community that LHC was the correct next step for CERN and for particle physics, and a great debt was also owed to Dr Giorgio Brianti and his team for producing the design presented to Council in December, and to the team led by Dr Lyndon Evans which had now taken it over. He therefore wished to pay tribute to all those whose work he had the honour of presenting.

In conclusion, LHC had been a part of CERN's planning for over fifteen years. Workshops and reviews during the last decade had shown without a doubt that it offered outstanding physics opportunities, and it was now agreed that it was the logical and most cost-effective next step forward for world particle physics. According to the External Review Committee, its design, costing and schedule were sound, and it had now been established that LHC experiments could use the unprecedented high luminosity that would be produced by the machine. Thus LHC was indeed, in the words of the Council Resolution of December 1991, "the right machine for the advance of the subject and the future of CERN." Therefore, on behalf of the CERN staff, the European and, indeed, the

⁴ See Annex 4.

world particle physics community, he urged Council to approve the project by passing Resolution CERN 2039(a), and to extend the Bannier procedure by passing Resolution CERN 2039(b), thereby opening up the TeV frontier and the exciting new physics expected from it.

Applause

The President invited the observers to comment.

Mr NEWMAN remarked that the European Union enthusiastically encouraged the approval of LHC as a project of the highest interest and importance for High Energy Physics.

Dr ASTBURY, representing Canada, said that he also strongly supported the Director-General in his request for rapid LHC approval. In the light of the Canadian High Energy Physics review scheduled for 21 July, which was expected to produce some very strong indications concerning the Canadian contribution to LHC, it was important that it be perceived as an approved and ongoing project.

Dr O'FALLON stated that the recent report by the HEPAP Sub-panel chaired by Professor Drell, enthusiastically recommending the United States' support for and involvement in LHC, had been very well received by Congress, the Department of Energy and the United States High Energy Physics community. The Director of the Office of Energy Research, Dr Krebs - shortly to visit CERN - had made a presentation to Congress setting out the Department of Energy's favourable reaction to the report, which had also been given an enthusiastic reception. Shortly thereafter Congress had taken the almost unprecedented step of increasing the requested 1995 Budget by 25 million dollars, representing a very significant change in attitude towards high energy physics in the United States after the low-point of the SSC cancellation. It would be highly unfortunate if delays in the LHC approval procedure were to dampen that new-found positive momentum, which he hoped would be used to its best effect in launching negotiations and securing a cooperation agreement between CERN and the United States Department of Energy as soon as possible.

Professor BHAWALKAR reported that the Indian scientific community strongly supported LHC and was looking forward with great enthusiasm to participating in it. The project had been discussed at the highest levels in India and had the full backing of the Indian government.

Professor SKRINSKY, stressing that the Russian authorities and high-energy physics community were committed to strong participation in the construction and future use of LHC, confirmed that Russia's contribution would be substantial, with indications of a net total of some 50 million dollars. However, rapid approval of the project and finalization of the practical details of the collaboration were essential to sustain momentum.

Dr SCHNITZER said that the Israeli scientific and high energy-physics communities were highly enthusiastic about LHC and looked forward to the 1995 negotiations mentioned by the Director-General regarding their participation in the programme.

The PRESIDENT thanked the observers for their valuable remarks and encouragement and said that he noted with great interest their statements of intention to participate in the project.

On the PRESIDENT's proposal it was agreed to proceed to Items 16, 17 and 18 of the Closed Session and to resume in Open Session with a full discussion of LHC Matters after lunch.

The meeting was adjourned in open session at 12.55 p.m. and immediately resumed in closed session.

16. ELECTIONS

(Item 16 of the Agenda) (Closed Session)

- Composition of the Scientific Policy Committee
Appointment of one New Member
(CERN/SPC/687 – CERN/CC/2044) (Confidential)

On the recommendation of the Scientific Policy Committee, Council unanimously decided to appoint Professor R. Barbieri member of the Scientific Policy Committee for a period of three years from 1st July 1994.

Following a request by the Scientific Policy Committee for an increase in its membership by one, Council, after some discussion and on the proposal of the Dutch delegation, decided to enlarge the Scientific Policy Committee by two members in view of its increasing workload with the accession of new Member States and the possible strong involvement of non-Member State physicists in LHC.

- Re-election of one of the Vice-Presidents

Council unanimously decided to re-elect Mr J. Bezemer Vice-President of Council for a third period of one year from 1st July 1994.

17. SENIOR STAFF APPOINTMENTS

(Item 17 of the Agenda) (CERN/SPC/689 – CERN/CC/2045) (Confidential)
(Closed Session)

- Appointment of a Division Leader

Council unanimously decided to appoint Dr M. Turala Leader of the Electronics and Computing for Physics Division for a period of three years from 1st January 1995.

- Re-appointment of a Division Leader

Council unanimously decided to re-appoint Dr D.O. Williams Leader of the Computing and Networks Division for two years from 1st January 1995.

- Appointment of LHC Project Leader

Council unanimously decided to appoint Dr L. Evans as LHC Project Leader, subject to approval of LHC.

18. SENIOR STAFF PROMOTIONS

(Item 18 of the Agenda) (CERN/SPC/688 – CERN/CC/2046) (Confidential)
(Closed Session)

Council, on the recommendation of the Scientific Policy Committee and the Committee of Council, unanimously approved the promotions of Dr B. de Raad and Dr K. Winter to Grade 14.

The meeting was adjourned in Closed Session at 1.40 p.m. and resumed in Open Session at 3.10 p.m.

19. REPORT ON THE CLOSED SESSION

(Item 19 of the Agenda)

The DIRECTOR-GENERAL reported on the decisions taken during the Closed Session (see Items 16, 17 and 18).

Concerning senior staff promotions he added that Dr de Raad, who had been at CERN since its creation forty years ago, had done a magnificent job throughout his long career in the accelerator sector and fully deserved his promotion to CERN's highest grade. He was equally delighted by the promotion of Dr Winter, also a long-serving member of the Organization, who had been involved in the discovery of pi-beta-decay, one of the first major discoveries at CERN, had subsequently led the Charm-2 experiment and was now in charge of Chorus, one of CERN's most exciting experiments for the future.

Applause.

20. LHC MATTERS

(Item 15 of the Agenda) (Contd.)

The PRESIDENT invited comments on the scientific and technical aspects of the project arising from the Director-General's earlier presentation.

Dr WOLF said that the Scientific Policy Committee was convinced of LHC's vital importance for CERN and for particle physics in general. It therefore strongly recommended Council's rapid approval of the project and wished to request that adequate funding be made available for its construction within the recommended time schedule.

Professor FLÜGGE, Chairman of the European Committee for Future Accelerators, referring to the tabled ECFA Statement on the Large Hadron Collider and the Long-term Scientific Programme of CERN (document ECFA/94/162), said that ECFA was convinced by the physics case for a high-luminosity multi-TeV hadron collider and stressed the fact that, if built in the existing LEP tunnel, LHC was the most cost-effective way of reaching the declared physics goals. ECFA supported the Management's strategy to focus the long-term future of the Laboratory on the scientific programme of LHC and considered that, together with the ongoing experimental programme, and in particular LEP2, it would provide an excellent and unique scientific programme during the coming decades. The Committee stressed in particular its strong conviction that CERN had been and would continue, with LHC approval, to be a unique asset to European and world particle physics. In the light of the above considerations, it therefore fully supported the LHC project and strongly recommended its approval by Council as soon as possible.

The PRESIDENT said that the statements of the Chairmen of the SPC and ECFA and the earlier remarks by the observers were a good reflection of the hopes that physicists, scientists and engineers around the world were placing in LHC.

Professor MAIANI, congratulating the Director-General on his excellent work and clear presentation, said that the Italian delegation considered that LHC was both a great scientific undertaking of tremendous value and an impressive technological challenge. At that point in its history CERN had a universal responsibility to the advance of particle physics at the high energy frontier, and

there was a good chance that LHC would be the first example of a global enterprise with significant support from non-European and non-Member States. Italy was therefore fully convinced that the time was right for LHC approval and wholeheartedly looked forward to it.

Professor SOERGEL said that the German delegation also considered that LHC was the right project for CERN and for a great future of world-wide scientific collaboration, and having heard the very positive statements at the morning's discussion was quite convinced that approval would be given. As recently demonstrated at Fermilab with the observation of the top quark, proton-proton collisions had tremendous potential, and CERN could therefore look forward to some very rich physics from LHC.

Professor PUNGOR said that the Hungarian delegation was also convinced that LHC represented a tremendous step forward in particle physics, and therefore strongly encouraged the idea of further discussions to resolve the remaining financial problems so that the project's final approval could be secured.

The PRESIDENT, summing up, said that he had been delighted to hear the very positive remarks of all those who had spoken, and that their impatience to see the first results of the new machine in the next few years was shared by all. The financial and administrative details, including the funding schedule and the comprehensive review to be carried out before the end of 1997, had now been discussed at length by the Scientific Policy Committee, the Finance Committee, the Committee of Council and Council. Member-State governments were all very aware of the need to resolve the few outstanding questions at the earliest possible opportunity and so bring the discussions to a successful conclusion.

In accordance with the resolution adopted by Council at its Ninety-ninth Session to move to a decision to approve LHC during the first half of 1994, it was important to ensure a positive and, if possible, unanimous decision as soon as possible. He therefore proposed to open the voting procedure on the adoption of the Draft Resolution set out in Annex I of document CERN/2039 - leaving aside provisionally the amendments and additions to the preamble proposed at the Committee of Council - and to leave the Hundredth Session of Council open until all votes had been cast, to allow any delegations who still had difficulties the time to resolve them, either internally or in discussion with the other

delegations. He could schedule a follow-up session for an early date. That procedure would also provide the observers from the non-Member States with a good indication of the Organization's position.

Council took note of document CERN/2036 and, on the proposal of the PRESIDENT, thus agreed:

1. to open the voting procedure on the adoption of the Draft Resolution concerning approval of the Large Hadron Collider (LHC) Project set out in Annex I (CERN/2039(a)) of document CERN/2039;
2. not to close the Hundredth Session of Council until all delegations had registered their votes on the Resolution, pending the outcome of further discussion and decisions on the financial arrangements for the project.
3. that the voting procedure now open could be closed at the second part of the Session, preferably in July 1994 or, if necessary, in September 1994 at the latest.

H.E. Mr BALDOCCI said that the Italian delegation was fully convinced of the case for LHC and, as the session remained open, wished to cast a vote in favour of the resolution *ad referendum* to ensure that the Italian authorities were aware of the whole context.

Mr BEZEMER said that the Netherlands government was prepared to support the LHC project as defined by the CERN Management. Although, to his regret, his delegation's vote in favour had to be *conditional* on certain issues, such as the support of all four major Member States and substantial supplementary contributions from the two Host States, in which respect it had understanding for the positions of the German and United Kingdom delegations, he was confident that both conditions were well on the way to being satisfied and that the Netherlands delegation would thus be able to waive its condition in the very near future.

Dr GUSTAVSSON, Professor GRAUE and Mr BELLO stated that their respective delegations' positive vote was *conditional* on consensus being reached.

Professor SOSNOWSKI stated that the Polish delegation approved the draft resolution and hoped that it would receive the approval of all Member States.

Professor LOPEZ observed that the few remaining issues to be resolved were quite small compared to the calibre and importance for the Organization of the whole project and the Spanish delegation was therefore ready to vote in favour of the resolution.

Council then declared open the voting procedure on the Draft Resolution concerning approval of the Large Hadron Collider (LHC) Project set out in Annex I (CERN/2039(a)).

Seventeen delegations (Austria, Belgium, Czech Republic, Denmark, Finland, France, Greece, Hungary, Italy*, the Netherlands*, Norway*, Poland, Portugal*, Slovak Republic, Spain, Sweden* and Switzerland) voted in favour.

