
BEER - Project Quality Plan

	Name	Role/Title
Owner	Premysl Beran	BEER Lead Scientist (ESS, NPI)
Authors	Radim Svejda ^a , Jiri Petru ^b	^a NUVIA ^b UJV Rez
Reviewer	Gabor Laszlo	NSS Lead Instrument Engineer
Approver	Shane Kennedy	NSS Project Leader

CONTENT

CONTENT.....	2
1. SCOPE.....	5
2. ISSUING ORGANISATION	5
3. INPUT TO THIS QUALITY PLAN	5
3.1. Basic Documentation related to this Document	5
3.2. Quality documentation of Contractor.....	5
3.3. Related Documents of ESS.....	5
4. QUALITY GOALS.....	6
5. MANAGEMENT RESPONSIBILITIES	6
5.1. Overall project organisation	6
5.2. Contractor’s project team	6
5.2.1. Steering Committee	6
5.2.2. Project sponsor	7
5.2.3. Project manager	7
5.2.4. Team manager	8
6. DOCUMENTATION AND STORAGE DATA	9
6.1. Document identification.....	9
6.2. Review and approval of documents	10
6.2.1. Internal Contractor’s approval procedure	10
6.2.2. Review procedure of IK Partner.....	10
6.2.3. Approval procedure of ESS	10
6.2.4. Document distribution	11
7. CONTROL OF RECORDS.....	11
7.1. Records which are not subject of uniform identification. ...	11
7.2. Records which are subject of uniform identification	11
8. RESOURCES	12
8.1. Materials	12
8.2. Human resources	12
9. REQUIREMENTS.....	12
10. COMMUNICATION.....	13

10.1.	Project language.....	13
10.2.	Communication rules	13
10.3.	Kick-off meeting	13
10.4.	Status meetings.....	14
10.5.	Special meetings.....	14
10.6.	Internal meetings of Contractor	14
11.	DESIGN AND DEVELOPMENT PROCESS.....	14
11.1.	Design and development planning	15
11.2.	Design and development inputs	15
11.3.	Control of design and development changes.....	16
12.	PURCHASING	16
12.1.	Subcontracting schedule	16
13.	PRODUCTION AND SERVICE PROVISION	16
14.	IDENTIFICATION AND TRACEABILITY.....	17
15.	CUSTOMER PROPERTY.....	17
16.	PRESERVATION OF PRODUCT	18
17.	CONTROL OF NONCONFORMING PRODUCT.....	18
18.	MONITORING AND MEASUREMENT	19
18.1.	Hold point	19
18.2.	Witness point	20
19.	AUDITS	20
19.1.	Internal Audit	21
19.2.	Audits Performed by ESS / IK Partner	21
19.3.	Audits Performed by Independent Quality Control	21
19.4.	Audits on subcontractors	21
20.	CHANGE MANAGEMENT	22
20.1.	Changes initiated by Customer.....	22
20.2.	Changes initiated by Contractor	22
20.3.	Agreement via Email	22

Document Type Description
Document Number ESS-0432363
Revision 1 (4)

Date Nov 9, 2018
State Preliminary
Confidentiality Level Internal

20.4. Written assignment 23
21. GLOSSARY..... 23
22. REFERENCES 23
DOCUMENT REVISION HISTORY 24

1. SCOPE

The scope of the Quality Plan is to define methods to ensure product quality and describe the manners in which the Contractor's QMS will be implemented within the project to satisfy the requirements of the contract documents. Furthermore, this document will outline the necessary tools, and specific activities and tasks, which will ensure quality throughout the project lifetime.

2. ISSUING ORGANISATION

Nuclear Physics Institute (NPI) and NUVIA.

3. INPUT TO THIS QUALITY PLAN

3.1. Basic Documentation related to this Document

Contract between IK Partner and Contractor with Annex "Schedule NIK 6.6#3 (Part of WP 13.6.6) – Beamline for European Engineering Research" signed between European Spallation Source – ERIC and Nuclear Physics Institute of the Czech Academy of Science [1].

EN ISO 9001:2015	Quality management systems. Requirements [2].
EN ISO 10005:2005	Quality management. Guidelines for quality plans [3].
EN ISO 10006:2003	Quality management. Guidelines for quality in project management [4].

