Management document	Description of Quality Assurance Program (QAP)

QUALITY ASSURANCE PROGRAM AT DESIGNING AND MANUFACTURING OF THE EQUIPMENT FOR KUDANKULAMNPP, UNITS 3, 4, 5 AND 6. QAP for NPP (M)

QAP-KK-010-002-2023

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DEVELOPMENT AND APPROVAL SHEET

OPERATION	COMPANY / POSITION	NAME	SIGNATURE	DATE
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CONTENTS

0. QUALITY POLICY

Open Limited Liability Company Polesye is defined by the Buyer/Customer as a company responsible for activity connected with designing and manufacturing of the equipment for Kudankulam NPP, units 3, 4, 5 and 6 according to the requirements of the Agreement and main regulatory documents listed in Appendix B of the present Description of Quality Assurance Program at designing and manufacturing of the equipment for Kudankulam NPP (hereinafter referred to as QAP for NPP (M).

Top management of LLC Polesye guarantees timeliness of works performance, compliance with the requirements of present QAP for NPP (M) and of the Buyer/Customer by the enterprise personnel involved in the above-mentioned activity, puts a priority on ensuring nuclear safety in the carrying out of activities.

Top management of LLC Polesye supports the specialists of all levels in successful performance of their tasks, ensures in-time and high-grade training and qualification of the LLC Polesye personnel.

In order to achieve the tasks stated in the present QAP for NPP (M) the LLC Polesye management assists in maintaining and constant improvement of work quality.

The Deputy Director on Quality is appointed as the Management Representative in the field of quality. He is a contact person to discuss all the problems related to quality assurance. He has sufficient authority to:

- reveal, recommend and take up the decisions on problems related to quality assurance;
- control fulfillment of the decisions;
- check that nonconforming conditions are not admissible, nonconforming documents are not used and the works do not continue until the corrective actions performed.

The LLC Polesye top management bears responsibility for the quality assurance of the works specified by the Contract on the equipment for Kudankulam NPP, as well as for the regular analysis and revision of QAP for NPP (M) for the purpose of permanent improvement of quality assurance system.

LLC POLESYE DIRECTOR SEMENYUK V.

1. INTRODUCTION

1.1. General terms

1.1.1. The present Description of Quality Assurance Program (hereinafter – QAP for NPP (M) of LLC Polesye (hereinafter – the Enterprise) includes the program for designing of the Equipment and the program for manufacturing of the Equipment for NPP Kudankulam, units 3, 4, 5 and 6 (hereinafter – Kudankulam NPP or KK-3,4, KK-5,6).

1.1.2. This QAP for NPP (M) has been developed according to the requirements of the Agreement, recommendations, standards and safety guides of IAEA of GS-R-3 (for KK-3,4) and GSR Part 2 (for KK-5,6) series and international standards ISO of 9000 series, and also taking into account the Russian regulatory documents.

The main terms and definitions are given in Appendix A.

The list of regulatory documents is given in the Appendix B.

1.1.3. QAP for NPP (M) defines principles, organizational structure, internal and external organizational interfaces, organizational requirements and sequence of activity of the Enterprise during development and manufacturing of the equipment for Kudankulam NPP.

1.2. General purposes

1.2.1. A general purpose of the present QAP for NPP (M) at manufacturing of the equipment for Kudankulam NPP is regulation of the activities for quality assurance directed to implementation of the main criteria and principles of safety of NPP.

1.2.2. The present QAP for NPP (M) determines the requirements to creation, application, assessment and continual improvement of quality management system for the purpose of safety assurance of the equipment being manufactured.

1.2.3. LLC Polesye Quality Objectives are developed and approved annually by the company order to implement the policy.

1.2.4. Managers will be informed about the Objectives by emailing an order of their approval. The managers of the structural subdivisions are responsible to communicate the Objectives to the subordinate personnel. The Objectives shall also be available on the Company's web resource.

1.3. Field of application

1.3.1. The present QAP for NPP (M) is applied to all activities of the Enterprise and of its subcontractors related to nuclear safety assurance. QAP for NPP (M) determines the requirements and commitments of the Enterprise on warranty assurance of reaching the required quality at all the stages of fulfilling the works specified in the Agreement.

2. MANAGEMENT

2.1. Quality assurance program

2.1.1. General provisions

2.1.1.1. The basis for QAP for NPP (M) development at designing and manufacturing of the equipment for Kudankulam NPP is the requirement of the equipment supply contract for Kudankulam NPP made between the Enterprise and the Buyer/Customer.

2.1.1.2. Quality Deputy Director is responsible for QAP for NPP (M) development.

2.1.1.3. QAP for NPP (M), approved by top management of the Enterprise, is transferred to Buyer/Customer (in the presence of the requirements in the Contract) for agreement.