Council further took note of the statements by the Italian, Netherlands, Norwegian, Portuguese and Swedish delegations relating to their *ad referendum* condition.

Mr RITZEMA, explaining why his delegation had not yet formally registered its vote, emphasized that the United Kingdom was a keen supporter of the LHC project, which enjoyed the strongest possible enthusiasm and backing in the domestic HEP community. LHC was the top priority project of the Particle Physics and Astronomy Research Council, which was why his delegation had voted in favour of the April resolution, expressing its commitment to it. However, it preferred to wait until the few outstanding financial questions referred to by the President and the Netherlands delegation had been resolved before voting on all the issues together and was keen to do so as early as July if all the necessary information were available and a convenient date could be arranged.

Dr STRUB said that the LHC project was of the highest importance for the German physics community, which was why his delegation also had voted in favour of the April resolution. It continued to consider the project vital to the advance of science and would therefore make every effort - as it hoped the other countries concerned would also do - to resolve the remaining difficulties, together with the CERN Management. The German delegation was convinced

* *ad referendum*

that the financial issues referred to by the Netherlands delegation and left open by the President of Council merited the joint effort required to resolve the remaining problems so that the necessary votes on the whole matter could be taken in the second part of the session, which should be convened at the earliest convenient moment.

Mrs SODE-MOGENSEN, supporting the remarks of the German and United Kingdom delegations concerning the outstanding issues, agreed that the necessary negotiations should be held as soon as possible, and strongly recommended that the second half of the meeting should take place earlier than September.

Mr BEZEMER and Professor PUNGOR said that they wished to be associated with the remarks of the Danish delegation.

The PRESIDENT said that he noted with appreciation the delegations' opinions, encouragement and advice.

21. OTHER BUSINESS

(Item 20 of the Agenda)

- Report on the recent HEP exhibition in Portugal

Mr BELLO stated that the joint ESO-CERN exhibition, which had ended on 12 June, had been a very successful and major event within the Lisbon 1994 European Capital of Culture programme, providing thousands of visitors every day with an opportunity to acquaint themselves with the research achievements of ESO and CERN and, most importantly, with future scientific ventures like LHC and the VLT. Portugal had been privileged to host the exhibition and, on behalf of the Portuguese Minister of Science and the President of the Lisbon 1994 Committee, he wished to thank the Director-General and CERN for having made the exhibition possible and to congratulate CERN on its successful participation in the opening ceremony.

The PRESIDENT, thanking and congratulating Mr Bello and his colleagues on their efforts to ensure the exhibition's success, said that the support of public opinion for fundamental research was essential, particularly in view of the

significant financial investments that were required. Scientists must always be conscious of the need to prove its importance to humanity and to the general progress of mankind, and major exhibitions like this were a good example of how that could be done.

- Retirement of Dr J. Ellis as Leader of the Theoretical Physics Division

The DIRECTOR-GENERAL reminded Council that after six years Dr Ellis would retire as Leader of the Theoretical Physics Division on 1st July 1994. Dr Ellis had led his Division with characteristic verve and style and, on behalf of the current and previous CERN Managements and, indeed, of the theoretical particle physics community of Europe, he wished to extend to him his sincerest thanks.

Applause.

- End of the term of office of Professor W. Hoogland as Director of Research

The DIRECTOR-GENERAL said that in his five years as Director of Research Professor Hoogland had played a very important role at CERN, both in its changing relations with the non-Member States, some of whom had become Member States during his time in office, and in many different areas of activity within the Organization itself. It was largely thanks to Professor Hoogland's drive and vision, in setting up various workshops, in developing the detector R&D programme and in organising the appropriate framework, that the LHC experimental programme had now reached the stage where it was ready to start building the experiments and to use the very high luminosity expected from the machine. On behalf of his predecessor, Professor Rubbia, and himself, he therefore wished to thank him for all his work for the Organization and looked forward to his continued assistance in certain non-Member State matters.

Applause.

- End of the term of office of Dr P. Darriulat as Director of Research

The DIRECTOR-GENERAL said that Dr Darriulat had made a tremendous contribution to the work of the Organization in his role of Director of Research since 1987, not only in his excellent guidance of the various parts of the research programme but in many other areas within CERN, including personnel affairs.

With his great wisdom and excellent knowledge of the Organization Dr Darriulat had also provided invaluable support and advice to him personally as a new Director-General, and would continue to do so in future, when he would undoubtedly be called upon to play a role as trouble-shooter for special tasks, and as adviser in forthcoming discussions with the United States Department of Energy. He therefore wished to extend to him both his personal gratitude and the warmest thanks of CERN and the European and world High-Energy Physics community for all that he had done.

Applause.

Mr BEZEMER said that the Netherlands delegation had greatly appreciated the excellent work of Professor Hoogland and Dr Darriulat, who would be sorely missed by Council and its committees. He looked forward to their continued services to the Organization in their new capacities.

Applause.

Dr DARRIULAT said that prior to his appointment as Director of Research seven years earlier he had served on the Long-range Planning Committee, which had first recommended the LHC project. It was therefore very rewarding, on his retirement from the Directorate, to hear so many positive votes cast in its favour. He greatly appreciated the kind remarks made on his behalf and wished to thank all those with whom he had worked during his term of office, including the current and previous two Director-Generals.

Applause.

- Last Meeting of four Member-State Delegates

The PRESIDENT said that he wished to thank Dr A. Hansen, Mr A. Balboni, H.E. Mr J. Kubis and Professor A. Donnachie, who were all attending Council for the last time. Dr HANSEN, delegate to the Finance Committee since June 1989, Council and Committee of Council delegate from April and June 1989 respectively until December 1990 and thereafter advisor, was leaving to take up a new post within the German Ministry of Research and Technology. Mr Balboni, Italian adviser to the Finance Committee and Council since October 1989, would take up an important position in Rome in the Italian Ministry for Foreign Affairs. Ambassador Kubis, who had attended the Committee of Council and

Council since 1st January 1993, was retiring as representative of the Slovak Mission to the United Nations Office and the international organizations in Geneva to take up a position at the Conference on Security and Cooperation in Europe in Vienna. Finally, Professor Donnachie, Scientific delegate to Council since October 1989 and member of the Scientific Policy Committee from October 1988 to December 1992, was leaving the United Kingdom delegation. On behalf of Council, he wished them all every success in the future.

Applause.

Mr BEZEMER said that Dr Hansen had been a true supporter and very good friend of the Organization. She would be greatly missed and he hoped that she would find satisfaction in her future assignment.

Applause.

The DIRECTOR GENERAL said that Professor Donnachie had not only been a Council delegate and member of the Scientific Policy Committee but also a long-standing chairman of various experimental committees, who had served CERN in many different ways over the last twenty years. That day marked the end of a very long association with the Organization and, on its behalf, he wished to extend to him his warmest thanks for all that he had done.

Applause.

The meeting was adjourned at 3.55 p.m. on 24 June.

* * *

DRAFT AGENDA OF THE
100TH SESSION OF COUNCIL

CERN/2038
31 May 1994

ORGANISATION EUROPÉENNE POUR LA RECHERCHE NUCLÉAIRE
CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

HUNDREDTH SESSION OF THE COUNCIL

Geneva - 24 June 1994 - 10.00 a.m.

Council Chamber

DRAFT AGENDA

Documents

1. Report of the Credentials Committee
2. Approval of the Draft Minutes of the
Ninety-ninth Session CERN/2035/Draft
3. Adoption of the Agenda CERN/2038
4. President's Report
5. Progress Reports presented to Council CERN/2043
6. Spanish Contribution
7. Accounts for 1993 :
 - Accounts for the Financial Year 1993 CERN/2040
CERN/FC/3696
 - Auditors' Report on the Accounts of the
European Organization for Nuclear Research
(CERN) for the Financial Year 1993 CERN/FC/3697
 - Auditors' Report for the Financial
Year 1993 - Comments by the Management CERN/FC/3698

Documents

- | | | |
|-----|---|------------------------------|
| 8. | CERN Pension Fund : | |
| | - Annual Report 1993
of the CERN Pension Fund | CERN/2042
CERN/FC/3702 |
| | - Report on the Audit of the Accounts
of the Pension Fund of the European
Organization for Nuclear Research (CERN)
for the Financial Year 1993 | CERN/FC/3703 |
| | - Report on the Audit of the Accounts
of the Pension Fund of the European
Organization for Nuclear Research (CERN)
for the Financial Year 1993 - Comments by
the Administration of the Fund | CERN/FC/3704 |
| 9. | Proposal for New Staff Employment Contracts | CERN/FC/3701
CERN/2041 |
| 10. | Proposal for a New Definition of Categories of
Members of the Personnel | CERN/FC/3710
CERN/2047 |
| 11. | Proposal to Create a Special Category of
Associated Members of the Personnel Called
"Project Associates" | CERN/FC/3711
CERN/2048 |
| 12. | Report from the Restricted Tripartite Group
on the Remuneration and Employment
Conditions of CERN Staff | CERN/RTG/8 |
| 13. | The Scientific Activities of CERN and
Budget Estimates for the Years 1995-1998 | CERN/SPC/685
CERN/FC/3695 |
| 14. | Preliminary Information on the
Cost Variation Index for 1995 | CERN/FC/3699 |

Documents

15. LHC Matters :

- The Large Hadron Collider Project CERN/2039
- Resolution concerning the Large Hadron Collider and the Long-term Scientific Programme of CERN, Adopted at the 99th Session of the CERN Council on 15 April 1994. CERN/2036

* * *

CLOSED SESSION

16. Elections :

- Composition of the Scientific Policy Committee
Appointment of one New Member CERN/SPC/687
CERN/CC/2044
(Confidential)
- Re-election of one of the Vice-Presidents

17. Senior Staff Appointments

18. Senior Staff Promotions CERN/SPC/688
CERN/CC/2046
(Confidential)

* * * * *

19. Report on the Closed Session

20. Other Business.

* * *

CERN PENSION FUND
ANNUAL REPORT 1993
OF THE CERN PENSION FUND

presented by

C. Cuénoud

Chairman,

Here are some of the some of the salient activities of the Fund which are also of longer-term significance.

On the administrative side, I would point to the continuing reorganization of the Fund's operational structure. In 1993 the improvements to this area resulted in the following:

- internally, a new organizational chart providing a better definition of the units of the Administration of the Fund, their duties and their relationships (see Annex I of the Annual Report);
- externally, the increased use of support of two different kinds:
 - 1) a global custodian to administer all the securities in the portfolio, which has many advantages, such as the monitoring of accounting operations, comparison of the performance of the investment managers and greater security of operations;
 - 2) six new European investment managers, each with a contract for the discretionary management of 50 million Swiss francs, a development which has at a stroke provided the Fund with greater diversification of investments by doubling the proportion of shares in its portfolio and, more importantly, increased the expected performance.

These were strategic decisions taken by the Governing Board with a view to increasing the Fund's long-term security and efficiency of operation.

Of course, with 500 million Swiss francs now under discretionary management by eight investment managers (six new and two of longer standing), the Fund has a duty to monitor closely their work and the risks and results of this policy. Chairman, I can assure you that the Fund, in particular through its Investment Committee, is carefully following the development of each of these portfolios.

As regards the portfolio managed directly by the Fund it can be noted that real-estate investments provide the portfolio with the expected stability of income. A study carried out last year shows that this part of the portfolio made a positive contribution to the average performance of the Fund. However, this type

of investment is not readily convertible into cash and therefore must not represent more than about a quarter of the Fund's total assets. Furthermore, in spite of the acquisition in 1993 of an office building offering a good return, a photograph of which is given in the Annual Report, the percentage of real-estate in the portfolio has remained stable at around 17%.