3.2. Quality documentation of Contractor

PJ01	Quality Manual [5]
OS03 Directive	Documentation Management [6]
OS04 Directive	System Management and Monitoring [7]
OS07 Directive	Contract Management and Records [8]
	Guideline for design documentation preparation [9]

3.3. Related Documents of ESS

ESS-0001879	Change Control Process [10]
ESS-0003688	Configuration Management Plan [11]
ESS-0008910	Design Review SOP [12]

ESS-0039311	Handbook for Plant & Process Design [13]
ESS-0027398	ESS Rules for Confidentiality Level Classification [14]
ESS-0039408	ESS NOSG Handbook [15]
ESS-0047989	ESS Rules for Quality Regulation - Mechanical Equipment [16]
ESS-0094091	ESS Generic Requirements for Marking and Labelling [17]

4. QUALITY GOALS

The quality goals of the project are to ensure that the delivered systems will fulfil the technical specifications, at the highest possible level and with correct interfaces to adjacent subsystem.

5. MANAGEMENT RESPONSIBILITIES

5.1. Overall project organisation

ESS is the final beneficiary of deliverables. ESS shall co-operate with the IK Partner and give all reasonable assistance to the Partner in its performance of the Scope of Works.

IK Partner signed a contribution agreement with ESS. IK Partner shall carry out the Scope of Works set out in the Schedules, provide and be responsible for all technical and financial reports, labour, materials, equipment and other resources required for the performance of the Scope of Works.

Contractor signed a commercial contract with IK Partner.

Representatives of IK Partner are in the Steering Committee and are responsible for contractual communication and technical communication affecting price, schedule or scope. They are informed about technical changes without impact on contract.

5.2. Contractor's project team

5.2.1. Steering Committee

Steering committee consists from representatives of main project stakeholders. Steering committee solves the contractual issues, approves the changes in the project plan.

5.2.2. Project sponsor

Project sponsor is a representative of the Contractor in the Project Steering Committee. Supervise the project from position of Contractor's head of division.

Responsibilities:

- Periodical review of project progress and reporting to the Contractor's TOP management
- Appoints and delegates project manager
- Approves the financial plan of the project, budget and schedule
- Approves the members of realization team and the members of design team
- Deals with the company sources and recommends their distribution
- Assigns the approved company sources
- Checks if the contract conditions are met from the commercial point of view
- Is authorized and responsible to monitor labour of project team (including the subcontractors)
- Approves the proposal of technical solution, the method of non-conformity control and a selection of the main sub-suppliers and related contracts
- Gives instructions to commence and closing individual sub-periods
- Is member of Contractor's change committee, the results of change committee submit to steering committee

5.2.3. Project manager

Project Manager controls and monitors the contract and is responsible for the implementation of the contract.

Responsibilities:

- Proposes the financial plan of the project
- Proposes the schedule of the project
- Manages the assigned team members and sub-contractors
- Approves the partial project outputs
- Checks if the contractual conditions are observed

- Checks the financial plan of the project
- Checks the schedule of the project
- Is Responsible for approving documentation and project documentation control
- Organizes the reviews of subcontractors and sub-suppliers
- Checks sub-supply receipt completeness
- Verifies the incoming materials checks
- Is responsible for the Change management
- Is responsible for nonconformities
- Is responsible for the qualification verification of all project workers
- Is responsible for quality assurance in the frame of Project in collaboration with the Quality Manager
- Proposes the technical solution, the method of non-conformity control and a selection of the main sub-suppliers and related contracts
- Keeps records about the project realization
- Is member of Contractor's change committee, collect and prepares the estimation of the impact to the project cost and schedule

5.2.4. Team manager

Responsibilities:

- Is responsible for management of assigned team
- Is responsible for proposal and control of schedule of sub-period
- Is responsible for implementation of Quality plan in all controlled processes
- Is responsible for observing technical standards and regulations
- Is responsible for the qualification verification of all team workers
- Is responsible for monitoring of nonconformities, reports identified nonconformities to the project manager
- Keeps records about sub-period realization

6. DOCUMENTATION AND STORAGE DATA

Contractor will provide a Documentation Schedule detailing all documents, records, drawings, plans, schedules, manuals and data relevant to the implementation of the Project.