2.1.1.4. The Enterprise transfers control procedures together with QAP for NPP (M) to the Buyer/Customer (in the presence of the requirements in the Contract) for agreement.

2.1.1.5. Agreed description of QAP and control procedures are transferred to the Buyer/Customer in electronic format with scanned signatures in the format of PDF in the Russian language.

2.1.1.6. Upon the request of NPCIL description of QAP shall be transferred to it for approval. The Enterprise is obliged to accept comments of NPCIL and to transfer update description of QAP for final agreement.

2.1.1.7. The QAP for NPP(M) shall be subject to review at least every three (3) years or as business need arises.

2.1.2. Procedures, instructions and drawings

2.1.2.1. QAP for NPP (M) documentation has 3-level structure, given in Figure 2.1.

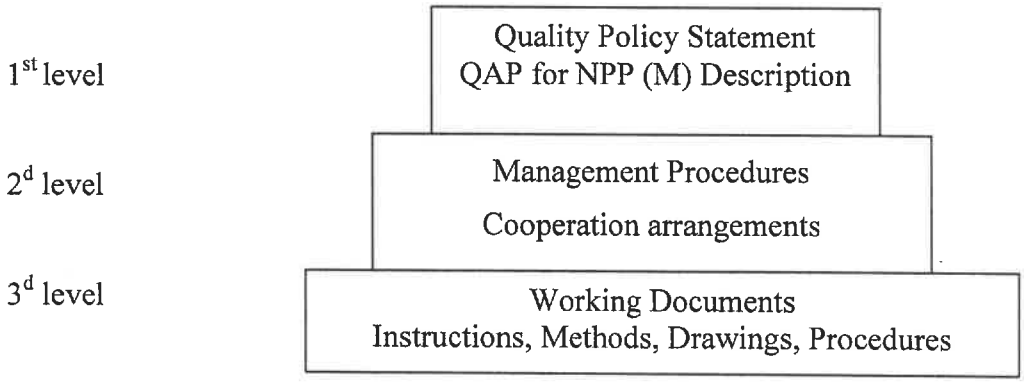


Figure 2.1

2.1.2.2. The present QAP for NPP (M) is the 1st level document (ref. to Figure 2.1) and determines the requirements for elaboration of the lower level documents and, if necessary, QAPs of Subcontractors (Sub-suppliers).

2.1.2.3. QAP for NPP (M) is put into action by Manufacturer director order, which is prepared by Quality Control Group after development and approval.

2.1.2.4. The 2nd level management documents necessary for fulfilling this QAP (M) include: management procedures, job descriptions, regulations on subdivisions, interface agreements, manuals and other organizational and administrative documents regulating the activity of managers on organization and planning quality assurance.

List of Management Procedures is given in Appendix C.

2.1.2.5. The 3d level working documents include design documentation, working and technical instructions relating to procedures of work fulfillment, quality control and tests of manufactured equipment.

The list of working procedures for performance QAP (M) is given in Appendix D

2.1.3. Management review

2.1.3.1. The present QAP for NPP (M) is checked, analyzed and corrected on the planned basis. The analysis from a management is carried out at least, than once a year. Changes and additions can be also executed under realization of corrective actions on the non-conformities and notes found during the audits of quality assurance performed by the Buyer/Customer. The next version of QAP for NPP (M) shall be agreed by the Buyer/Customer as required by the Agreement.

2.1.3.2. Analysis on content shall include (but not limit to) the following:

- works on quality assurance and state of their fulfillment;
- problems in the field of quality and proposals on their decision;
- faults of QAP for NPP (M), elimination of nonconformities, corrective actions;
- accidents and failures;
- staff preparation, training and issue of certificates.

2.1.3.3. Management of the Enterprise in the person of Quality Deputy Director controls and supervises quality of all works at all stages. Control and supervision is performed on the base of plans. Control and supervision cover all the works fulfilled by Sub-contractor as well.

2.1.3.4. The Enterprise shall send reports on the analysis of quality of works on the Agreement to the Buyer/Customer every three months. Quality Deputy Director is responsible for the organization of preparation and transfer of quarterly reports on quality analysis.

2.1.4. Conflict resolution in the field of quality

2.1.4.1. Quality Deputy Director is assigned as Representative of Management in the field of quality. He is authorized to reveal the problems connected with quality and to develop and introduce measures on solving these problems to the extent of suspending the works, if it is necessary.

2.1.4.2. In case of disagreement between department managers, which are beyond the competence of Quality Deputy Director, the problem is submitted to the Director of enterprise for solving on base of Quality System requirements.

