

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

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*Action to be taken*

*Voting Procedure*

For information and discussion	<b>FINANCE COMMITTEE</b> 325 <sup>th</sup> Meeting <b>17 June 2009</b>	—
For information and discussion	<b>COUNCIL</b> 151 <sup>st</sup> Session <b>18-19 June 2009</b>	—

**FIVE-YEARLY REVIEW 2010**

**REPORT ON MAIN RECRUITMENT MARKETS FOR STAFF MEMBERS**

This report has been drawn up in the framework of the 2010 five-yearly general review of the financial and social conditions of members of the personnel. It provides information concerning the Organization's main recruitment markets for staff members.

Further to discussion at the TREF meeting on 19 and 20 May 2009, the Management hereby submits this report to the Finance Committee and to the Council for information and discussion.

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## I. — INTRODUCTION

In accordance with its Staff Rules and Regulations, the Organization must undertake a five-yearly review of the financial and social conditions of members of the personnel.

Annex A 1 of the Staff Rules specifies that:

*“The purpose of the five-yearly review is to ensure that the financial and social conditions offered by the Organization allow it to recruit and retain the staff members required for the execution of its mission from all its Member States. In accordance with Article S II 1.03, these staff members must be of the highest competence and integrity.”*

In order to proceed with the five-yearly review, § 3 of Annex A 1 of the Staff Rules further specifies that:

*“The Director-General shall submit to Council:*

- a) for information and discussion, a document identifying the Organization's main recruitment markets (e.g., industry, national laboratories, intergovernmental organizations, as the case may be) for staff members in career paths AA to B and for staff members in career paths C to G respectively;*

Pursuant to the above-mentioned § 3 a), the Organization hereby submits to the Finance Committee and the Council the present report on CERN's main recruitment markets for staff members.

It should be noted that by “arrivals” this report refers to staff members who have effectively taken up appointment at CERN.

## II. — CERN'S MISSION

In accordance with the CERN Convention :

*“The Organization shall provide for collaboration among European States in nuclear research of a pure scientific and fundamental character, and in research essentially related thereto [...]*

*The Organisation shall [...] confine its activities to the following:*

- a) the construction and operation of one or more international laboratories [...] for research on high-energy particles [...];*
- b) the organisation and sponsoring of international co-operation in nuclear research, including co-operation outside the Laboratories [...]*”

In order to achieve its mission and perform fundamental research at the high energy frontier, CERN is required to design, construct and operate complex accelerators and detectors which advance the frontiers of technology in various fields. Additionally, the exploitation of the physics data requires the highest level of information technology (e.g. grid computing).

In this document, the Management has identified CERN's main recruitment markets, namely those where the key competences required for the accomplishment of the Organization's mission are to be found.

### **III. — CERN'S OBJECTIVES AND RELATED RECRUITMENT EXPERIENCE DURING THE PERIOD JANUARY 2005 TO DECEMBER 2008<sup>1</sup>**

#### **A) CERN's objectives during the reference period**

The Organization's mission as described above has been translated into a number of objectives. During the reference period, the main objective was to complete the procurement, assembly, testing and installation of the components of the LHC machine, the detectors and the scientific computing. Apart from the installation of the superconducting magnets (more than 1800 main magnets to be operated at 1.9 Kelvin, i.e. -271°C), major unprecedented precision and robustness are required from all accelerator complexes and infrastructure systems. New detector technologies were developed and implemented in the experiments. Furthermore, scientific computing for the LHC advanced in a new domain based on grid technology to prepare for worldwide capacity for analysis of the expected physics data.

#### **B) CERN's recruitment experience during the reference period**

In the above context, CERN recruited 553 staff members during the reference period. The present chapter shows their professional origin, i.e. where they were working prior to their arrival at CERN as staff members. A distinction is made between internal and external recruitment.

Internal recruitment concerns those who were previously either fellows or associated members of personnel (i.e. associates, students or users).

External recruitment concerns those not belonging to the previous category and who have either no professional experience (i.e. straight out of school or university) or have acquired professional experience with another employer prior to working for CERN. Such previous employers are subdivided into industry (i.e. private sector), universities, research institutes, international organizations or public sector (i.e. public administrations other than universities, research institutes and international organizations).

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<sup>1</sup> Hereinafter "the reference period".

### 1) External recruitment during the reference period

As shown in Table 1 below, 397 persons were recruited externally during the reference period.

