

39th Session of CERN Council

A report on the Council meeting which took place on 2 - 3 October under the chairmanship of Dr. G. Funke.

This special meeting of the Council had essentially two items on its agenda : 1) To review the situation on the proposed 300 GeV Laboratory and to work out the next steps forward for the project ; 2) To agree the budgets for the existing CERN Laboratory for the coming three years.

300 GeV count down

The Director General, Professor B. P. Gregory, opened the discussion with a review of the present situation on the 300 GeV project. Five countries — Austria, Belgium, Federal Republic of Germany, France and Italy — have now declared their intention to participate in a new high energy physics Laboratory, and these countries contribute about 60 % of the present CERN budget.

Following the decision of the U.K. not to support the new Laboratory at the present time, a possible initial programme for the project has been drawn up which reduces the cost by 25 % (slightly more than the contribution of the U.K. to CERN). Thus with 60 % support already assured, and with the expectation that favourable decisions from other countries will soon be forthcoming, it can confidently be said that the project is going ahead.

The 'reduced programme'

After the announcement of the U.K. decision in June, the Council asked CERN to prepare a possible programme to take account of the reduced participation. This involved revising the project so that the foreseen expenditure (a total of 1776 million Swiss francs spread over eight years) would come down to a level which would place no extra burden on the countries who agreed to participate than they faced before the U.K. withdrawal.

At a meeting of the Scientific Policy Committee on 10 July, a series of guidelines were drawn up stressing principally that the reduced programme should retain the ultimate capabilities of the machine both in terms of energy (300 GeV), of intensity (10^{13} protons/second), and of utilization (facilities for extensive exploitation by research teams). The SPC also stated that the time at which physics starts at the machine should not be delayed and

that even the restricted project should give value for money as a research facility.

At the same time, with the strong hope that the U.K. government will be able to reverse its decision before very long, the reduced programme has been planned so that it could revert to the full programme without incurring much extra expense when the U.K. joins.

The reduced programme, prepared following these guidelines, is a model of what can be done and not a final proposal. It serves as a basis for decision by demonstrating that it is possible to meet the new situation and to go ahead with the project while still retaining its ultimate aims.

The cost estimates for the construction period of the original project were prepared under three headings —

- i) The machine itself (931 MSF)
- ii) General Laboratory facilities and services (431.5 MSF)
- iii) Preparation for research (413.5 MSF).

On the machine itself only modest savings can be made given the requirement that its ultimate performance will be able to reach that originally planned without much extra expense. However, by starting with a reduced r.f. accelerating system, magnet power supply and injection system, a total saving of 61 MSF can be made. The price paid in machine performance would be a lower intensity (down by a factor of five) and beginning operation at a lower energy (200 GeV). If 20 MSF could be saved elsewhere, operation could begin at 300 GeV. Restoring the full performance will be straight forward with more money available.

Laboratory facilities and services are cut by 160 MSF because of reduced power equipment, less site work and buildings, and the postponement of the main computer installation.

Preparations for the experimental programme carry the heaviest cut, 215 MSF. This takes account of there being 25 % less physicists to accommodate at the machine and accepts that the research will have to take longer getting into top gear - building up to 75 % level over two years after the machine begins operation. Only one ejection system and experimental hall

will be built and the experimental equipment will be less ; in particular no large bubble chamber will be built for the start of the research.

These savings bring the total cost of the project to 1335 MSF (at 1967 prices), 75 % of the cost of the project originally planned.

Next steps forward

A series of decisions now have to be taken to bring the project to a reality. One of the major ones is the selection of the site for the new Laboratory. The process of elimination so far had brought the list of possibilities down to nine but this is effectively reduced to five at the moment — the five sites of the countries who are supporting the project : Doberdo (Italy), Drensteinfurt (Federal Republic of Germany), Focant (Belgium), Göpfritz (Austria), Le Luc (France). Obviously, other sites would be added to the list if some other countries joined.

The Council accepted that no further studies on the sites are necessary before taking the final decision. It is hoped that it will be possible to have a first indicative vote at the December Council meeting. Should two or three sites then emerge as the prominent contenders, detailed discussions with the countries concerned could take place prior to the final vote, hopefully in March 1969.

Another decision which needs to be taken at least as fast as the site decision is the appointment of the Director General of the new Laboratory. A project leader is needed to take charge of the final design of the machine which will be carried out before beginning construction on the site. The choice is obviously crucial to the success of the project, and the Council accepted that the best possible man (or two-man team) will be selected, regardless of nationality.

A further essential before the new Laboratory can come formally into being is the ratification of the revised Convention. In December last year, the Council approved amendments to the existing CERN Convention to allow a new Laboratory to be built. Acceptance of the revised Convention in no way implies commitment to support the new Laboratory and the delegates were



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reminded of the need for their government to ratify the amendments to the Convention as soon as possible. The signature of all thirteen countries is needed to enable the project to go ahead, but it is obvious that countries who may not participate will not attempt to hold back the others.

Prior to the December Council session, meetings will take place, involving particularly the five countries who are joining the project, to arrive at a final text of the 'Programme definition', the document within whose framework the new Laboratory will be built and operated.

Assuming that these various items can be resolved by March of next year, the final design could start under the new project leader by the middle of 1969. Then in the second half of 1970, the team could move on to the site to begin construction of Europe's new accelerator.

Professor B. H. Flowers, delegate for the U.K., summed up the discussion on the 300 GeV project. He said that the discussion had shown the spirit of European cooperation in science in action. Even with the reduced programme, a new range in the study of matter and its interactions could be opened up and Europe would retain in the future the position it has held for so many years as second to none in fundamental science. Professor Flowers offered his congratulations and those of the Science Research Council, of which he is Chairman, that the project is going ahead, and said that U.K. Secretary of State for Education and Science, Mr. Edward Short, also wished it to be known that 'he is pleased at the positive decisions that have been taken'.