For the movable assets sector which, as you are aware, constitutes more than half of the portfolio, it can be noted that the financial markets performed excellently in 1993. As a result the Fund achieved an overall performance of 9% according to its own more restrictive criteria. The return achieved in 1993 has brought the Fund slightly closer to the actuarial hypotheses set by the Council. In fact, the 1993 net performance (after deduction of inflation) was 4.3% against the 3% of the actuarial hypothesis. The net performance for the last ten years is 2.8%.

Chairman, the Fund achieved a very satisfactory performance last year. 1994 is already proving to be a more difficult year and we will do our best to ensure its financial balance and to optimise its management, conscious of the fact that as a collective savings body it is our duty to keep one eye on the results and the other alert to the quality of investments and the risks being run.

Thank you Chairman.

THE SCIENTIFIC ACTIVITIES OF CERN AND
BUDGET ESTIMATES FOR THE YEARS 1995-1998:
ADDITIONAL MATERIALS

presented by
the Director-General

SCIENTIFIC ACTIVITIES AND BUDGETS 1995-1998

- **REQUEST**
 - approve 1995 proposals → preliminary draft Budget in September
 - take note of 1996-1998 proposals
(Bannier procedure suspended pending approval of LHC)
- **SCIENTIFIC STRATEGY** - follows December 1993 plan
- **BUDGETARY PROPOSALS AND LHC TIMETABLE**
 - June 1994 → 1995-1998 plan, following April 1994 contingency plan:
 - show LHC viable even if no supplementary contributions
(would → slow-track LHC)
 - plans for 1997, 1998 hypothetical (OK - Bannier suspended)
 - June 1995 → 1996-2000 plan, assuming LHC approved + 5 year Bannier:
 - clearer picture of supplementary contributions
 - expect realistic plan with fast-track LHC

Outline

- **Assumptions on available funds**
- **Scientific Activities**
- **Budgetary proposals**
- **Comparison with December 1993 and April 1994 plans**
- **Conclusions**

Assumptions on income

- 1) Reduction in Spanish contribution 40% in 1994,* 30% in 1995, 15% in 1996, 10% in 1997, 5% in 1998 [now expect ⇒ 40%, 30%, 20%, 15%, 10%]**
- 2) Rebate to Germany will continue in 1997 and 1998 (may not be result of 1996 review)**
- 3) 15MCHF cut made in 1993 will be restored in 1998 and subsequent years (President “understood that budget levels would depend on LHC decision”)**
- 4) Other MS contributions constant (with full materials indexation anticipated): contributions of new MS additive**
- 5) No supplementary contributions (very pessimistic)**

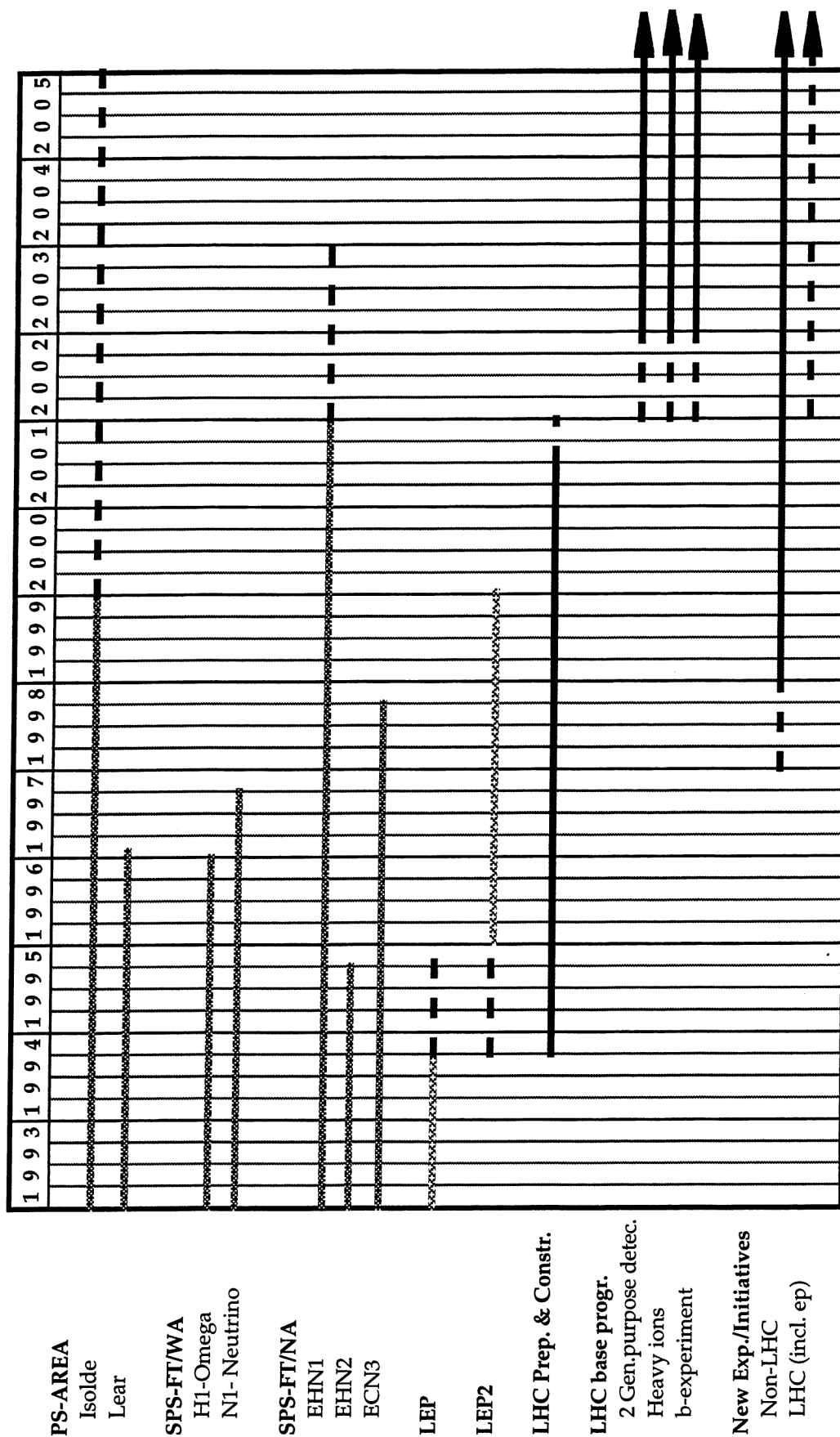
* Cut in 1994 of 27.5MCHF will be dealt with by reductions in exploitation and personnel - possible (but damaging) as allocations cautions in anticipation - and energy, plus use of reserves

**Table 9 - Expected income
(MCHF, 1994 prices)**

	1994	1995	1996	1997	1998
Ordinary contribution from:					
14 Member States ¹	937.5	937.5	937.5	937.5	953.1
- Reduction granted to Germany	-23.4	-23.4	-23.4	-23.4	-23.8
- Possible reduction to Spain	-27.5	-20.7	-10.3	-6.9	-3.5
+ Portugal (to the budget)	1.8	2.9	5.1	5.7	5.8
+ Finland	7.2	7.8	7.8	7.8	7.9
Contribution to the Budget from:					
Poland	1.1	1.1	3.2	5.2	7.3
Czech Republic	0.9	0.9	1.6	2.2	2.9
Slovak Republic	0.4	0.4	0.6	0.8	1.0
Hungary	0.6	1.2	1.9	2.6	3.3
Other income	13.9	11.0	11.0	11.0	11.0
Total	912.5	918.7	935.0	942.5	965.0

¹ Namely : Austria, Belgium, Denmark, France, Germany, Greece, Italy, Netherlands, Norway,
Portugal (Special), Spain, Sweden, Switzerland, United-Kingdom

Figure 1 : MODEL FOR THE SCIENTIFIC PROGRAMME



**Table 8 - Budget estimates
(MCHF, 1994 prices)**

	1995	1996	1997	1998
Personnel budget				
Staff	499.5	505.4	512.0	510.4
	469.1	475.0	481.6	480.0
Basic salaries & allowances	351.4	353.7	357.2	355.4
Social contributions	95.1	96.9	97.8	97.3
Centralized cost ²	22.6	24.4	26.6	27.3
Fellows & Associates	30.4	30.4	30.4	30.4
Materials budget	419.2	429.6	430.5	454.6
For the present basic programme	361.2	345.1	335.0	326.1
For LHC commissioned in 2004	58.0	84.5	95.5	128.5
TOTAL	918.7	935.0	942.5	965.0
Additional funds to restore LHC commissioning		7.5	17.5	111.5
Machine & areas		5.5	14.5	111.0
Detectors		2.0	3.0	0.5
GRAND TOTAL with Add. funds	918.7	942.5	960.0	1076.5

² Annuity for debt to the Pension Fund, compensation for Early departures, contractual termination, indemnities for removal and installation.

COMPARISON WITH DECEMBER 1993 LONG-TERM PLAN AND APRIL 1994 CONTINGENCY PLAN

	<u>December 1993</u>	<u>April 1994</u>	<u>This Plan:</u>
German Contribution	No rebate in 1997 and 1998	No rebate in 1997 and 1998	Rebate in 1997 and 1998 81MCHF
Spanish Contribution	No reduction	No reduction	Reduction of one year's contribution } less income in 1995-98 than in April plan
NMS Contribution	500MCHF Starting with 93M in 1998	None	None
LHC Commissioning	2002	2004	2004

} presumably wrong?

REMARKS: In period 1995-98

- 1) April plan → 152M less spend than December plan
= 93M supplementary income assumed in December + 59M surplus at end of 1998
- 2) June plan → 174M less spend than December plan
= 93M supplementary income assumed in December + 81M less income
- 3) To restore 2002 commissioning now need 137M extra
(total "missing income" increased by 137-93 = 44M + 0.4% materials index loss 1999 onwards)
- 4) June plan has 44M spend carried over beyond 1998 relative to April plan

CONCLUDING REMARKS

8

- Plan
- shows can cope with short/medium term funding problems (major measure = postponement of 44MCHF LHC work)
 - confirms can → LHC with commissioning in 2002 if extra income before 1998
 - confirms can → LHC with commissioning in 2004 if no supplementary income

Now ask ⇒ approve 1995 proposals → preliminary draft Budget in September
⇒ take note of 1996-1998 proposals

THE LARGE HADRON COLLIDER

presented by
the Director-General

THE LARGE HADRON COLLIDER*

- **The Scientific Case for the LHC**
- **The LHC Machine + cost**
- **The LHC Experiments + cost**
- **The LHC and the Long-term Scientific Programme**
- **The role of Non-Member States**
- **Approval of the LHC**

* For further details see the Minutes of the 98th and 99th Sessions of Council.

STANDARD MODEL

fits all (?) data

but is incomplete and -> many questions

2

CONSTITUENTS

- 6 conventional Leptons
- 6 conventional Quarks

↑_top? <- detailed study LHC

- ν masses?

- CP violation in

mass matrix?

↑__ LHC

connection?

why 6?

substructure?

↑__ LHC

unconventional?

↑__ LHC

FORCES

- Strong/nuclear
QCD

- full understanding?

↑__ LHC

quark - gluon plasma?

↑__ LHC

- Electro-weak

- $M_W \neq M_Z \neq M_\gamma = 0$?

Higgs or what?

↑__ LHC

- Gravity

- quantum theory?

Connection?

Supersymmetry?