Origin	Cat. 1	Cat. 2	Cat. 3	Cat. 4	Cat. 5a	Cat. 5b	Cat. 5c	Total	%
	<i>Scientific Work (experimental &amp; theoretical physics)</i>	<i>Scientific (other) &amp; Engineering Work</i>	<i>Technical Work</i>	<i>Manual Work, Crafts &amp; Trades</i>	<i>Professional Administrative Work</i>	<i>Office &amp; Administrative Work</i>	<i>Office Work</i>		
<b>Beginning of Career</b>		6	23			5	1	<b>35</b>	8.8
<b>Public Sector</b>		2	9	23	2	2		<b>38</b>	9.6
<b>Industry</b>		24	150	29	8	44	4	<b>259</b>	65.2
<b>International Organisation</b>			9	2	4	3		<b>18</b>	4.5
<b>Research Institute</b>	8	11	4		2	1		<b>26</b>	6.6
<b>University</b>	4	8	4	1	2	2		<b>21</b>	5.3
<b>Grand Total</b>	<b>12</b>	<b>51</b>	<b>199</b>	<b>55</b>	<b>18</b>	<b>57</b>	<b>5</b>	<b>397</b>	<b>100</b>

*Table 1 – Professional origin of external staff member arrivals during the reference period by employer and professional category*

During the reference period, fully two thirds of staff recruited externally came from industry. These findings are consistent with those observed in previous five-yearly review periods.

### 2) Internal recruitment during the reference period

During the reference period, CERN also recruited 156 persons who were already working at CERN, either as fellows or associated members of the personnel, as shown in Table 2 below.

Professional categories		Fellows	Associates	Students	Users	Total
<b>1</b>	<i>Scientific Work (experimental &amp; theoretical physics)</i>	10	3		5	<b>18</b>
<b>2</b>	<i>Scientific(other) &amp; Engineering Work</i>	67	30	8	18	<b>123</b>
<b>3</b>	<i>Technical Work</i>		6		2	<b>8</b>
<b>4</b>	<i>Manual Work, Crafts &amp; Trades</i>					
<b>5a</b>	<i>Professional Administrative Work</i>	2			1	<b>3</b>
<b>5b/c</b>	<i>Office &amp; Administrative Work</i>		2		2	<b>4</b>
<b>Total</b>		<b>79</b>	<b>41</b>	<b>8</b>	<b>28</b>	<b>156</b>

*Table 2 – Source of internal arrivals during the reference period by professional category and previous status*

The 156 internal arrivals represent almost one third of the total arrivals, which is a higher ratio than in the 2000 to 2004 period<sup>2</sup>.

This is firstly explained by the combined effect of the measure introduced during the previous five-yearly review period, which aimed at hiring a greater number of fellows<sup>3</sup>, and overall lower staff recruitment. Secondly, the reference period was atypical due to the very high pressure to finish the LHC according to schedule, after the significant delay experienced by the project. During this period, many fellows were assigned to projects directly related to LHC completion. So as to keep existing competences and avoid losing time in training recruits coming from outside CERN, an exceptionally high number of staff were therefore recruited among this category of members of personnel.

The Management is of the opinion that CERN should not continue to recruit fellows as staff members to such an extent. When recruiting, CERN, like any other organization, needs to strike a good balance between candidates who commenced their professional career in the Organization, and those with a professional experience acquired outside the Organization. Furthermore, it should be remembered that one of the principal aims of the fellowship programme is to provide young staff with an opportunity of acquiring experience at CERN, allowing them to return to their country enriched with the additional knowledge they gained during their stay in an international environment.

#### IV. — CERN'S FUTURE OBJECTIVES AND RELATED RECRUITMENT NEEDS

##### A) CERN's future objectives

For the medium to long term, the Organization's main objectives, as agreed by Council in the framework of the European Strategy for Particle Physics, approved at its Special Session in Lisbon in 2006 (CERN-Council-S/002), are the following:

- *“the highest priority is to fully exploit the physics potential of the LHC”*,
- *“resources for completion of the initial programme have to be secured such that machine and experiments can operate optimally at their design performance”*,
- *“subsequent major luminosity upgrade (s-LHC), motivated by physics results and operation experience, will be enabled by focused R&D, to this end, R&D for machine and detectors has to be vigorously pursued now and centrally organized towards a luminosity upgrade by around 2015.”*

In this framework, CERN's activities, for the immediate future, over and above operating the LHC, will focus on:

- A first class programme of low energy precision and unique experiments.

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<sup>2</sup> Hereinafter “previous five-yearly review period”.

<sup>3</sup> In the previous five-yearly review period, there were on average 217 fellows at CERN, while this number increased to 271 in the reference period.

- R&D and prototyping phase for the new initiatives:
  - LINAC4,
  - SPL and PS2 studies,
  - LHC upgrade (s-LHC),
  - CLIC/ILC studies on accelerators and detectors.
- Consolidation of the accelerator, technical and general infrastructure.