2.2. Organization, responsibility and authority

2.2.1. Introduction

2.2.1.1. This QAP for NPP (M) is intended to the end that all activities of the Enterprise and its Sub-contractors connected with quality assurance during designing and manufacturing of the Equipment for Kudankulam NPP are performed under control and are recorded for the purpose of submission of the objective data concerning compliance of products specified with requirements of the Agreement.

2.2.1.2. QAP for NPP (M) applies to all specialists of the Enterprise including those who bear responsibility for planning, scheduling and providing resources.

2.2.2. Organization

2.2.2.1. The organizational structure of the divisions of the Enterprise involving in designing and manufacturing of the Equipment for Kudankulam NPP is shown in Appendix E.

2.2.2.2. The following types of specialization of labour are accepted at the Enterprise:

– functional specialization of labour among various categories of heads, specialists of the enterprise demanding from them certain complex of knowledge unique to them, training and skills on management functions;

– professional specialization of labour among groups of specialists/workers on technological uniformity of the performed work;

– qualification specialization of labour among groups of specialists/workers in dependence on complexity of the performed work.

2.2.2.3. Functions, duties and powers of heads and specialists are determined in the corresponding job descriptions.

2.2.3. Responsibility and authority

2.2.3.1. The Deputy Director for Quality is responsible for the successful planning, development, implementation and improvement of the Quality Plan(s), as well as for the coordination of quality activities both within the Enterprise and with external organizations.

2.2.3.2. All specialists of the Enterprise are responsible for acquaintance, understanding and accomplishment of those parts of QAP for NPP (M) which concern their activities. Division managers are responsible for certain specialists to review those documents on quality assurance (any level) which are related to their activities, and to follow them.

2.2.3.3. QCD personnel systemically perform control and assessment of the Enterprise activity concerning quality assurance at manufacturing of the Equipment. To realize such activities the audits (members of the audit group), shall be performed, the measures on non-conformance reports shall be controlled, the Quality Plans shall be prepared. Quality inspection monitoring and evaluation is per-

formed by the specialists who are not directly responsible for execution of the work being inspected for acceptance.

2.2.3.4. The top management executes analysis of QAP for NPP (M) on conformity of the planned actions to requirements of working standards.

2.2.3.5. Responsibility and authority to stop work is assigned to Quality Deputy Director, who organizes this work in such manner as issues of planning, control, inspection and etc. do not predominate over safety issue.

2.2.3.6. Authorities and responsibilities of personnel in subdivisions of the Enterprise, performing activities connected with quality assurance, are stated in this QAP for NPP (M), Regulations on subdivisions and job descriptions.

2.2.3.7. All the personnel responsible for performance of quality assurance functions have sufficient authority and freedom of action necessary for:

– quality problem definition;

– providing of recommendations and/or solutions on problems related to quality assurance;

– checks and representations of reports on accomplishment of the issued decisions to the Enterprise management;

– non-admission of further actions in case of detection of non-conformities up to the moment of carrying out of necessary corrective actions and/or development of preventive measures.

2.2.3.8. Sphere of responsibility of the Enterprise managers is shown in Table "Information about LLC Polesye in Appendix F.

2.2.4. Delegating of authorities and responsibilities

2.2.4.1. Each manager can delegate execution of any of his responsibilities to anyone immediately obeying to him specialists; however, responsibility for execution of these responsibilities cannot be delegated.

2.2.4.2. Each manager can execute the duties and take up the responsibility of immediately obeying to him specialist if the last one is properly qualified for this work.

2.3. Resources management

2.3.1. Provision of resources

2.3.1.1. Ensure quality policy is carried out and stated by the Enterprise management objectives are achieved appropriate resources have been allocated to the extent required:

- personnel with experience requirement;
- equipment for design and construction work and developments;
- production equipment;
- testing facilities and measuring equipment and etc.

When providing resources, the Enterprise management meets the requirements for planning, timely allocation and compliance to the stated purposes.

2.3.1.2. Allocated resources provide implementation and maintenance in working order of quality management systems, continuous productivity improvement that promotes successful functioning of production on release of high-quality products as:

- developed design, technological and organizational documentation establishes unified and complete requirements to products and provides production according to consumer requirements;
- primary equipment is exposed to periodic repair and upgrade for ensuring required parameters of engineering processes;
- working with measuring equipment and testing facilities is carried out so that the reliable assessment of parameters of processes of product production of is ensured;
- maintenance of quality system in working order is performed by carrying out of internal inspections of quality by qualified personnel.

2.3.2. Labour resources

2.3.2.1. Management of the process of providing LLC Polesye with qualified personnel through the creation of conditions for development and implementation of professional abilities and business qualities of each worker, maintenance of balance between a skill level of personnel and level of quality requirements of the performed work is performed by the Enterprise Director through the HR Training and Development Department, in such case:

- appointment of upper managers is performed taking into account knowledge and a work experience;
- heads and specialists conform to the qualification requirements stated in job descriptions;
- personnel are allowed to independently performed work after ensuring its training including theoretical and practical training at the Enterprise or at third parties (if necessary);
- activities of the Enterprise personnel are regulated with the documents given in appropriate sections of this QAP for NPP (M).