↑__ LHC

Directors of world's particle physics laboratories + ICFA

- ⇒ “Following the cancellation of the SSC, the LHC now offers the only realistic opportunity to study multi-TeV hadron collisions”
- ⇒ “There are compelling arguments that fundamental new physics will appear in the energy domain that will be opened up by the LHC, including the origin of electroweak symmetry breaking (and hence the origin of mass)”
- ⇒ “The LHC will remain a unique facility for the foreseeable future and ICFA considers that it is now the correct next step for particle physics at the high-energy frontier”
- ⇒ “ICFA urges that appropriate mechanisms and means be found to [bring NMS into the project] and that the LHC be available for research by the world particle physics community”
- ⇒ “ICFA believes that all nations engaged in high-energy physics should join in the construction of major high-energy facilities”

- 1 TeV collisions of quarks and gluons require
 - much higher energy protons, as quarks and gluons carry only small (fluctuating) fractions of this energy
 - very high luminosity \Rightarrow the rare quarks that carry more than a tiny fraction of the proton's energy
- The LHC will be able to do the job



MAIN LHC PARAMETERS (June 1993)

COLLISIONS	p p	Pb Ions
OPERATIONAL ENERGY TeV	14	1148
DIPOLE FIELD (MAX) T	8.65 (9.0)	
LUMINOSITY cm ⁻² s ⁻¹	10 ³⁴	10 ²⁷
LUMINOSITY @ BEAM-BEAM	(2.5 10 ³⁴)	
BUNCH INTERVAL m / ns	7.5 / 25	40.5 / 135
PARTICLES per bunch	10 ¹¹	10 ⁸
PARTICLES per beam	2.8 10 ¹⁴	4.7 10 ¹⁰
NUMBER of EXPERIMENTS	2	1

The LHC

⇒ makes very cost effective use of existing infrastructure

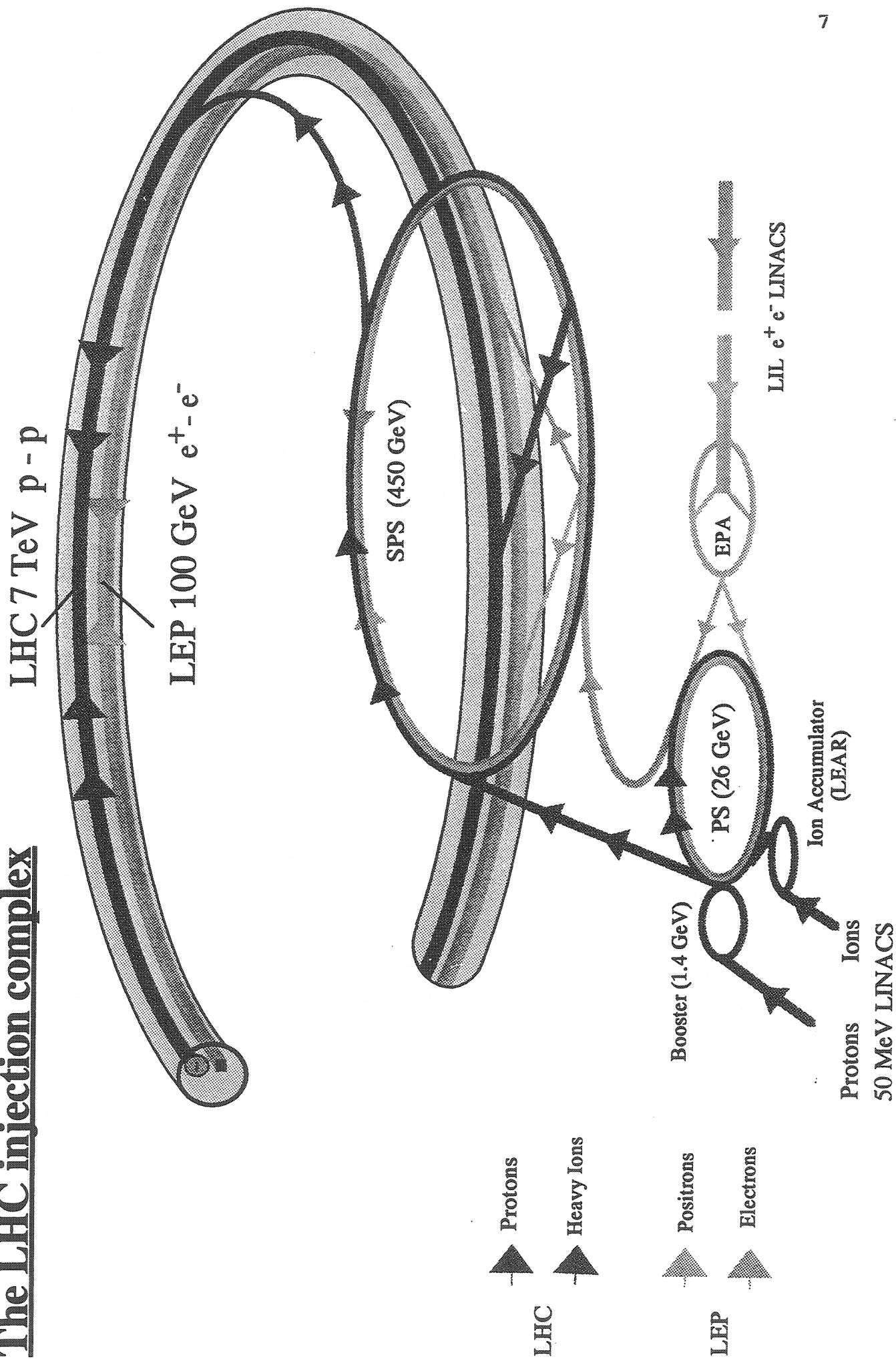


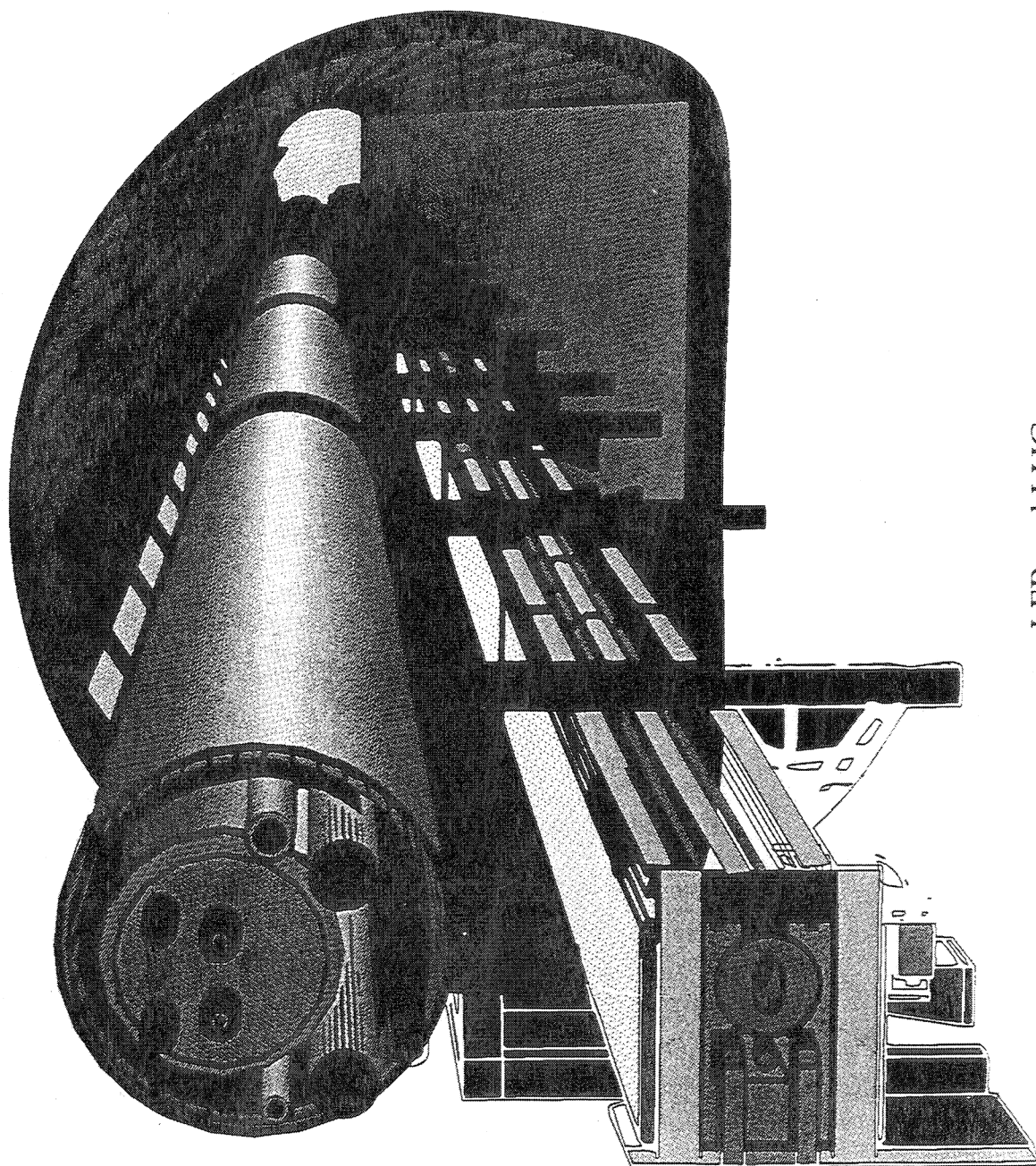
⇒ breaks new ground in

- magnetic field (8.65T)
- 2 in 1 structure
- 1.8K superfluid helium
- luminosity