Budgets 69, 70, 71

The way in which budgets for coming years are agreed at CERN follows what is known as the 'Bannier procedure' (it was worked out in the Finance Committee on the instigation of Mr. J. H. Bannier, delegate for the Netherlands). At the December Council meeting each year, the budget for the following year is voted together with a 'firm estimate' for the year after and 'provisional' figures for the subsequent two years. The firm estimate would normally only be reconsidered if a major change occurred either in the work of CERN or in the financial circumstances of Member States, and the provisional figures could also confidently be used in planning long-term projects. The Bannier procedure has proved invaluable in enabling CERN to organize its projects efficiently.

At the Council meeting of December 1967 however, currency devaluation had produced an abrupt change in financial circumstances and it was not possible at that time to arrive at figures for the coming years. The Bannier procedure could therefore not be applied. In March, the Council asked for a general review of the long-term development of budgets as well as the possibility of short-term savings. A first report on the programme review has been prepared.

Not having a firm estimate for 1969, CERN had not been able to work out a detailed budget for the coming year to present to the Council in December and it was therefore important to agree some figures at this meeting.

The Director General presented the recommendations of the CERN administra-

Dr. Hine (standing), the Director General (centre) and the President of the Council in happy mood during the Council Session.

tion for the years 69, 70 and 71. He recalled that at the end of 1965, the Member States had authorized two major developments in the research facilities at CERN — the construction of the intersecting storage rings, and the implementation of an improvement programme at the 28 GeV proton synchrotron. This involves long term commitments stretching through to 1971.

On the intersecting storage rings, everything is going as initially foreseen and the expenditure on this huge project, which is now past its half-way stage, is within the predicted figures. On the improvement programme however, there are many parts (the heavy liquid bubble chamber 'Gargamelle', the large hydrogen chamber, the Omega project, improvements at the synchro-cyclotron,...) and there are some changes and additions which could not be foreseen when the approval of the Council was first sought. Two main items are —

- 1) The Booster injector, to increase the intensity of the CERN 28 GeV accelerator. This injector has been made more elaborate, and therefore more expensive than predicted, in particular to absorb some possibilities which emerged in 1966 which could contribute greatly to increasing the performance of the intersecting storage rings.
- 2) The collaboration with the Institute of High Energy Physics, Serpukhov, which was agreed in July 1967. CERN is providing special equipment for use on the Soviet 70 GeV accelerator and is financing CERN teams doing experiments at the machine. This could not be predicted in 1965.

In spite of tightening some areas of expenditure (for example, the staff numbers, which are now 50 less than forecast and will be 150 less than forecast by 1971) the commitments now facing CERN will take all the proposed budget increases over the next few years and will involve holding the physics programme at its present level for four years.

No detailed predictions on budgets for CERN-Meyrin after 1971 were put forward at the Council meeting. Some major considerations for the years from 1972 onwards, when the ISR and the improvements programme are completed, have to be carefully examined. They include the impact

Professor Puppi (left) retiring Chairman of the Scientific Policy Committee in conversation with one of the advisers to the Italian delegation, Dr. S. d'Andrea.

Professor Gentner (left) newly appointed Chairman of the Scientific Policy Committee with Professor Paul delegate of the Federal Republic of Germany.

of the start of construction of the 300 GeV machine and eventually the start of physics at the machine, the role of the national Laboratories, the long-term future of CERN-Meyrin.

The delegations of the Federal Republic of Germany and the U.K. both called for reductions in the proposed budget figures. Germany based its request on the financial implications of beginning construction of the new Laboratory and on the needs of other areas of science and technology, maintaining that CERN should establish priorities in its work from now on.

The U.K. delegation were concerned in the short-term to make economies whenever possible in view of their financial situation but, more importantly, in the long term were concerned with the image of CERN for governments and for the rest of science. Other fields such as astrophysics, oceanography and molecular biology, whose demands on finance at the moment are comparatively modest, are growing at a tremendous rate and by the early 1970s they will take an increasing proportion of the restricted science budgets. The U.K. urged CERN to take the lead in recognizing this problem, for it is decisions taken and attitudes established now, which will dictate whether CERN is adapted to the situation which will soon prevail.

A compromise solution was put forward by the Director General giving figures in between those proposed by CERN and those proposed by the U.K. This resulted in the following budgets (in units of a million Swiss francs) being agreed unanimously for the next three years —

1969 : 218, 1970 : 229, 1971 : 240

For the ISR project —

1969 : 88.6, 1970 : 79.5, 1971 : 79.5.

Expenditure in 1969 in connection with the 300 GeV project depends greatly on the speed with which decisions are taken and a tentative figure of 8.5 MSF was recorded.

These budgets will be voted at the December meeting. The Director General said that, in preparing the detailed budgets, everything possible will be done to avoid the burden of the reduced budgets falling too heavily on the physics programme, while still fulfilling the various projects under way.

The scale of the contributions of the Member States is due to be revised at the



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end of this year (an exercise carried out every three years on the basis of U.N. statistics of net national income). The Council decided to reduce the contribution of Greece and of Spain as is allowed for in the Convention in 'special circumstances'.

Appointment

Professor W. Gentner from Heidelberg University was appointed to succeed Professor G. Puppi as Chairman of the Scientific

Policy Committee. In bringing the meeting to an end, the President, Dr. G. Funke, expressed the warm appreciation of the Council to Professor Puppi for all the work he has done in the SPC during his term of office.