The Documentation Schedule will be maintained as the reference for documentation status within the contract.

Contractor is responsible for updating the Documentation Schedule throughout the continuance of the Contract.

All documents shall be in English.

Documents are uploaded into CHES, where they can be accessed by both IK Partner and ESS.

6.1. Document identification

In order to assure that all documents are reliable and traceable, the following information shall be included:

- Project name
- Title
- Author's name and organisation
- Identification number of document
- Number of revision
- Document status (Preliminary, Review, for Approval, Released)
- Confidentiality level (Public, Internal, Confidential, Strictly Confidential)
- Date of issuing
- Name and organisation of reviewer
- Name and organisation of approver

All of listed information are included in predefined title page, which will be used in documents in case that all required information are not specified elsewhere in the document. All documents shall be provided with ESS identification number according to ESS Configuration Management Plan [11]. The Contractor shall use own document's identification number. For generating of Contractor's document number the Guideline for design documentation preparation [9] will be used

During the document preparation the document status shall be "Preliminary". Document changes and development shall be controlled using indexing on title page and table

“Revision List” in document. During Contractor’s internal approval the document status will change to “Review”. After Contractor’s internal approval procedure and submitting to ESS for review the document status will change to “For Approval”. After approval of the document by ESS the document status will change to “Released”. When a requirement on change of the “Released” document will arise the procedure described above shall start again with increased number of revision.

Confidentiality level of documents will be specified in accordance with ESS Rules for Confidentiality Level Classification [14].

6.2. Review and approval of documents

6.2.1. Internal Contractor’s approval procedure

Project documentation is subject of Internal Contractor’s Approval. Approval procedure will be carried out in accordance with Contractor’s Internal Directive OS03 – Documentation Management [6], which defines Approval procedure for documentation worked by Contractor as well as documentation worked by subcontractors.

6.2.2. Review procedure of IK Partner

After internal Contractor’s approval procedure project documentation is a subject of IK Partner’s review. After the review procedure, the documentation is presented to ESS for approval.

6.2.3. Approval procedure of ESS

ESS Approval procedure shall be organised as defined in the ESS Design Review Standard Operating Procedure [12].

The contents of the CDR data package shall be established as a minimum 4 weeks before the review.

The review board shall review the documentation provided and submit written comments to the ESS and IK Partner no less than 3 working weeks before the review meeting. The IK Partner shall consolidate the comments and provide written answers to the board no less than 1 working week before the review meeting.

The agenda of the review meeting shall be communicated to the Parties no less than 1 week before the review meeting. The review meeting may include in depth presentations by the IK Partner of the work undertaken and responses to the review findings.

6.2.4. Document distribution

All documents till the Contractor's approval will be stored in electronical form in the contractor's project folder. After Contractor's approval will be the document uploaded to the CHESS for IK Partner and ESS review procedure. Information about document's uploading will be sent to the ESS responsible person by email.

After document's approval by ESS the distribution will be controlled by ESS using CHESS.

7. CONTROL OF RECORDS

All records shall have unique identification due to their traceability. Records shall be divided into two groups.

7.1. Records which are not subject of uniform identification.

This group includes records of internal or external communication such as:

- Statements
- Letters
- Emails
- Faxes
- Presentations

For identification, archiving etc. of these records author or sender is responsible.

7.2. Records which are subject of uniform identification

This group includes records such as:

- Administrative records
- Quality assurance records
- Moments of meetings
- Tests protocols
- Monthly reports
- Final report

In order to assure that all records are reliable and traceable, the following information shall be included:

- Project name
- Title
- Author's name and organisation
- Identification number of document
- Number of revision
- Document status – if applicable
- Confidentiality – if applicable
- Date of issuing
- Name and organisation of reviewer – if applicable
- Name and organisation of approver – if applicable

All these records will be stored in electronical form in the contractor's project folder. Records which are subject of ESS approval shall have ESS identification number and will be uploaded to the CHES.

these records will be stored in electronical form in the contractor's project folder. Records which are subject of ESS approval shall have ESS identification number and will be uploaded to the CHES.