The LHC injection complex





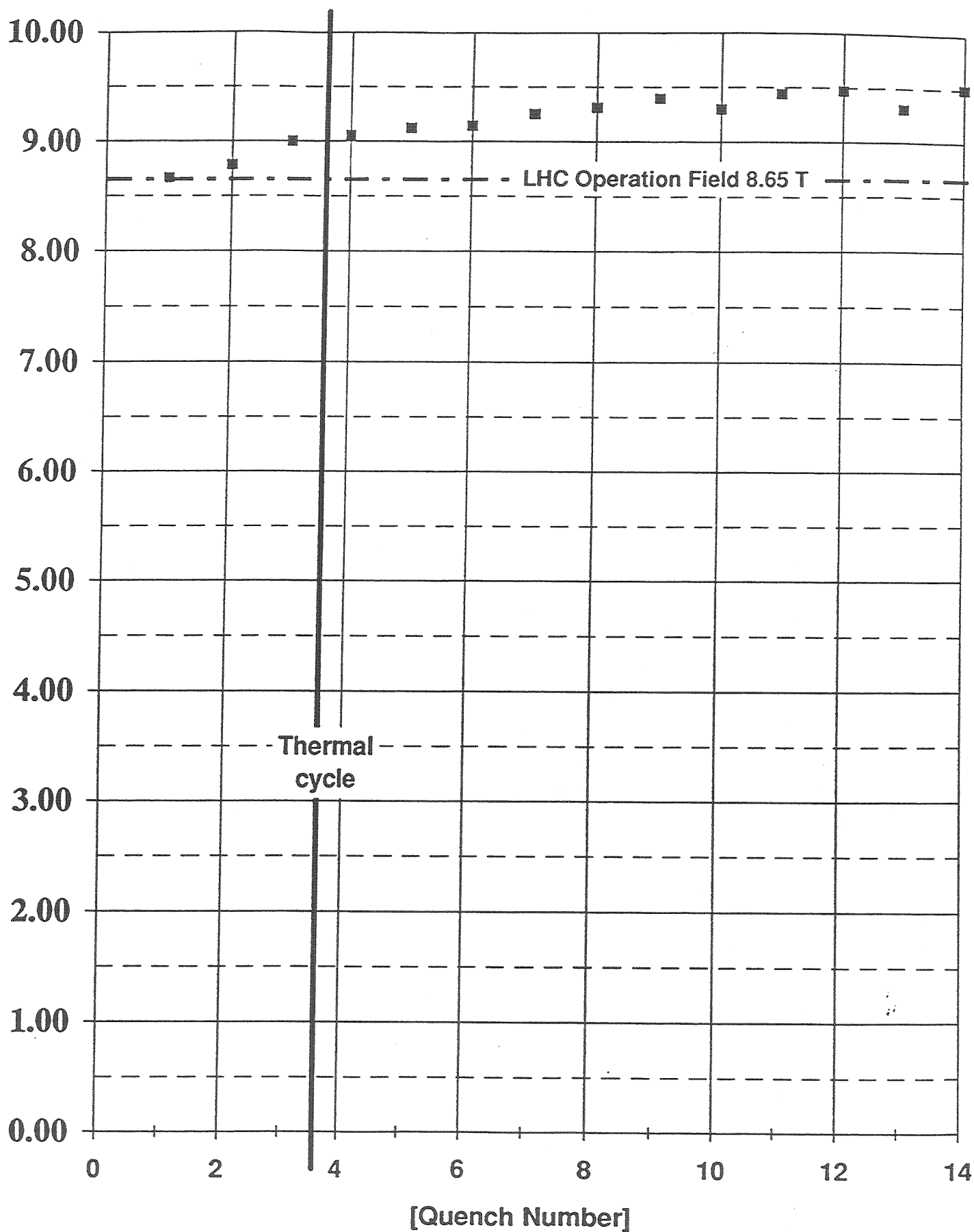
LEP and LHC

LHC COMPONENTS

- **Quadrupoles - exceeded specification last year**
- **Dipoles (the most challenging item)**
 - **External Review (Nov 1993) \Rightarrow “no doubt that [the operational magnetic field of] 8.65T can be achieved” with “an adequate safety margin”**
 - **First long 2 in 1 dipole (made in industry) exceeded the design field before first quench: field quality excellent** 

MBP1I1 - April, June 94

B [T]

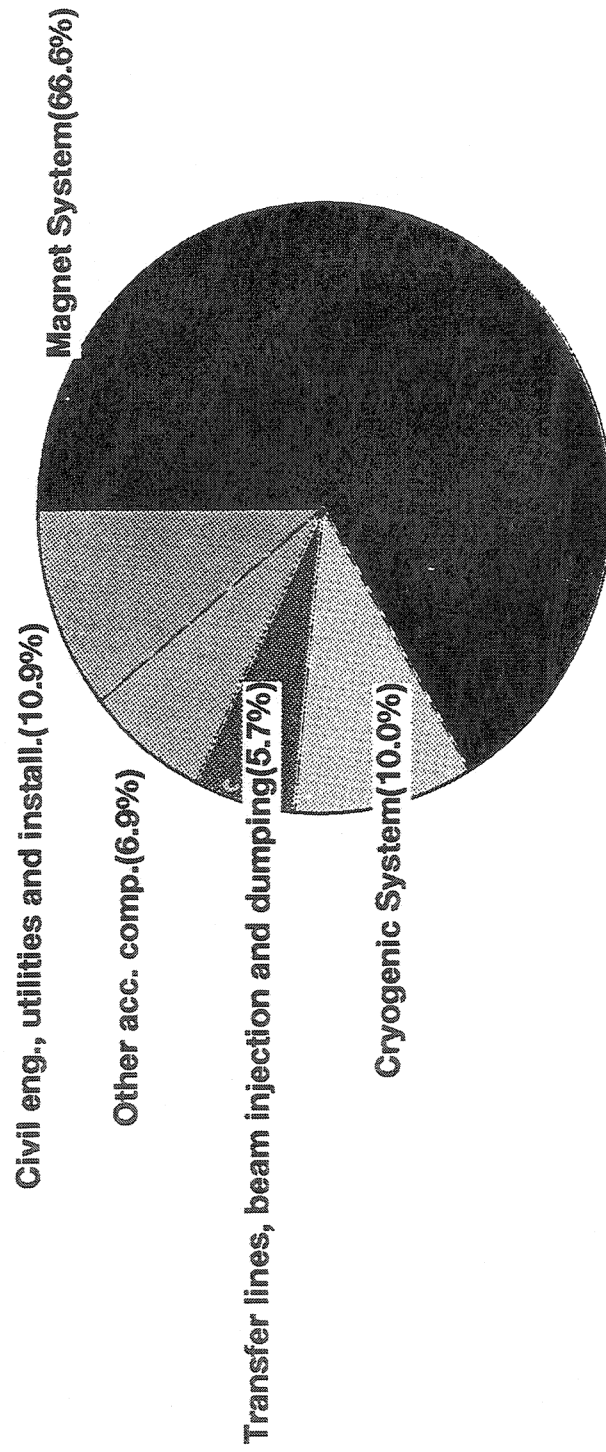


LHC MATERIAL COST

- 2230MCHF (1993) inside which it should be possible to provide for contingency 
- Construction \Rightarrow challenging opportunities for industry

LHC CONSTRUCTION SCHEDULE

- Technically: can \Rightarrow commission in 2002
- If required to go slower by financial situation (e.g. commission in 2004), note that schedules do not diverge until 1998 



Total Machine Cost: 2230 MCHF

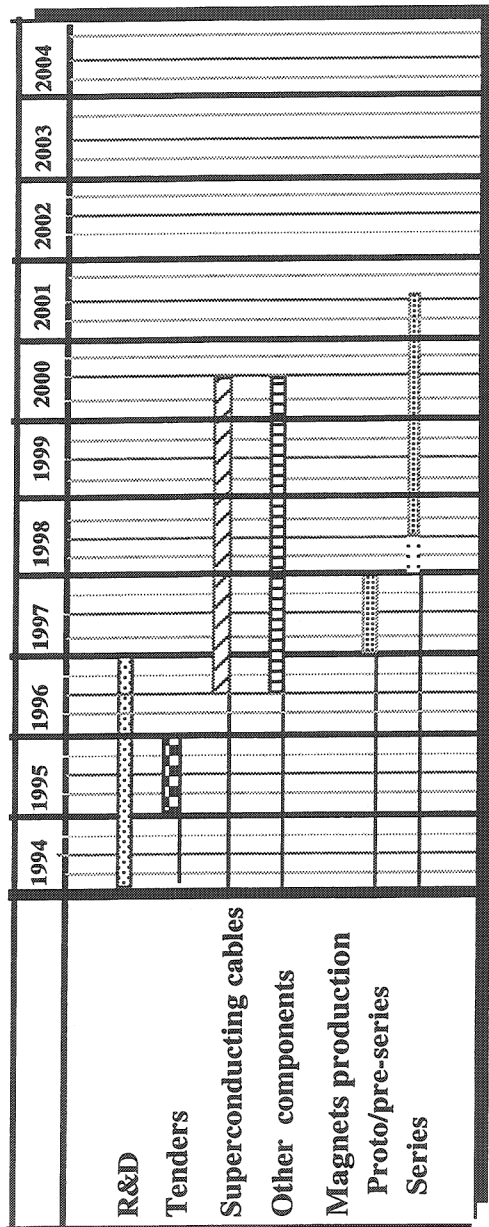


Figure 4 - LHC Dipole fabrication planning - Optimum scenario

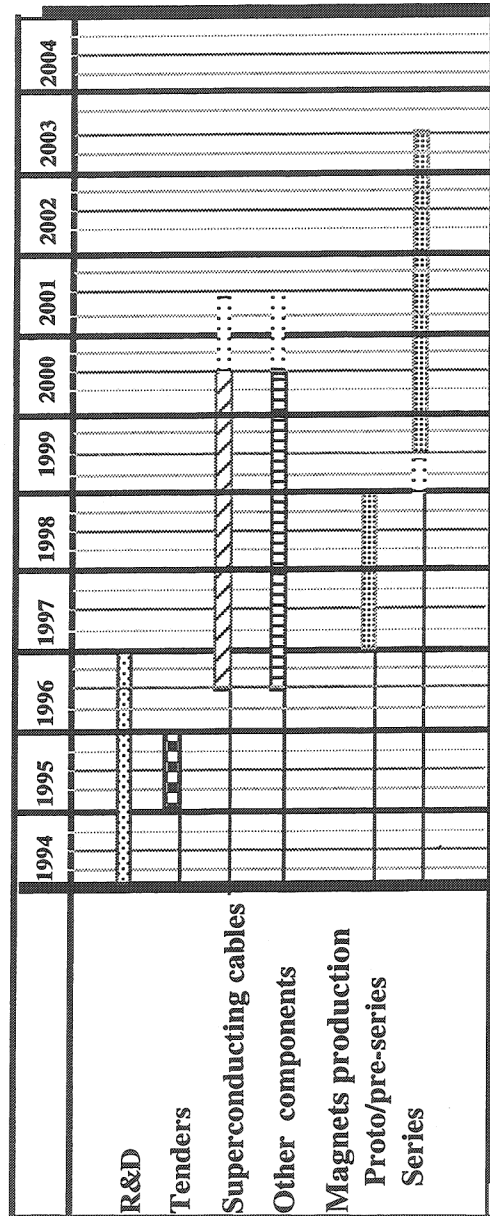


Figure 5 - LHC Dipole fabrication planning - Stretched scenario

THE EXPERIMENTAL ENVIRONMENT AT LHC

- Challenge - 10^9 events s^{-1} and tiny signals, e.g. 800 GeV Higgs \rightarrow 4 leptons once in 10^{14} events
 \Rightarrow unprecedented demands on hardware and data acquisition
- Thanks to intensive R&D programme, it seems this challenge can be met