2.3.2.2. The system of staffing and training of the Enterprise personnel is aimed at providing necessary number and competence of personnel at the level sufficient for designing and manufacturing of Equipment effecting the safety of NPP.

2.3.2.3. Heads of structural divisions perform direct work on identification of needs for personnel number required for designing and manufacturing of the Equipment, experience level, determination of needs for personnel training.

2.3.2.4. Requirements for number and categories of personnel it are specified by organizational structure of the Enterprise and personnel arrangement of divisions on the basis of a type and scope of work.

2.3.2.5. In case of personnel selection the highly skilled workers with corresponding education and practical knowledge on the specialty/position that is of interest for the Enterprise are preferred to others.

2.3.3. Training, qualification and certification

2.3.3.1. The Enterprise personnel is trained and qualified that allows it of skilfully performing the work appointed to it in designing and manufacturing of the Equipment for Kudankulam NPP and understanding the consequences of its actions for safety.

2.3.3.2. For determination of personnel qualification involving in designing and manufacturing of the Equipment one or several of the following criteria are used:

- requirements for level of training;
- requirements for gathered experience;
- termination of training courses according to the installed program;
- assessment of production activities in a particular area;
- availability of the certificate (diploma) issued by admitted technical society or government facility.

2.3.3.3. In addition to previously obtained training, education and experience the Enterprise ensures training and professional development of the technical personnel for the purposes of every worker preparation for performing of necessary work. Deputy Director for HR Training and Development (in cooperation with the Deputy Director for Quality) is responsible for organization of personnel training. Technical Director is responsible for supervising personnel training.

2.3.3.4. The personnel of the Enterprise that is directly related to designing and development of the design documentation, development of a production process, inspection, manufacturing of the Equipment for Kudankulam NPP shall be subject to certification and periodic safe operation knowledge assessment as for the Equipment, under inspection of Federal Service for Ecological, Technological and Atomic Inspection.

2.3.3.5. Test of knowledge on safety regulations and rules in nuclear power of heads and specialists is carried out by the standing examination commission created by the order of the top management of the Enterprise.

2.3.3.6. Certification of personnel (welders, controllers/non-destructive testing inspectors) is carried out by examination committee of the organization having an appropriate license of Rostekhnadzor.

2.3.3.7. Working results of examination committees are drawn up by protocols in the prescribed form. Appropriate certificates are awarded based on the results of test of knowledge.

2.3.3.8. Control of timely certification and test of knowledge of subordinate personnel is performed by heads of structural divisions.

2.3.4. Infrastructure and labour conditions

2.3.4.1. LLC Polesye has developed infrastructure necessary for creation of conditions for providing fulfillment of requirements for products that includes:

– administrative and service building, production rooms and storage facilities equipped with heavy lift gears, special sites and mechanical facilities related to them;

– equipment for production processes: welding equipment, metal-cutting machines, including machines with CNC, equipment for metallurgical treatment (furnace for heat treatment, equipment for hot and cold stamping, stretching and rolling machines, bending and forming machines), equipment for heat, water jet and cold cutting of metal;

– repairs and maintenance service, energy service.

2.3.4.2. Infrastructure is constantly supported in operating condition with running, scheduled preventive and capital repairs.

2.3.4.3. The Equipment, used in engineering procedures, passes periodic tests for the purpose of prevention of degradation of its accuracy up to the level when there is a reject in products, during the period between planned repairs, and for determination of quality of the performed midlife or capital repairs based on documentary arranged plans and according to the requirements of STO-010-031, STO-010-032.

2.3.4.4. Improvement of techniques in operation, implementation of new methods of manufacturing and control including repairs, tests and providing special devices and equipment which are required for these purposes are systematically carried out.

2.3.4.5. The results of such activities which are documented in acts (reports, etc.), are analyzed and form base for later use in production.

2.3.4.6. For the purpose of improvement of activities of the Enterprise the management provides creation of such working conditions which could have a positive effect on motivation, satisfaction and work of personnel.

Arrangement of suitable working conditions includes:

– drill and implementation of new technologies on welding, heat treatment, machining, etc. using methods of creative work and possibility of more complete implementation of workers potential;

– the organization of works on labor protection and fire safety with compulsory education of personnel and appointment of the persons responsible for safe organization of works, fire safety,

carrying out of studies, instructing and certification of subordinate personnel;

- development of appropriate instructions;
- equipment of workplaces with office equipment;
- centralized retirement pension contribution;
- providing administrative and service buildings and production areas with heat, lighting and ventilation if necessary.