8. RESOURCES

8.1. Materials

Generally, the ESS NOSH Handbook [15] and ESS Handbook for Plant & Process Design [13] requirements shall be followed.

For what concerns the quality characteristics of the different components, equipment shall be EU-ROVENT certified to ensure the compliance with European regulation and best engineering practice. ISO, EN standards and directives shall be taken as reference for the selection of material.

8.2. Human resources

The contractor will assure certified welders and welding engineers to satisfy the quality requirements on products according to ESS Rules for Quality Regulations - Mechanical Equipment [16].

9. REQUIREMENTS

Requirements are defined in document ESS-0124328 BEER – System Requirements Document [18].

10. COMMUNICATION

10.1. Project language

Due to the international significance of the project the communication language will be used as follows:

- All communication to the ESS: English
- IK Partner – Contractor: Czech
- Contractor – subcontractors: Czech

10.2. Communication rules

Email shall be the normal way of communication except the formal documents where the signature is required. The communication rules have been established as follows:

- Contractual and project communication should be sent according to the contractual scheme Contractor – IK Partner – ESS (also in opposite way). The email should be considered as official form of communication. It is recommended to use letters for important contractual issues.
- Technical communication with impact to the contractual price, schedule or scope should be sent as the contractual and project issues (see above in this chapter).
- Technical communication during design phase without impact to contractual price, schedule or scope should be sent directly by Contractor or Subcontractor to the ESS, added by email copy to an IK Partner.

10.3. Kick-off meeting

Kick-off meeting is the first project opening meeting. The main objective of Kick-off meeting is:

- Confirming of the mutual understanding of the Scope of Work
- Presenting the baseline proposals of project plan, schedule and work breakdown structure
- Introducing the key resources and team members

- Completing the milestone definition list
- Making technical presentation of the proposed solution
- Presenting management plans

The Minutes of Meeting shall be prepared and agreed by all the key parties.

10.4. Status meetings

Status meetings shall be held every month during the whole duration of the project. Status meetings may be held at the ESS or IK Partner's premises or over the telephone/video conferencing. The purpose of the meetings is to review progress, risks, review decide on change requests and discuss upcoming activities and potential challenges.

The Minutes of Meeting shall be prepared and agreed by all the key parties.

A technical meeting shall be held every week mainly over the video conferencing. Technical issues shall be discussed and clarified on these meetings.

10.5. Special meetings

In addition to the status meetings could be, if necessary, at the request of ESS, IK Partner or Contractor organized the special meeting in the form of telephone/video meeting. These meetings will focus on issues that could affect the execution of project and finding the appropriate action.

The Minutes of Meeting shall be prepared and agreed by all the key parties.

10.6. Internal meetings of Contractor

Project manager shall organize regular internal meetings of Contractor with the participation of the Contractor's employees and Subcontractors, these meetings are aimed at checking progress and resolve potential problems associated within the project implementation.

11. DESIGN AND DEVELOPMENT PROCESS

Design and development processes are managed as comprehensive and independent subprojects within the project management of Contractor. These processes are defined in Contractor's Internal Directive OS03 – Documentation Management [6] and Directive OS07 – Contract management and records [8].

11.1. Design and development planning

The Contractor will implement design and development planning in the framework of project solution. The project planning consists mainly of:

- Advanced design and development
- Definition of measurable criteria for review, verification, and validation of each taken step during design and development
- Structured project organization, including responsibility and legalization in the act of design and development

Project manager has overall responsibility for design and development planning.

11.2. Design and development inputs

Inputs for individual phases of design and development or references to them are defined in project plan.

These inputs are reviewed for adequacy, completeness, clarity and mutual consistency particular in the following criteria:

- Standards of functionality and implementation
- Standards of internal and external legislation
- Information and experience from similar projects (references to them)
- Further information according to project set up and implementation

The unknown or undefined requirements for design and development are managed using a Task list. Task list will be uploaded to the CHESS. For updating of Task list is responsible Contractor's Project manager.