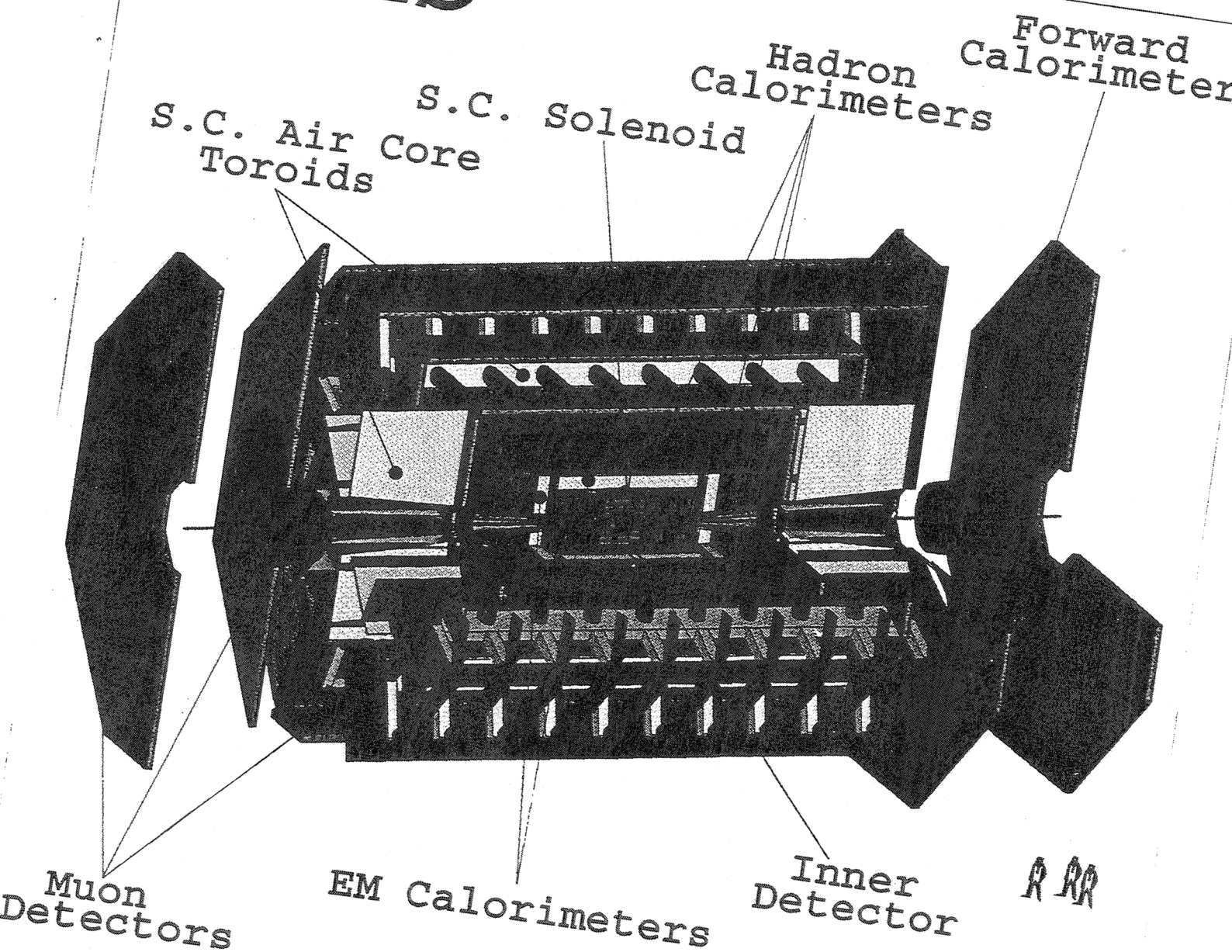
EXPERIMENTAL AREAS FOR LHC

- **Up to six areas available**
- **Initially envisage four substantial experiments**
- **The cost of developing the areas for these four experiments is estimated to be 210MCHF (1993)**

LHC EXPERIMENTS

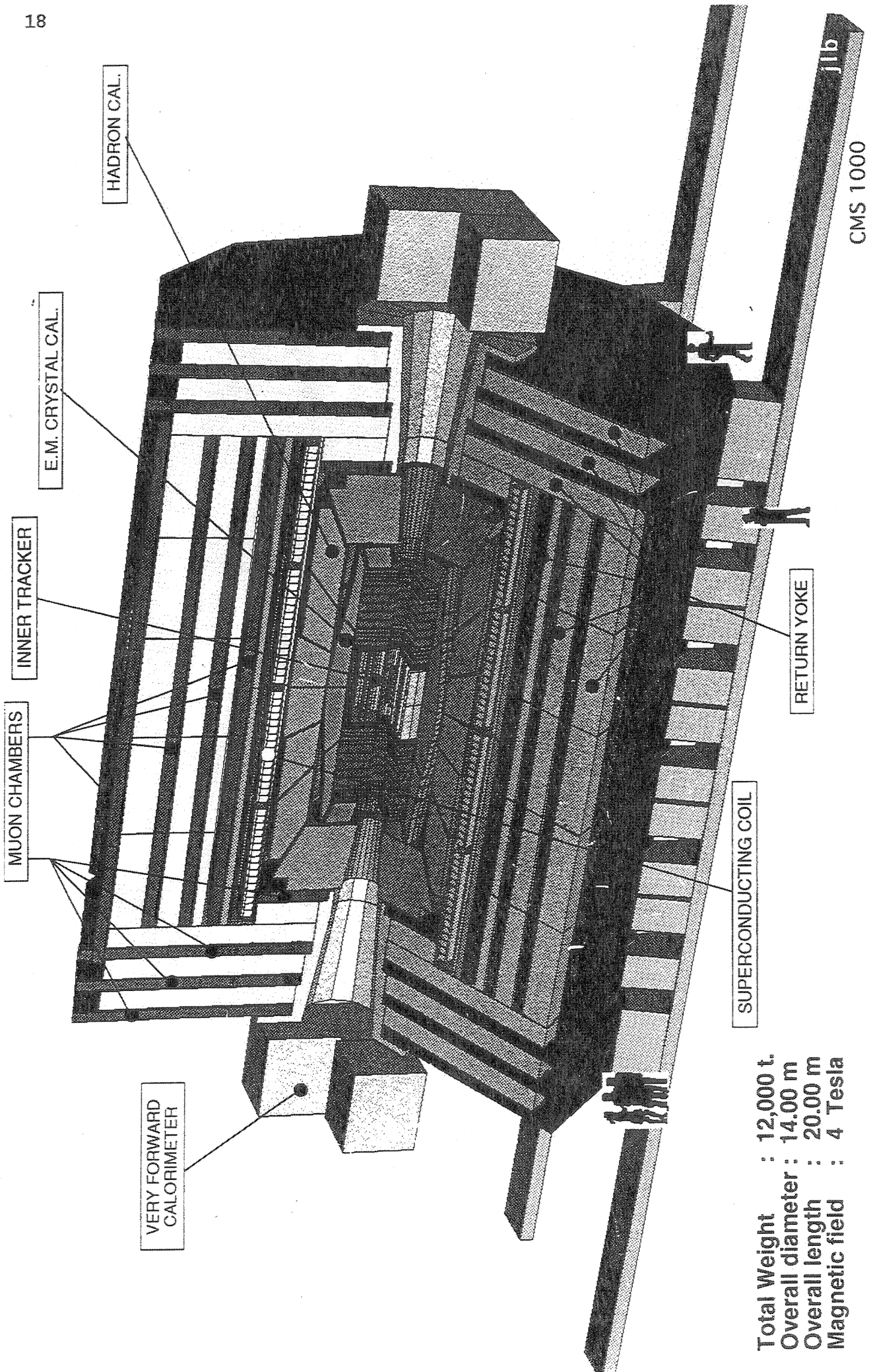
- Two general purpose p-p detectors (ATLAS, CMS), with complementary approaches, preparing technical proposals (👉)
- One general purpose heavy ion experiment (ALICE), preparing technical proposal (👉)
- Agreed in principle → one B-experiment: collision mode preferred
[possibility of other small experiments: σ_t , ν]

ATLAS



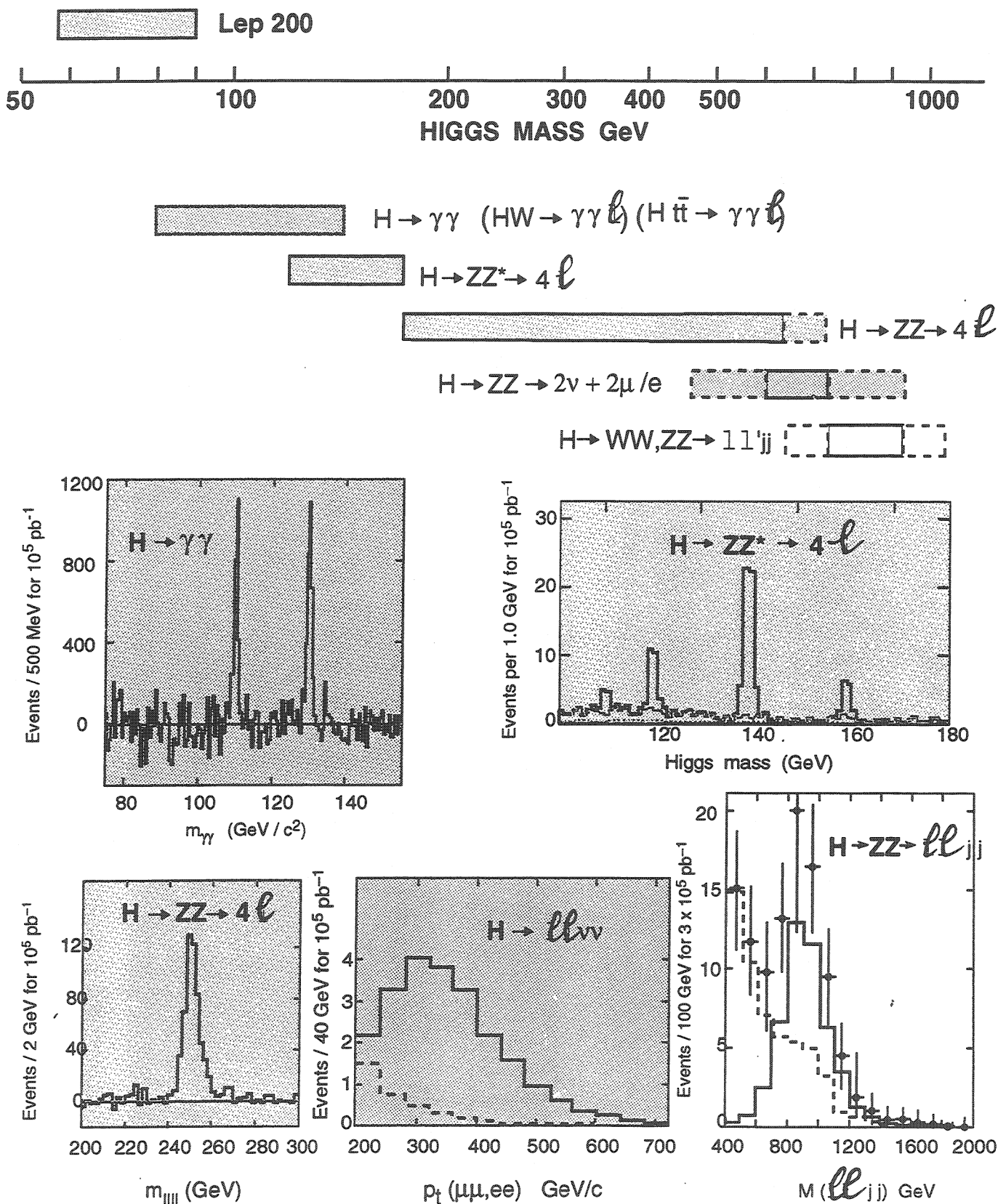
CMS

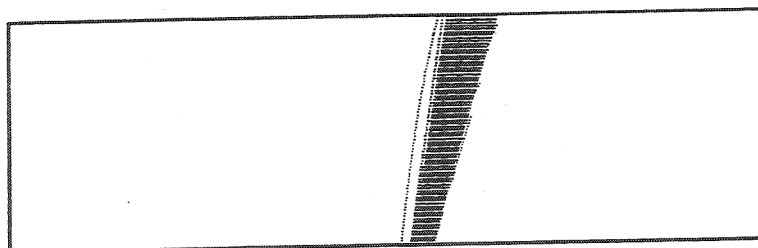
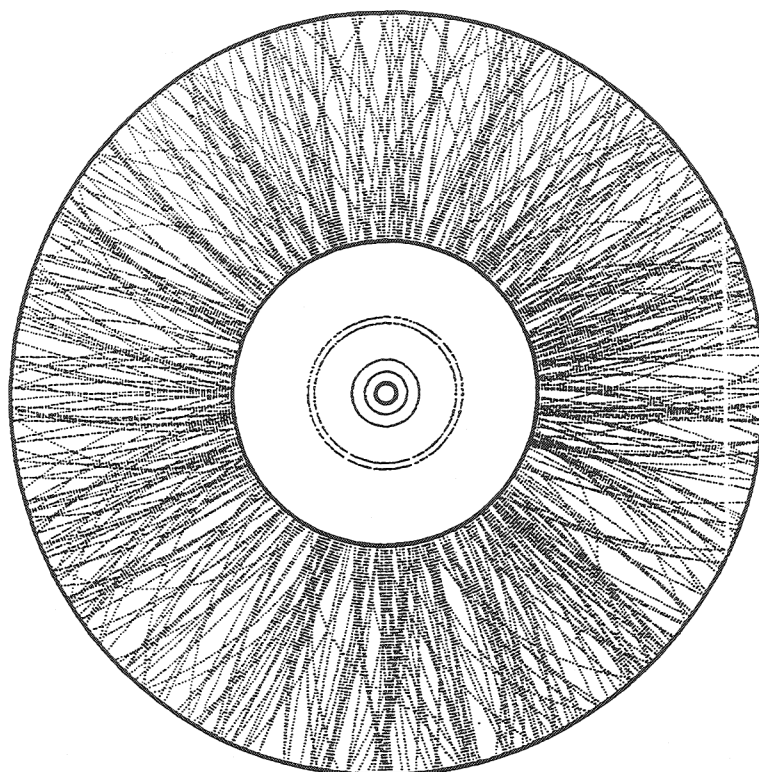
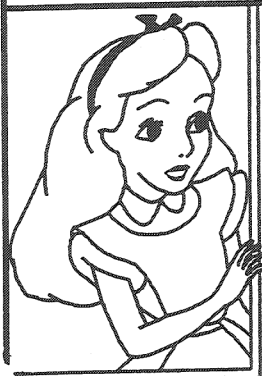
A Compact Solenoidal Detector for LHC