2.3.4.7. The Enterprise has created and now supports acceptable working conditions providing safe and satisfactory execution of operations on designing and manufacturing of the Equipment for the Kudankulam NPP without a superfluous physical and psychological load on personnel.

2.4. Safety culture

2.4.1. All workers, which are involved in manufacturing of the equipment for NPP Kudankulam, shall have safety culture - qualification and psychological readiness in case of which safety of NPP is the priority purpose and internal necessity leading to understanding by each worker influence of its activities on safety of NPP and consequences which low-quality performance of works can lead to.

2.4.2. Safety culture at the enterprise is created and supported by means of:

– selection, professional training, sustainment and preparation of personnel in each field of activity which influences over safety;

– strict observance of discipline at accurate distribution of authority and personal responsibility of the heads and the contractors;

– development and strict observance of the requirements of the quality assurance program, production and job descriptions, manufacturing instructions (processes) and their periodic updating taking into account gathered experience;

– establishments by the heads of all levels of the atmosphere of trust and such approaches to collective work which create internal necessity for positive attitude towards safety;

– self-checking of the activities by workers that influences over safety;

– understanding of inadmissibility of concealment of mistakes in activities, necessity of identification and elimination of the reasons of their origin, necessity of continual self-improvement, studying and implementation of advanced experience, including foreign one by each head and worker;

– establishments of such system of encouragement and penalties based on the results of productive activity which stimulates openness of workers' actions and does not promote concealment of mistakes in their work.

2.4.3. The order of the organization of works on forming and supporting of safety culture at the Enterprise is regulated with STO-010-053.

2.4.4. Forming and supporting of safety culture at personnel as one of the main components for quality assurance and reliability of the equipment made for NPP requires systematic and diversified work with personnel. For this purpose training system for the personnel was created at the Enterprise. Its main objectives:

– ensuring compliance of personnel qualification for the requirements of manufacture;

– forming of necessary knowledge and skills before work authorization including special ones;

– storing necessary knowledge and experience, development of production skills during labor activity;

– enhancement of knowledge and skills in case of change of working conditions;

– systematic control of professional knowledge and skills of personnel during labor activity.

2.4.5. In this direction of activities along with this Quality assurance program the following procedures, regulating working procedures and work progress monitoring, are in force:

– P-010-019 "Regulations on a test procedure of knowledge of regulations and rules on safety in nuclear power at the heads and the specialists of LLC Polesye";

– STO-010-027 "Order of selection, preparation, advanced training, certification and permit to work of personnel";

– STO-010-028 "Certification procedure of assembly fitters on preparation and assembly for welding of the equipment of NPP";

– STO-010-029 "Controller procedure qualification";

– П-КК-010-003 "Nonconformity management at manufacture of the equipment for Kudankulam NPP, units 3, 4, 5, 6";

– STO-010-046 "Certification procedure of the workers that carry out heat treatment of the parts at manufacturing of the equipment of NPP and Nuclear Power Units";

– STO-010-053 "Organization procedure of works on forming and supporting of safety culture";

– department regulations, position descriptions.

Given procedures regulate an order of:

– selection, completing, preparation, sustainment and advanced training, the admission to independent work of personnel,

– determinations of need for the number of personnel, level of its training and qualification,

– forming and supporting of safety culture,

– certifications and examination of personnel skills,

– assessment of regulations and rules on safety in nuclear power,

– development, accomplishment, analysis and update of programs on training, retraining, advanced training, examination and certification of personnel,

– keeping documentation (records) on human resource management.

2.5. Differentiated approach

2.5.1. In spite of the fact that quality assurance principles remain constant, usage scale of requirements of QAP for NPP (M) shall correspond to importance of each element or service for nuclear safety. Therefore the Enterprise at performance of works on designing and manufacturing of the Equipment for the NPP Kudankulam applies differentiated approach which allows to fulfill necessary requirements and to ensure proper quality and safety. The differentiated approach shall reflect planned and all an acknowledged difference in application of specific requirements for quality assurance. Requirements to quality assurance are differentiated depending on categories of quality assurance of the Equipment.

2.6. Quality policy

2.6.1. LLC Polesye quality policy consists in achievement, supporting and continuous improvement of quality of manufactured products according to the requirements of national and international rules, regulations and standards, and consumer requirements as well.

2.6.2. Quality policy determines documented purposes and liabilities of the Enterprise concerning quality.

Quality policy is approved by the Director of LLC Polesye and given in section 0 of this QAP for NPP (M).

Quality policy of the enterprise is explained in case of employment so that each worker completely understands it, promotes its realization and keeping according to the requirements of the regulating documentation and the consumer.

