Quality Assurance Template

TECHNICAL SPECIFICATION

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Date: 2001-05-08
### History of Changes

<table>
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<th>Rev. No.</th>
<th>Date</th>
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<th>Description of Changes</th>
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<td>1999-06-25</td>
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The Large Hadron Collider Project

Invitation to Tender

Technical Specification for

Xxxx

Abstract

This Technical Specification concerns the supply of xxxx.

Deliveries are foreseen over xxxx years from placement of the Contract.

May 2001
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1. INTRODUCTION

1.1 Introduction to CERN

The European Organization for Nuclear Research (CERN) is an intergovernmental organization with 20 Member States*. It has its seat in Geneva but straddles the Swiss-French border. Its objective is to provide for collaboration among European States in the field of high energy particle physics research and to this end it designs, constructs and runs the necessary particle accelerators and the associated experimental areas.

At present more than 5000 physicists from research institutes world-wide use the CERN installations for their experiments.

1.2 Introduction to the LHC Project

The Large Hadron Collider (LHC) is the next accelerator being constructed on the CERN site. The LHC machine will mainly accelerate and collide 7 TeV proton beams but also heavier ions up to lead. It will be installed in the existing 27 km circumference tunnel, about 100 m underground, that previously housed the Large Electron Positron Collider (LEP). The LHC design is based on superconducting twin-aperture magnets which operate in a superfluid helium bath at 1.9 K.

1.3 Subject of this Technical Specification

2. SCOPE OF THE TENDER

2.1 Scope of the supply

2.2 Items not included in the supply

2.3 Items supplied by CERN

2.4 Long-term conditions

3. GENERAL CONDITIONS FOR TENDERING AND CONTRACTING

Please refer to the commercial documents for more complete information.

Tenders will only be considered from firms having been selected as qualified bidders by CERN, as a result of the Market Survey ref. xxxx. CERN reserves the right to disqualify any bidder whose reply to this Market Survey is found to have been incorrect.

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* CERN Member States are: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, The Netherlands, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland and the United Kingdom.
3.1 Tender procedure

3.1.1 Pre-tender discussions

The Bidder is strongly encouraged to contact CERN and discuss details of this Technical Specification before submitting a tender. In particular, CERN wishes to ensure that no doubt exists as to the interpretation of this Technical Specification.

3.1.2 Alternative solutions

If the Bidder finds that any part of this Technical Specification is difficult, or costly to meet, he is free to propose an alternative solution, provided that the deviations from this Technical Specification, together with the reasons and advantages, are clearly indicated in the tender. Such alternative solutions shall always be made in addition to a conforming bid, which must comply fully with this Technical Specification.

CERN reserves the right to accept or reject the proposed alternative solutions without justification.

3.1.3 Preliminary programme

The Bidder shall propose a preliminary design and manufacturing schedule with the tender, based on the specified CERN provisional delivery schedule.

3.1.4 Subcontractors

The Bidder shall declare in his Tender any subcontractors whose services he intends to use in the event of a Contract. Refer to the commercial documents for more details. If awarded the Contract, the Bidder shall restrict himself both to the subcontractors and the amount mentioned in the Tender. If, for some reason, he wants to change any subcontractor, or the scope of subcontracted work, or the amount subcontracted, he must obtain CERN’s prior agreement in writing.

3.1.5 Technical Questionnaire

The Technical Questionnaire attached to this Technical Specification shall be completely filled in and returned with the Tender Form, otherwise the tender will not be considered as complete and will be discarded.

3.1.6 Presentation of tender

3.1.7 Country of origin

Please refer to the commercial documents for specific conditions concerning the country of origin of the equipment or services to be supplied.

3.2 Contract execution

3.2.1 Responsibility for design, components and performance

The Contractor shall be responsible for the correct performance of all items supplied, irrespective of whether they have been chosen by the Contractor or suggested by CERN. CERN’s approval of the design and component choice does not release the Contractor from his responsibilities in this respect.
CERN assumes responsibility for the performance of items and sub-systems supplied by CERN.

### 3.2.2 Contract follow-up

#### 3.2.2.1 Contract engineer

The Contractor shall assign an engineer to be responsible for the technical execution of the Contract and its follow-up throughout the duration of the Contract.

#### 3.2.2.2 Progress report

The Contractor shall supply, within one month of notification of the Contract, a written programme detailing the manufacturing and testing schedules. The programme shall include preliminary dates for inspections and tests.

A written progress report shall be sent to CERN every xxxx months until completion of the Contract.

#### 3.2.2.3 Design approval and production

The detailed design shall be submitted to CERN for approval within xxxx months after notification of the contract. CERN will give its approval or refusal, in writing, within xxxx weeks. Component ordering and equipment manufacture shall not start without CERN’s written prior agreement.

The series production shall be preceded by the production of xxxx pre-series units or xxxx prototypes. Production of the series shall not start before CERN has given its formal approval of the pre-series or prototypes in writing.