Total Weight : 12,000 t.
 Overall diameter : 14.00 m
 Overall length : 20.00 m
 Magnetic field : 4 Tesla

Search for the Higgs in CMS



ALICE EVENT DISPLAY **$\theta \in (75^\circ, 80^\circ)$**  $\begin{matrix} = \\ \vdots \\ + \end{matrix}$

MATERIAL COST OF EXPERIMENTS (MCHF 1993)

	<u>FIRST</u> <u>STAGE</u>	<u>BASE</u> <u>-LINE</u>	<u>EXPECTED</u> (as of Dec 1993) <u>CERN</u>	<u>OTHER</u>
• pp - ATLAS	350	420	85+..	275±?
- CMS	340 (+30 if Xals)	410 (+30)	85+..	255±?

Costs checked by CORE

• ALICE	70	}	CERN ⇒ 15 (ALICE) + 10 (B)
• B	50		

Total CERN contribution 220MCHF

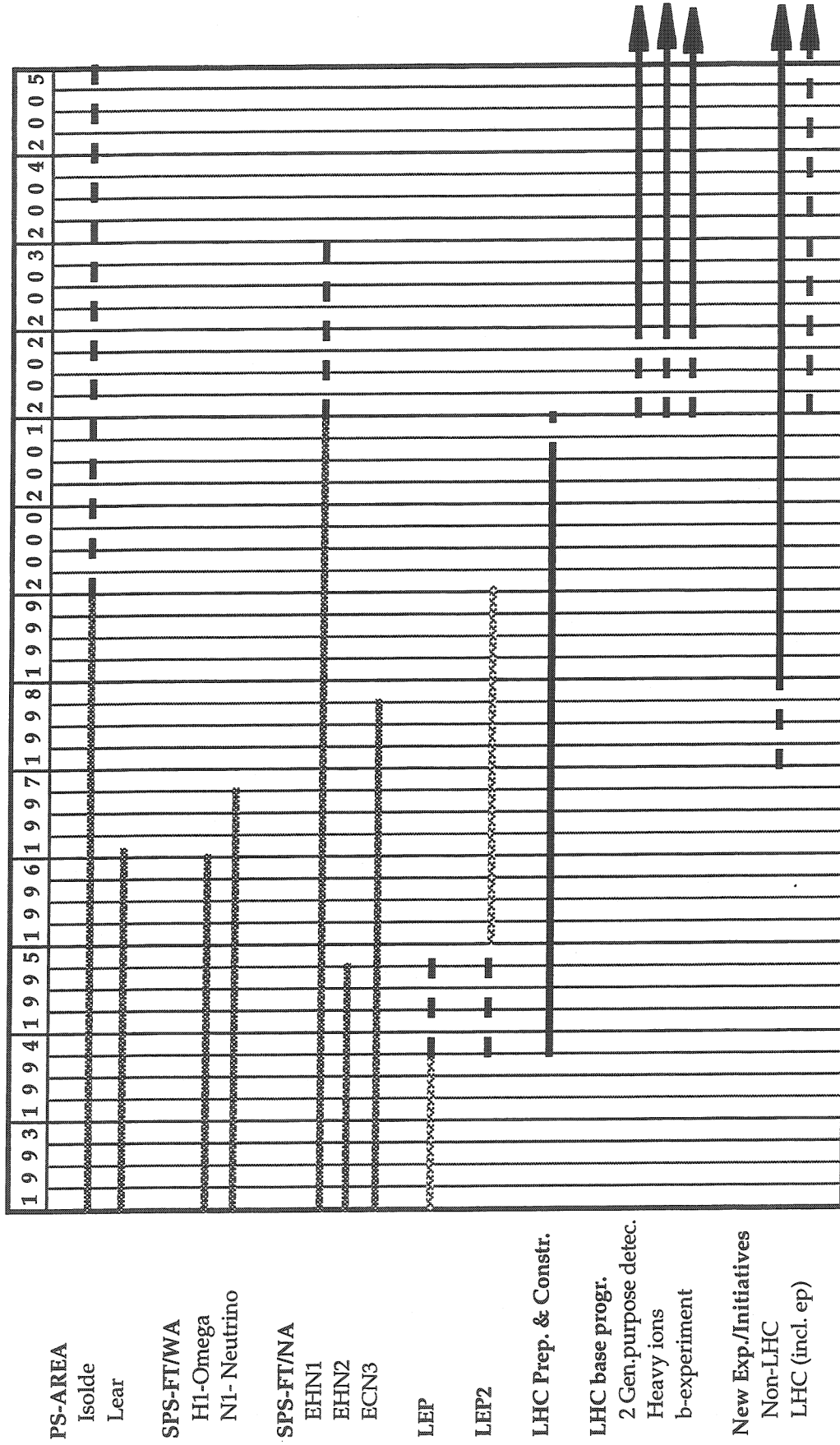
THE LHC AND THE LONG-TERM SCIENTIFIC PROGRAMME

- The LHC must be seen inside a complete long-term programme 

Note - the proposed programme requires the closure and run-down of still excellent programmes and facilities (LEAR, West Area, LEP) to free resources for the LHC

- because LHC will occupy the LEP tunnel, installation will require a gap of at least two years in CERN's front-line activities: this must be kept to minimum

Figure 1 : MODEL FOR THE SCIENTIFIC PROGRAMME






- The long-term plan presented in December 1993 contained a comprehensive analysis of the resources needed to carry out the proposed programme
- It was proposed to further reduce staff 
⇒ reduce staff costs 
making some room for increased material expenditure
- However the required resources exceed the expected level of regular Member State contributions 

Figure 2
Evolution of CERN Staff (m-y)

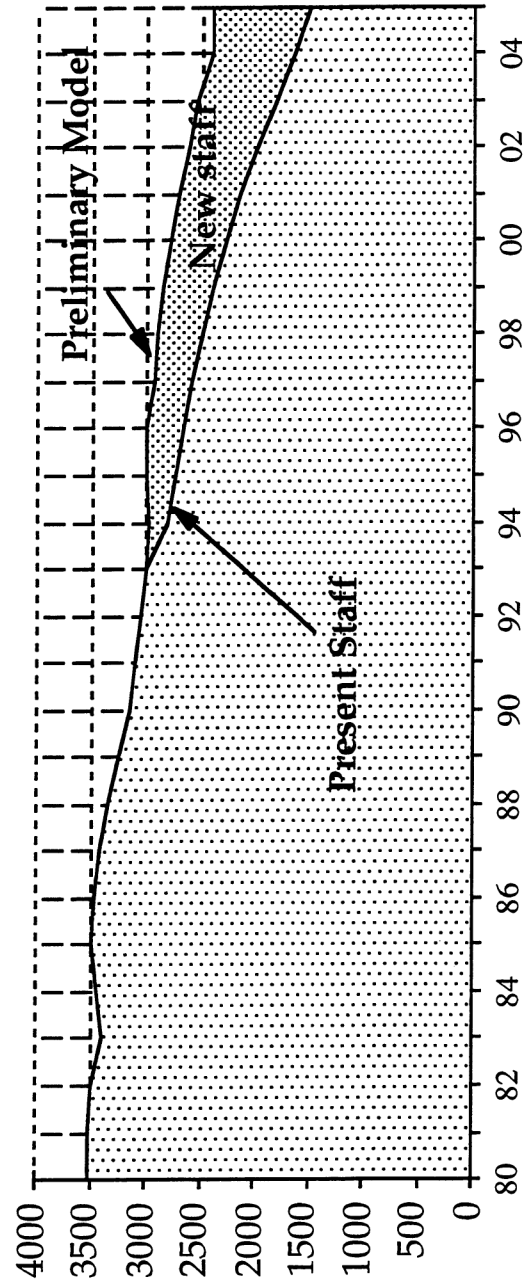


Figure 3
Personnel expenditure (MCHF, 1993 prices)