2.7. Cooperation

2.7.1. Cooperation control

2.7.1.1. Reliable interrelation between the Enterprise, the Buyer/Customer and NPCIL and the Subcontractors was established. Control over all interrelations regarding providing requirements of this QAP for NPP (M) is assigned to Deputy Director on quality.

2.7.1.2. The Subcontractors involved by the Enterprise in production of the Equipment specified in Agreement and/or separate assemblies / parts of this Equipment for NPP Kudankulam are responsible for quality and terms of manufacture and delivery of the products.

Interaction of the Enterprise with the Subcontractors concerning quality assurance is performed according to current agreements.

2.7.1.3. The Subcontractors are responsible for providing with all necessary and required information to the Enterprise.

2.7.1.4. Product acceptance of the Subcontractors for NPP Kudankulam is performed both at the enterprises of the Subcontractors, and during incoming inspection at LLC Polesye. The Buyer/Customer's representatives can take part in acceptance at the enterprise of the Subcontractor. The Subcontractors of the Enterprise are responsible for observance of the rules and technical requirements concerning safety and performance of works established in the Agreement taking into account all subsequent changes, and for compliance of delivered goods to established requirements.

2.7.1.5. The Subcontractors shall develop their own QAP which shall be based on the requirements of this QAP for NPP (M) if there are requirements in the Agreements.

2.7.1.6. QAP developed by the Subcontractors shall be approved by Deputy Director on quality of LLC Polesye.

2.7.1.7. Cross liability and communications links at implementation of QAP for NPP (M) are determined by the Agreement, documentation of QAP for NPP (M). Deputy Director on marketing shall prepare (if required) the agreement on interaction which can include the following requirements:

- main field of responsibility, powers and subordination;
- determination of responsibility for check, agreement and approval of technical documentation;
- identification of key positions for interaction;
- contents of the official documents which are required for accomplishment of procedures or transfer of technical information (programs, plans, specifications, methods, instructions, drawings, records);
- description of process of documentation transfer in and out of organization;
- internal and external activities schedules of the Enterprise within the requirements of the Agreement.

2.7.1.8. Control of interaction of the external organizations and divisions, involving in implementation of the Agreement, concerning quality assurance is performed by Deputy Director on quality.

2.7.2. Internal field of interaction

2.7.2.1. Internal field of interaction includes interaction between divisions of the Enterprise and is specified in Regulations on appropriate divisions.

2.7.2.2. Coordination of internal interactions on realization of QAP for NPP (M) is assigned to Deputy Director on quality.

2.7.2.3. Coordination of internal interactions on technical questions is assigned to Technical Director.

2.7.3. External field of interaction

2.7.3.1. External field of interaction includes interactions between the Enterprise and external organizations. Diagram of external interactions is shown in Appendix G.

2.7.3.2. Interaction of the Enterprise and the Buyer/Customer concerning quality assurance is performed according to the requirements of the Agreement. Key questions of interaction are resolved by direct negotiations and/or official correspondence of authorized representatives.

2.7.3.3. Interaction of the Enterprise with the Subcontractors concerning quality assurance is performed according to the current agreements on delivery. Key questions of interaction are resolved by direct negotiations and/or official correspondence of authorized representatives.

2.7.3.4. Coordination of interactions of the Enterprise with the Authorized organization concerning quality assurance is performed by Deputy Director on quality.

2.7.3.5. Interactions of the Enterprise with NPCIL are performed through the Buyer/Customer.

2.8. Rearrangement management (managerial transforming)

2.8.1. For the purpose of achievement higher results and ensuring required quality of manufactured equipment for NPP Kudankulam, organizational changes (reorganization) are carried out as a process of continuous updating (transformation) at the Enterprise.

2.8.2. For the purpose of ensuring process of continuous enhancement and transformation of Enterprise to ensure necessary quality of manufactured equipment and to satisfy consumer requirements it is necessary permanent accomplishment of the following requirements:

– well-defined objectives shall be set for the personnel participating in reorganization (transformation),

– actions for goal achievement and explanations about purpose of actions shall be brought to personnel,

– means for accomplishment of necessary transformations shall be provided to personnel,

– it is necessary to assign quite certain obligations to personnel and confer specific powers, and establish incentives for effective work as well.

2.8.3. Determination of tasks, strategies, plans and purposes is the main task of the top management of the Enterprise. Top management shall set the area of work at the Enterprise when providing high quality level and safety of manufactured equipment. All structural divisions of the Enterprise shall understand the direction set by top management and shall feel responsible for goal achievement. Priorities and purposes of the Enterprise shall be such to provide continuous enhancement of organizational changes and compliance of manufactured products to the requirements on safety in nuclear power.

Plans and purposes shall reflect prospects of future development of the Enterprise taking into account, first of all, safety of manufactured equipment.