The Required design and development outputs are subject of review and approval processes according to Chapter 6.2 of this document. The Design and development output shall generally meet following characteristics:

- Fulfils the inputs requirements
- Provides recommendations for realization, including purchasing and services provision
- Includes the criteria for product acceptance
- Specifies product's characteristics for correct and safe using

11.3. Control of design and development changes

Any changes registered by the Contractor or ESS are identified and approved systematically via the change control procedure which includes assessment of cost, Plan and safety implications of the proposed changes. This makes it certain that all applied modifications are listed, reviewed, verified, validated and approved, according to all the right and legal standards. The framework of modification analysing is being carried out with the possibility of influential modifications to surrounding systems.

The Contractor will keep the Change log to show the current status of requests for Change and Changes authorised or pending. Change log will be uploaded to the CHESS. For updating of Change log is responsible Contractor's Project manager.

12. PURCHASING

All supplying organizations (Subcontractors) are certified (approved) organizations with an established quality control system (all suppliers who cooperate with the Contractor are being validated). The Standard Governing Subcontractor's certification is the Contractor's internal quality standard and requirements (All Subcontractors must be in accordance with Contractor's internal quality standards and requirements).

Contractor's evaluation of Suppliers using the methods described under Directive – OS07 Contract Management and Records [8] is performed periodically. All supplying organizations (Subcontractors) for this project will be subject to evaluation and record of such evaluation will be maintained as required by section 7.4.1 of ISO 9001:2000 [2].

12.1. Subcontracting schedule

The Contractor has established a Subcontracting schedule detailing:

- All major or critical items and activities to be subcontracted by the Supplier
- Specifications of the associated items or activities to be performed
- The identity of the relevant Subcontractor, including details of its contact officer
- Proof of the Subcontractor's qualification, including for example ISO 9001 certification

The Contractor shall update the Subcontracting Schedule, or its parts, when required.

13. PRODUCTION AND SERVICE PROVISION

Contractor shall plan product realization within the project management activities. The individual stages, their duration and the milestones will be included in the schedule of the project, which is part of ongoing monitoring of the project documentation. Schedule will

be continuously updated and is monitored by the ESS and IK Partner during the status meetings.

Before products realization the Contractor will provide following qualification documents and manufacturing process specifications to be approved by ESS.

Document	Archive number
Valid supplier assessment of subcontractors	
Comprehensive layout and referencing documents (Drawings etc)	
Component part list	
Design review/report	
Calculation review/report	
Material procurement specification	
Inspection plan	
The NDT company's certificate of accreditation and the extent of the accreditation	
The NDT personnel certificate of examination	
Forming procedure	
Welding data package	
- WPS + WPQR	
- Certification of the company's authorization for joining materials	
- Certification of welders	
- Qualification of welding personnel	
NDT procedures	
Program for pressure and tightness testing - installation	

14. IDENTIFICATION AND TRACEABILITY

Requirement on marking of the components is defined by ESS Configuration management plan [11] and ESS Rules for Plants & Process Design [13]. The components shall be marked according to ESS Generic Requirements for Marking and Labelling [17].

15. CUSTOMER PROPERTY

<<Describe how customer property is identified within your organisation and how it is controlled. Seen as an input, describe how it is verified that the provided customer property fulfils the stated requirements before use, and if they are not; how these nonconformities are handled. Specify how lost or damaged property of customer is handled. >>

16. PRESERVATION OF PRODUCT

The Contractor shall preserve all the components for delivery and storing for period before the installation will be started. The conditions for storing of components are set as follows:

- Ambient temperature: -5 to +40°C
- Relative humidity: max. 75% at 40°C

All components shall be adequately packed by Contractor to avoid any mechanical damage during the storage period on the ESS site. Contractor is responsible for finding out the storage condition on ESS site before delivery.

17. CONTROL OF NONCONFORMING PRODUCT

The Contractor has drawn up a documented procedure to ensure that a product that is not in compliance with requirements has been identified and managed. Identification and management of a non-complying product prevents:

- its unintentional use or delivery
- its entering further processes

Records are kept about the nature and manner of management and solutions, and about implemented follow up measures.

If any nonconformities will occur in relation to the approved design documentation, ESS requirements or applicable standards or laws, there are two possible eventualities:

The contractor is able to produce the equipment according to all requirements. In this case the Contractor takes internal actions, but these actions must be recorded in the Status report. If these actions will lead to a correction according the document, which is not approved by ESS, the Contractor must obtain consent of ESS before the implementation of correction.