The requirement that CERN continues to attract and retain top-level technical and scientific competence is not merely essential for the execution of the Organization's scientific programme, but also for its mission to sponsor international collaboration, which includes collaborations with other institutes, other International Organizations with a scientific mission such as ITER, and such projects as FAIR and XFEL. It is also a vital component of the European Strategy for Particle Physics, as defined by the Council, which aims at maintaining Europe's excellence in this field.

Finally, the Organization's very proactive approach to knowledge and technology transfer will be enhanced.

## B) CERN's related recruitment needs

CERN's future recruitment needs will be determined by:

- the future programme of the Organization, in line with the objectives referred to in Chapter IV, A) above;
- the corresponding manpower needs; and
- the expiry of limited-duration contracts and staff retirements.

Table 3 below shows the forecasted annual decrease in staff over the period 2009 to 2013, compared with the reference period.

Professional categories		Average annual number of departures 2005-2008	Estimated forecast of annual number of departures 2009-2013
1	<i>Scientific Work (experimental &amp; theoretical physics)</i>	8	7
2	<i>Scientific(other) &amp; Engineering Work</i>	62	54
3	<i>Technical Work</i>	60	66
4	<i>Manual Work, Crafts &amp; Trades</i>	18	21
5a	<i>Professional Administrative Work</i>	12	8
5b/c	<i>Office &amp; Administrative Work</i>	31	30

**Table 3 – Average annual number of departures of staff members during the reference period against estimated forecast of annual departures for the period 2009 to 2013**

During the reference period, CERN recorded a net loss of about 100 engineers and 150 technicians and mechanics. For the R&D phase of the new initiatives, the Organization will need to reconstruct its engineering and technical capabilities.

In order to achieve the objectives described under Chapter IV, A) above, and in line with the currently approved Mid-Term Plan (MTP), CERN's yearly staff recruitment needs are forecast to be in the range of 120 to 150 staff. Below is a table showing, by professional category, the breakdown of these expected recruitments over the period 2009 to 2013 as compared to the average yearly arrivals during the reference period<sup>4</sup>:

Professional categories		Average yearly arrivals 2005-2008	Forecast of range of yearly recruitments 2009-2013
1	<i>Scientific Work (experimental &amp; theoretical physics)</i>	8	5-10
2	<i>Scientific(other) &amp; Engineering Work</i>	44	40-60
3	<i>Technical Work</i>	66	60-80
4	<i>Manual Work, Crafts &amp; Trades</i>		
5a	<i>Professional Administrative Work</i>	5	5
5b/c	<i>Office &amp; Administrative Work</i>	17	10-15

**Table 4 – Average staff member arrivals during the reference period against forecast of recruitments (for the period 2009 to 2013)**

As appears from Table 4 above, in view of the increased R&D activities, in the coming years CERN will need to recruit a substantial number of staff, mainly in professional categories 2, 3 and 4.

More specifically, CERN will require the highest level of engineering competences, as well as technical skills in fields such as superconductivity, cryogenics, vacuum, electricity, information technology, electronics and radiofrequency. It will also require expertise and administrative skills in the fields of finance, purchasing, audit, accounting, human resources and legal advice. These competences and skills, which are indispensable to CERN, are to be found primarily in industry.

Examples are:

- Applications of superconductivity and cryogenics can be found in electricity companies working on breakthrough projects such as resistance-free electrical distribution.
- The information technology industry is at the cutting-edge in the domain of large-scale computer centres and networks.

<sup>4</sup> The foreseen number of recruitments might have to be adjusted depending on the scientific programme and related MTP that will be approved by the Council in June 2009.



- In the domain of electronics, extremely high-level competences have been developed with, for example, manufacturers of semi-conductors in the sector of telecommunications and in the construction of satellites.
- Specialists in the latest developments in the radiofrequency field can also be found in the telecommunications sector.
- Human resources professionals have been recruited from leading companies in sectors such as air travel or telecommunication devices.
- Auditing competences are to be found in the few firms that are considered as leading companies in the sector.
- High-level finance, accounting and logistic professionals are sought in well-established companies in domains such as aircraft construction, electronics or air express transportation.
- Administrative assistants are recruited in sectors such as automotive industry, electronics, construction equipment, chemical or pharmaceutical industry.

It is only by recruiting candidates with the highest level of expertise in these fields that CERN will maintain its excellence.

## V. — CONCLUSION

Data for the reference period is consistent with that for the previous five-yearly review periods, which showed that two-thirds of CERN's external recruitment was from industry.

For the future, CERN needs to continue to recruit staff with the engineering, technical and administrative competences mentioned in Chapter IV, B) above. As these competences primarily exist in industry, especially in high-technology activities, it follows that CERN's main recruitment market is, and remains, industry. This finding applies to staff members in both career paths AA to B and C to G.

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