2.8.4. Principle of planning is applied to effective management of organizational changes at the Enterprise.

2.8.5. Planning is performed for the purpose of providing necessary technical, economic, social and organizational conditions for forming, providing and supporting of required technological level and product quality at all stages of its life cycle.

2.8.6. Structure of quality assurance system of LLC Polesye represents set of:

– quality policy;

– organizational structure and responsibility of personnel;

– engineering procedures and management processes;

– constructions and processing equipment;

– qualified personnel;

– test and control equipment;

– systems of quality data documentation;

– physical resources;

– monitoring systems and process measurement.

2.8.7. Within this system planned activities for quality management at all stages of basic processes are performed during production of the equipment at LLC Polesye.

2.8.8. The Director of the Enterprise is responsible for these activities. Quality planning is determined by the following work types:

– establishment of the purposes of the Enterprise measured and approved with purposes policy in the field of quality;

– planning of QMS development.

2.8.9. Purposes in field of quality are developed at the Enterprise level. Purposes in field of quality are developed, proceeding from the following data:

– policy and strategic objectives of the Enterprise,

– opportunities of improvement and solution of existing problems, non-conformities,

– requirements and satisfaction of consumer,

– results of internal and external audits, inspections corrective and preventive actions,

– results of accomplishment of purposes and plans of previous period,

– proposal of the Enterprise personnel,

– decisions made at meeting during the analysis of data on the part of a management,

– other sources proceeding from specifics of activities of the Enterprise.

2.8.10. During development of the purposes in the field of quality the following items shall be provided:

– purpose conformance with quality policy,

– measurability of specified goals,

– compliance to the principle of continuous improvement,

– integrity maintenance and efficiency of QMS,

– specified and exact statement,

– attainability goals for particular period of time,

2.8.11. The purposes in the field of quality are documented and drawn up in the form of the perspective plan of development of the Enterprise for the present year (comprehensive plan of quality improvement - the purpose of the Enterprise) according to STO-010-024.

2.8.12. Ensuring continuous usability, adequacy and productivity of QMS by the means of periodic analysis and assessment of its condition is performed by the Director of the Enterprise. This type of activity contains:

– assessment of conformity of QMS (policy, purposes in the field of quality, audit and inspection results);

– analysis of consumer satisfaction (notes, claims);

– assessment of character and tendencies based on processes and results (audit results, tendencies and dynamics in emergence of discrepancies);

– monitoring of preventive and corrective actions, assessment of their productivity (accomplishment / not accomplishment).

2.8.13. Quality system is regularly exposed to analysis by management of the Enterprise at the current and final meetings on quality at the Director of the Enterprise which are held according to the requirements of STO-010-024.

2.8.14. The analysis contains an efficiency evaluation of quality management system and its problems, possibilities of improvement and needs for changes of its organization, information on accomplishment of solutions of the previous meeting.

2.8.15. The management makes decisions over final assessment of conformity of quality management system to specified objectives in the field of quality policy and over increase of its productivity in general or separate processes requiring special attention, quality-related expenses for improvement of products according to the requirements of consumers, resource requirements.

2.8.16. As a result of final efficiency analysis of quality management system (output data), look-ahead plan of the Enterprise development (a comprehensive plan of improvement of quality - the purpose of the entity) is prepared for the current year according to STO-010-024.

2.9. Satisfaction of concerned parties

2.9.1. The Enterprise in its activities interacts with a number of concerned parties. First of all, consumers of the equipment made by the Enterprise are among concerned parties.

2.9.2. For achievement of maximum consumer satisfaction, long-term activities of the Enterprise shall be based on accomplishment or even excess of the consumer requests where quality and safety of products made by the entity are on the first place.

2.9.3. Developed quality management system implemented and supported at the Enterprise guarantees that:

– consumer requirements concerning product quality are determined and stated clearly and unambiguously based on standard and obligatory requirements in agreements/contracts, with carrying out of technical and economic analysis considering resources of the Enterprise;

– all stages of fulfillment of the requirements of agreements/contracts are planned for the purpose of accomplishment of the agreement/contract within the agreed time frames and the corresponding quality of manufactured products is provided and documented;

– functional divisions perform gathering and analysis of information on course of the implementation of an agreement/contract according to their areas of activity;

– responsibility for coordination of interaction of functional divisions and feedback with the customer throughout the entire period of time necessary for accomplishment of the agreement/contract is determined.

All these processes are described in more detail in appropriate sections of this QAP for NPP (M).

2.9.4. Quality policy of LLC Polesye consists in achievement, support and continuous improvement of quality of manufactured products according to the requirements of national and international rules, regulations and standards, and consumer requirements as well.