The Contractor is not able to produce the equipment according to all requirements. In this case the Contractor must submit for approval a proposal of correction actions to the ESS. Report of Nonconformity shall be prepared by the Contractor and submitted to the ESS.

The detection of Nonconformities by the Contractor and its subcontractors is responsibility of the team managers. The Team manager, after identification, ensures the separation of nonconforming product from process and stops the process (incl. related processes). The Team manager then informs the Project manager, who records the nonconformity.

Nonconformity will be managed by each supplier, thus in the place of origin.

18. MONITORING AND MEASUREMENT

The System Verification Plan will be the central compliance document. The System Verification Plan will be developed during the design phase. For each particular activity, the System Verification Plan will identify:

- The applicable requirements and instructions
- Whether or not that activity is to be witnessed or whether notification is required
- The provisions for recording the verification and completion of the listed operations

Before the realization of products, the Contractor will provide one or more Inspection and Test Plans according to the ESS Rules for Quality Regulations. Each Inspection and Test Plan will be a set of manufacturing, control and test operations arranged in logical order. Inspection and Test plan shall include at least following inspection activities:

- Completeness, availability and approval of documentation (construction, inspection, quality, ...)
- The professional qualification of staff
- Proper state of technical equipment for production
- Input inspections of materials
- Checks of individual production steps
- Checks of assembled parts of product (dimensional, functional, ...)
- Tests FAT, SAT
- Final approval of the product quality

Important part of Inspection and Test Plans is also the Welding data package.

Inspection and test plans are subjects of ESS approval.

18.1. Hold point

During the approval of Inspections and Test Plans the ESS may assign the Hold point mark (H) to the individual inspection activity.

The Hold point means that Contractor shall formally in written invite the ESS supervision to participation on inspection activity at least 10 working days in advance. Supervision will

respond formally stating their intentions at least 5 working days before the scheduled date of inspection activity.

After confirmation of the supervision participation the Contractor shall not perform the inspection activity without consent of supervision except in the case of written authorization by ESS supervision.

Signature of ESS supervision on the Inspection and Test Plan document immediately after performing of inspection activity applies to the Contractor for consent to the continuation with consequent activity.

However, if the ESS supervision that was properly informed by the Contractor within the notification period, does not arrive at scheduled, the contractor may proceed the inspection activity after written notice of the absence of ESS supervision.

18.2. Witness point

During the approval of Inspections and Test Plans the ESS may assign the Witness point mark (W) to the individual inspection activity.

The Witness point means that Contractor shall inform the ESS supervision at least 10 working days before scheduled date of inspection activity. ESS supervision will respond only in case that requires participation on this inspection activity.

If the ESS supervision does not respond at least 5 working days before the scheduled date, the Contractor may proceed with inspection activity without participation of ESS supervision.

If the ESS supervision has confirmed his participation, but does not arrive, the Contractor may proceed with inspection activity without participation of ESS supervision.

19. AUDITS

In the course of the project implementation the ESS / IK Partner may perform audits of the quality system. For the purpose of the quality audits, ESS / IK Partner is obliged to permit access of ESS / IK Partner deputy or a supervision body to all of the project documentation, personnel and any site where the work is performed. Quality Control for activities that are subcontracted by the Contractor will be subject to the same requirements as for the Contractor.

As a result of any inspection or audit shall be an audit report containing:

- Description of activities
- Controlled Documents

- Identification of inspected parties and a facility for mark up of inspections points, e.g. Hold/witness
- Signatures and dates for acceptance of inspection points

19.1. Internal Audit

Internal Audits are used to verify compliance activities and processes of the project with the requirements of this PQP, standards, legislation and control documentation of Customer and to analyse the effectiveness of project management of project.

Internal audits are carried out by the audit team designated by the CEO. In the absence of its own skilled workers members of the audit team be outside workers.

19.2. Audits Performed by ESS / IK Partner

The ESS / IK Partner may carry out planned audits, reviews and inspections of the Quality management system to verify compliance activities and processes with quality and technical aspects of Contract.

Date of the audit will be announced at least 15 days in advance.