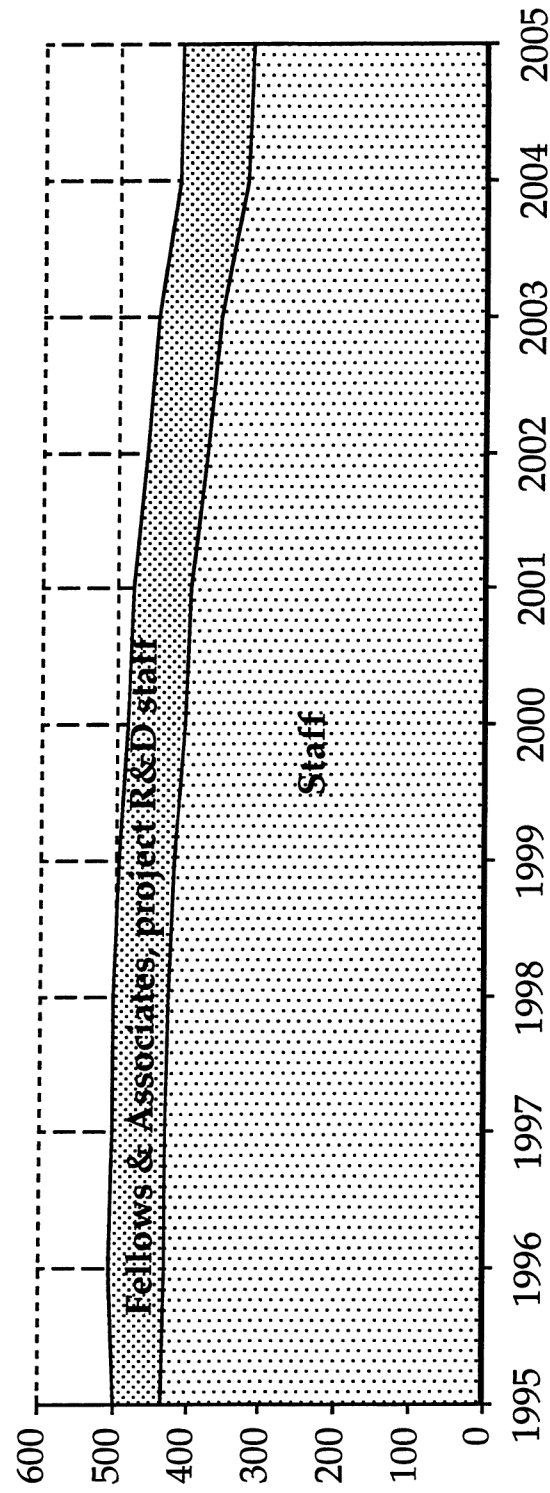
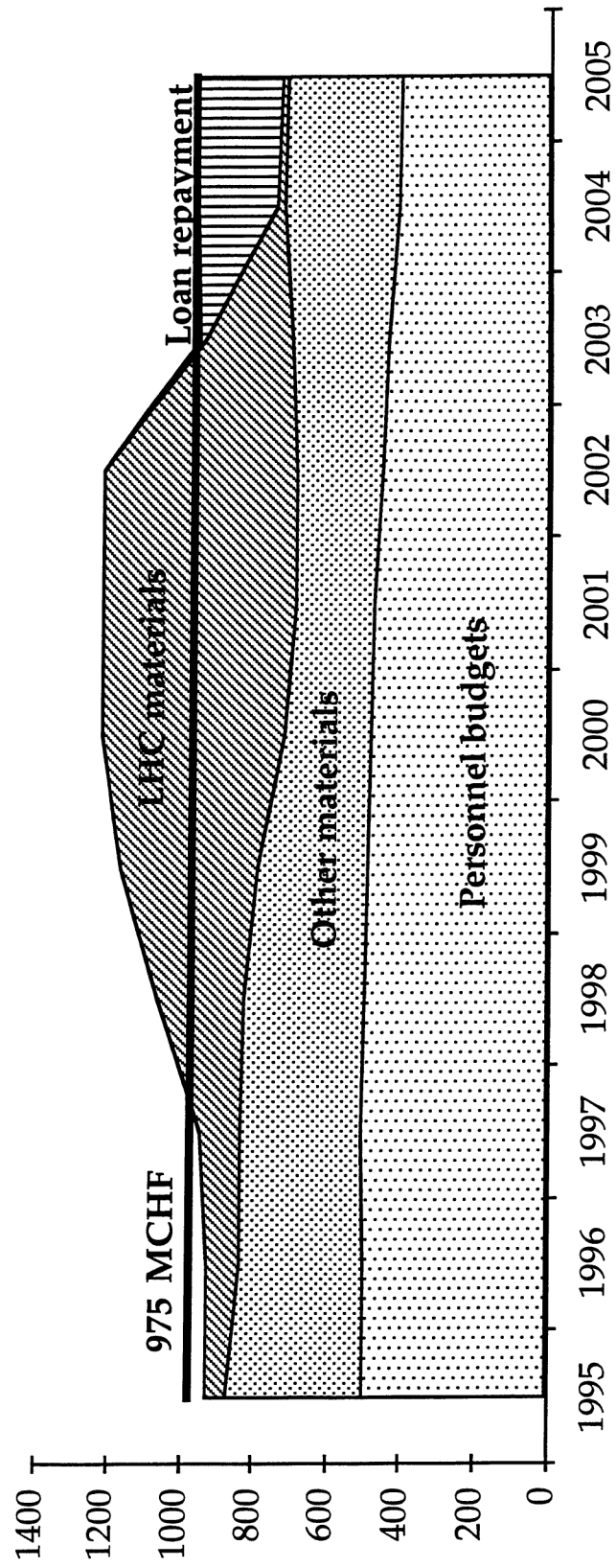


Figure 5
Personnel and Materials expenditure (MCHF)




STRATEGY

- vigorously seek supplementary contributions (Member and Non-Member States) to fill "funding gap" and allow \Rightarrow LHC commissioning in 2002
- develop options which do not need supplementary contributions: main element
 - extend gap in programme to 4-5 years (very damaging, only contemplate as last resort) \Rightarrow commission in 2004

\Rightarrow approve LHC now in – knowledge that, if unavoidable, can proceed
 on stretched timetable without extra contributions

– hope/expectation that extra contributions will be found

FUNDING OPTIONS

- Options presented in April have now been updated 
- | | | | | |
|-------------------|-----------------------------|---|----------------|-----------------------|
| confirming that { | with no supplementary | ⇒ | commission LHC | } pay around end 2006 |
| | contributions | | 2004 | |
| | with 500M CHF | ⇒ | commission LHC | |
| | supplementary contributions | | 2002 | |

assuming Member State contributions maintained at present level in real terms

- Schedules ⇒ 2002/2004 do not diverge significantly until 1998 ⇒

Propose comprehensive review of long-term plan at appropriate moment, and in any case before end of 1997, to better define timetable in light of the foreseen funding

BUDGET SCENARIOS (MCHF)

Alternative 1 : LHC commissioning in 2002

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
In the Dec. 93 plan														
Expected income	926	929	952	971	973	975	975	975	975	975	975	975	975	
Planned expenditure	926	929	952	1064	1174	1226	1229	1224	945	751	739	740	750	
Yearly balance	0	0	0	-93	-201	-251	-254	-249	30	224	236	235	225	
Cash position	0	0	0	-93	-294	-545	-799	-1048	-1018	-794	-558	-323	-98	
In the June 94 plan														
Cash position	0	-8	-25	-137	▲			- add. 44 MCHF	-0.4% index loss *)				▲	

Alternative 2 : LHC commissioning in 2004

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
In the April 94 plan														
Total Option	-14	-15	-15	-108	-216	-198	-192	-155	74	245	209	4		-160
Personnel cost variation	-2	-3	-7	-20	-20	-38	-43	-26	-40	27	6	7		-223
Materials cost variation	-12	-12	-8	-88	-196	-160	-149	-129	114	218	202	-3		
Yearly balance	14	15	15	15	15	-54	-62	-94	-44	-21	28	231	225	
Cash position	14	29	44	59	74	20	-42	-136	-180	-201	-173	58	283	
In the June 94 plan														
Cash position	0	0	0	0	▲			- add. 44 MCHF	-0.4% index loss *)				▲	

*) 0.4% : calculated materials index (2.2%) - Granted materials index (1.8%)

DISCUSSIONS WITH NON-MEMBER STATES

- **Council (December 1993)**

- ⇒ non-Member State participation welcome . . . on the understanding that usage on a significant scale must be accompanied by a contribution to the costs
- ⇒ favourably disposed to giving "voice" in LHC discussions to Non-Member States making significant (cash) contributions

- **Management**

- ⇒ would like to proceed on a partnership basis (machine, experiments, decisions . . .) with countries in other regions
- ⇒ elaborating a suitable framework (e.g. Associate Status)

POTENTIAL CONTRIBUTING PARTNERS

- **Canada** - on cancellation of KAON/appointment of A Astbury as Director of TRIUMF, Govt → “examine ways in which TRIUMF can act as Canada’s gateway to CERN”
- **China** - interest in contributing manpower and by manufacturing
- **India** - possible agreement with CERN under discussion
- **Israel** - already contributing to CERN (agreement to be revised in 1995)
- **Japan** - asked to start negotiations
- **Russia** - possible agreement with CERN under discussion
- **USA** - Drell Panel recommendation that “government declare its intention to join other nations constructing LHC at CERN” accepted by administration. Talks start 8-9 July.
-

APPROVAL OF THE LHC

The LHC is now ready for approval

Propose - approval now (→ maintain 2002 commissioning, maintain momentum of project, sustain drive of physicists and engineers involved, prudent planning/optimum use of resources, conclude negotiations with non-Member States)

- review of long-term programme at appropriate moment before end of 1997 to better define timetable in light of available funding

- Council has agreed that as LHC will be embedded in the existing infrastructure, it should be approved as a modification of the basic programme
- Propose draft Resolution (CERN/2039(a)) which would approve LHC as modification of basic programme (👍)

DRAFT RESOLUTION
APPROVAL OF
THE LARGE HADRON COLLIDER (LHC) PROJECT

THE COUNCIL,

Having regard to:

the Resolution (CERN/1904) it adopted at its 93rd Session on 20 December 1991 stating that the LHC is the right machine for the advance of the subject and of the future of CERN;

Considering:

The proposal to construct a Large Hadron Collider in the LEP tunnel (CERN/SPC/679 - CERN/CC/2016; CERN/SPC/677 - CERN/CC/2014; CERN/SPC/677/Add. - CERN/CC/2014/Add.; CERN/CC/2030; CERN/2039);

the Resolution it adopted at its 99th Session on 15 April 1994, which again endorsed the scientific case for the LHC, supported the promotion of the LHC as the central element of the long-term programme of CERN, expressed a wish that the LHC be implemented as part of the basic programme of the Laboratory, and endorsed the proposed comprehensive review of the progress of the project, to be carried out at an appropriate moment and in any case before the end of 1997 in order to define more precisely the timetable for execution of the project in the light of the foreseen funding;

Articles II, III and V of the CERN Convention;

the Council decision of 21 December 1978 by which the programmes of activities of the Basic Programme were redefined so as to form a single programme of activities (CERN/1323);

the Council Resolution (CERN/1411(a)) dated 25 June 1981 by which the Council approved the LEP Project as part of the Basic Programme of the Organisation as defined in the document entitled "*Scientific Activities and Budget Estimates 1982-1985*" (CERN/SPC/471 - CERN/FC/2443), so that the basic programme presently comprises "*The Proton Synchrotron (PS), the Super Proton Synchrotron (SPS), and the Large Electron Positron Collider (LEP)*";

DECIDES:

- a) to include the Large Hadron Collider (LHC) project in the basic programme of the Organisation, which will then consist of the Proton Synchrotron (PS), the Super Proton Synchrotron (SPS), the Large Electron Positron Collider (LEP), and the Large Hadron Collider (LHC).
- b) to approve the Basic Programme as thus modified.

- As for LEP, very desirable during LHC construction
 - ⇒ extend Bannier procedure by approving draft Resolution (CERN/2039(b)) (👉)
- [note: in version circulated as annex II of CERN/2039, line six of “Considering”, “CERN/2039(b)” should read “CERN/2039(a)”]
- ⇒ expressions of intent to try to grant full calculated materials index
 - ⇒ gentleman’s agreement not to leave CERN

DRAFT RESOLUTION
CONCERNING THE BANNIER PROCEDURE
AND THE LHC PROJECT

The Council,

CONSIDERING

the Bannier procedure (CERN/478), as approved by Council on 19 December 1962, concerning the provision and determination of Budgets and estimates of the Organisation;

the Resolution of Council (CERN/1411(b)), by which the Bannier procedure was adapted with a view to the LEP project, phase 1;

the Resolution of Council (CERN/2039(a)), dated 24th June 1994, concerning the approval of the LHC project;

the interest of the Organisation in ensuring that the LHC project be properly financed and managed;

DECIDES that

1. The Bannier procedure shall be adapted with a view to the implementation of the LHC project.

Under the modified Bannier procedure, annual budget estimates for five years shall be drawn up each year together with annual estimates of the ordinary contribution of the Member States to the Budget for the same period.

2. The annual estimates concerning the ordinary contribution of the Member States shall be regarded as firm. The Council may increase these estimates for reasons other than decisions concerning the cost-variation index, only if no objection is raised. The Council may decrease them by a two-thirds majority of the Member States present and voting, in accordance with Article V. 2 (c) of the CERN Convention.

3. The decision on the annual Budget shall be taken in accordance with Article V. 2 (c) of the CERN Convention.
4. On a proposal of the Management, Council shall decide on the use of contributions additional to the ordinary annual contributions of the Member States.

CONCLUSION

- LHC = part of planning for over fifteen years
(John Adams 1977 → ensure LEP tunnel OK for LHC)
- Workshops and reviews in last decade
 - LHC physics outstanding (logical next step for world particle physics; uniquely cost-effective way forward)
 - LHC experiments can use $10^{34} \text{cm}^{-2} \text{s}^{-1}$
 - LHC design, costing, schedule sound

**LHC is “right machine for the advance of the subject” and
“the future of CERN”**

Council is now asked to

- **approve the LHC by passing Resolution CERN/2039(a)**
- **extend the Banner procedure by passing Resolution CERN 2039(b)**

**APPROVAL OF THE LHC WILL OPEN UP THE TeV FRONTIER
AND THE EXCITING PHYSICS EXPECTED THERE**