### 3.2.3 Deviations from this Technical Specification

If, after the Contract is placed, the Contractor discovers that he has misinterpreted this Technical Specification, this will not be accepted as an excuse for deviation from it and the Contractor shall deliver equipment in conformity with this Technical Specification at no extra cost.

During execution of the Contract, all deviations proposed by the Contractor from this Technical Specification, the Tender, or any other subsequent contractual agreement, shall be submitted to CERN in writing. CERN reserves the right to reject or accept such proposals without justification.

CERN reserves the right to modify this Technical Specification during execution of the Contract. The consequences of such modifications shall be mutually agreed between CERN and the Contractor.

### 3.3 Factory access

CERN and its representatives shall have free access during normal working hours to the manufacturing or assembly sites, including any subcontractor’s premises, during the Contract period. The place of manufacture, as stated in the Tender, may only be changed after written approval by CERN.
4. TECHNICAL REQUIREMENTS

4.1 General description

4.2 Design criteria

4.3 Materials

4.4 Dimensions and tolerances

4.5 Performance

4.6 Safety

4.7 Operational conditions

4.8 Environmental conditions

4.9 Controls

4.10 Information and documentation management

4.10.1 Manufacturing drawings
Manufacturing drawings prepared by the Contractor for the execution of the Contract shall comply with the procedure defined in chapter 8 of the LHC QAP document No LHC-PM-QA-306.00, "Drawing Process-External Drawings".

4.10.2 Planning and scheduling
Planning and scheduling activities shall be performed according to the procedure defined in the LHC QAP document No LHC-PM-QA-301.01, "Planning and Scheduling Requirements for Institutes, Contractors and Suppliers".

4.10.3 Quality control records
All specified tests and measurements carried out during all stages of production, from raw material procurement up to delivery and installation, must be recorded in specific files, collected in the MTF (Manufacturing and Test Folder), according to the procedure defined in the LHC QAP document No LHC-PM-QA-309.00, "Fabrication and Inspection of Purchased Equipment".

5. APPLICABLE DOCUMENTS
Please refer to the cover letter or Instructions to Bidders for the complete list of enclosed documents which form part of this Invitation to Tender.
Please note that the quality assurance documents, CERN standards and Purchasing documents referred to in this Technical Specification are on the enclosed CD-Rom entitled "CERN Official Documents".

5.1 Standards
The following additional standards are applicable for the execution of the Contract.

5.1.1 CERN standards

5.1.2 International standards

5.1.3 National standards

5.2 Other references

5.2.1 On-site work regulations
If work is to be carried out on the CERN site, attention is drawn to the fact that CERN has specific rules concerning e.g. safety regulations applicable to works of Contractors at CERN, access to and activities on the CERN site, occupational health and safety on the Organization's site and special health and safety matters.

5.2.2 Other documents

6. QUALITY ASSURANCE PROVISIONS
The Contractor must plan, establish, implement and adhere to a documented quality assurance program that fulfils all the requirements described in this Technical Specification and drawn up according to the Quality Assurance Plan for the LHC Project.

Please note that the quality assurance documents, CERN standards and Purchasing documents referred to in this Technical Specification are on the enclosed CD-Rom entitled "CERN Official Documents".

The list of relevant topics covered by the LHC Quality Assurance Plan, together with the corresponding documents, is given in Table 1 below.

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<thead>
<tr>
<th>Topic</th>
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<td>Glossary, Acronyms, Abbreviations</td>
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<td>Design Process and Control</td>
<td>LHC-PM-QA-307.00</td>
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7. TESTS

7.1 Tests to be carried out at the Contractor's premises

CERN reserves the right to be present, or to be represented by an organization of its choice, to witness any tests carried out at the Contractor's or his subcontractors' premises. The Contractor shall give at least 10 working days notice of the proposed date of any such tests.

7.2 Tests to be carried out at CERN

8. DELIVERY AND COMMISSIONING

8.1 Provisional delivery schedule

8.2 Packing and transport to CERN

The Contractor is responsible for the packing and, where included, the transport to CERN. He shall ensure that the equipment is delivered to CERN without damage and any possible deterioration in performance due to transport conditions.

8.3 Handling at CERN

8.3.1 CERN supplied items and services

8.3.2 Contractor’s installations at CERN

Please refer to section 5.2.1.

8.4 Commissioning

8.5 Acceptance and guarantee

Provisional acceptance will be given by CERN only after all items have been delivered in accordance with the conditions of the contract including documentation referred to in this Technical Specification, all tests specified have been successfully completed and all test or other certificates have been supplied to CERN.
The guarantee period is defined in the commercial documents.

8.6 Service

8.6.1 Maintenance

8.6.2 On site service

8.6.3 Training

9. CERN CONTACT PERSONS

Persons to be contacted for technical matters:

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<tr>
<th>Name/Division/Group</th>
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Persons to be contacted for commercial matters:

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Annex A:  List of Drawings

Annex B:  CD-Rom "CERN Official Documents"