19.3. Audits Performed by Independent Quality Control

During the project implementation, a worker of independent quality control will review if this Quality Plan and other quality documentation are observed. He can participate in any audits specified in this Quality Plan, or he can order an unplanned audit. In case the serious imperfections have been found having an effect upon the work quality, he can cease the works and he can initialize non-conformity management.

Date of the audit will be announced at least 15 days in advance.

19.4. Audits on subcontractors

During the project implementation the Contractor shall perform quality audits at subcontractor's sites.

The Contractor will announce the planned date of the audit by the subcontractor to the ESS and IK Partner at least 1 working days in advance. The ESS and IK Partner has the right to participate in the audit of the subcontractors.

Results of the audit will be communicated to the ESS, IK Partner and subcontractors.

20. CHANGE MANAGEMENT

20.1. Changes initiated by Customer

Before the completion of the Work ESS (or IK Partner) may send request for change in written form. Complete procedure for change control is described in document Change Control Process [10]. Changes without impact on schedule and costs may be agreed by email. Change request should contain following information:

- Detailed change description
- Change Analysis (effects, risks, time, costs etc.)
- Schedule impact for affected projects
- Scope impact for affected projects
- Cost impact for affected projects
- Safety Impact

20.2. Changes initiated by Contractor

In case that the Contractor is unable to meet the parameters or specification required by approved detailed design he must immediately upon the detection send a request for change.

Change means:

- Using other design solution, specifications or materials than the product or part was originally approved
- Production using equipment or tools repaired or relocated to another supplier
- Change of supplier components, materials or services
- Production following any change in production method or process
- Relocation of production or deployment of new production facilities

Technical changes may be made only on the basis of a written assignment and approval by the IK Partner and ESS.

20.3. Agreement via Email

Changes affecting only form of documents with no impact on schedule and with no additional costs, no effect on the interface and no effect on safety, with no contradiction with the standards of the product, may be agreed by email.

20.4. Written assignment

All other changes may be made only by written assignments and approval of the change request by ESS.

In all cases, the verbal agreement is not valid.

21. GLOSSARY

Term	Definition
WDP	Welding Data Package
EN	European Standard
ISO	International Organization of Standardization
FAT	Factory acceptance tests
SAT	Site acceptance tests
P&ID	Piping and Instrumentation Diagram
FEM	Finite Element Method
CFD	Computational Fluid Dynamics
QMS	Quality Management System
RAMS	Reliability, Availability, Maintainability and Safety
SDD	System Design Description
CAD	Computer-aided design
WU	Work Unit
COMM	Component operational and maintenance manual
SOP	Standard Operational Procedure
ESS	European Spallation Source – ERIC
IK Partner	Nuclear Physics Institute of the Czech Academy of Science
Contractor	NUVIA a.s.

22. REFERENCES

- [1] Contract between IK Partner and Contractor with Annex “Schedule NIK 6.6#3 (Part of WP 13.6.6) – Beamline for European Engineering Research” signed between European Spallation Source – ERIC and Nuclear Physics Institute of the Czech Academy of Science.
- [2] EN ISO 9001:2015 Quality management systems. Requirements.
- [3] EN ISO 10005:2005 Quality management. Guidelines for quality plans.

- [4] EN ISO 10006:2003 Quality management. Guidelines for quality in project management.
- [5] PJ01 Quality Manual
- [6] OS03 Directive Documentation Management
- [7] OS04 Directive System Management and Monitoring
- [8] OS07 Directive Contract Management and Records
- [9] Guideline for design documentation preparation
- [10] [ESS-0001879](#) Change Control Process
- [11] [ESS-0003688](#) Configuration Management Plan
- [12] [ESS-0008910](#) Design Review SOP
- [13] [ESS-0039311](#) Handbook for Plant & Process Design
- [14] [ESS-0027398](#) ESS Rules for Confidentiality Level Classification
- [15] [ESS-0039408](#) ESS NOSG Handbook
- [16] [ESS-0047989](#) ESS Rules for Quality Regulation – Mechanical Equipment
- [17] [ESS-0094091](#) ESS Generic Requirements for Marking and Labelling
- [18] [ESS-0124328](#) BEER – System Requirements Document

DOCUMENT REVISION HISTORY

Revision	Reason for and description of change	Author	Date
1	First issue	Radim Svejda	2018-11-08