2.9.5. Management of LLC Polesye is responsible for quality planning of products which is provided with set of certain processes:

– personnel management;
– facilities management;
– design and development;
– purchasing;
– manufacturing processes (on manufacturing and testing of equipment);
– control and measurement (of processes, products, internal and external audits, inspections);
– control of non-conforming products;
– records administration;
– control of records;
– shipment and delivery finished production;
– measurement of consumer satisfaction;
– management review.

Quality planning is performed for the purpose of providing necessary technical, economic, social and organizational conditions for forming, providing and maintenance of a required technological level and product quality at all stages of its life cycle.

2.9.6. For efficiency and productivity of process management of product lifecycle there will be development of:

– production program for a year, (half-year, quarter) with calculation of amounts of planned to release of products on the basis of the analysis of data by Deputy director on marketing according to the agreements signed with consumers and amounts of increment of unfinished products according to the data made by Deputy Director on production;

– comprehensive plan of quality improvement of products for the current year (the purpose of the Enterprise);

– annual plan of standardization of the Enterprise provided development of new documents of management system, correcting and revision of the current documents;

– annual plan of preparation, retraining and advanced training of personnel on the basis of the analysis of amount and character of production, tasks on implementation of new equipment and technologies, increase in labour productivity;

– annual plan of internal audits.

2.9.7. For achievement of the maximum consumer satisfaction at the Enterprise consumer satisfaction is studied by top management:

– requests of consumers and relative importance of these requests are determined,

– compliance of activities of the Enterprise to consumer requests is analyzed,

– priorities for improvement are determined – those activities in which improvement of characteristics will give the greatest satisfaction of consumers,

– purposes of improvement of activities for satisfaction of consumer requirements are stated and improvement process is also controlled.

2.10. Configuration management

2.10.1. General requirements

2.10.1.1. The main objective of management of a configuration (the interconnected functional and physical characteristics of products stated in data on products configuration) is the constant control of compliance of the requirements to products to the actual indicators of manufactured products and developed documentation.

2.10.1.2. Management of a product configuration is the activity directed to application of technical and managerial control of processes of product lifecycle (configuration elements).

2.10.1.3. Planning of configuration management (product lifecycles) is a basis of process of configuration management.

2.10.1.4. Effective planning allows coordinating activity for management of the configuration in specific situations at all stages of product lifecycle.

2.10.2. Process planning of product lifecycle

2.10.2.1. Top management determines the processes of product lifecycle leading directly to creation of products and provides their productive and effective functioning for total satisfaction of consumer requirements.

2.10.2.2. General scheme of interaction of basic processes of production of products is given in Appendix I.

Each process and/or its separate stages are described by appropriate documents of the Enterprise included in Appendices C and D of this QAP for NPP (M).

2.10.2.3. All necessary procedures and extent of their application at all stages of product lifecycle are specified in this QAP for NPP (M). This set of documents contains necessary technical, production and organizational activities, allows performing quality planning and systematically carrying out the works necessary for achievement of quality of manufactured equipment and a guarantee of its compliance to all requirements of the regulating documentation and the consumer.

2.10.2.4. Content of QAP for NPP (M) includes the actions listed below that provide planning of release of high-quality products corresponding data on products configuration:

- development of Quality assurance program;
- development of Quality plans;
- determination and implementation of control methods, processes, equipment and resources which can be required for providing the necessary quality level of products;
- providing compatibility of a design, production process, control procedures and testing, and attached documentation as well;
- improvement of quality control systems, monitoring and test methods, as required;
- selection of appropriate methods of check at different production phases;

– determination of necessary types and amount of registration records on quality and their drawing up;

– establishment and registration of sufficient checks at specified production phases.

2.10.2.5. Quality assurance programs (QAP for NPP) are developed in the presence of consumer requirements for specified stages of activities of the Enterprise (designing, manufacturing) and/or for the specific contract/agreement.

2.10.2.6. Quality plans of product production are developed at the customer's request on the basis of requirements of design and technological documentation that contains amounts and parameters of controls and tests taking into account additional requirements of the agreement, in case of their availability, and approved by Deputy Director on quality (or by Chief specialist on quality) and, if required, by the Customer or its authorized representative depending on terms of the contract.

2.10.2.7. Quality plans contain control points both surveys, and inspections of production with a stop of engineering procedure of production. Inspection results at control points are fixed in appropriate columns of quality plans.

2.10.2.8. Development and release, realization, and also control of the course and results of implementation of quality assurance programs and accomplishment of quality plans are performed by designated persons assigned by orders of a the enterprise management. These designated persons are responsible for accomplishment of the functions determined for them in quality assurance programs.

2.10.2.9. Management of a configuration is successful if:

– all processes of product lifecycle conform to the requirements;

– physical configuration of manufactured equipment conforms to the project requirements and all changes and non-conformities are drawn up according to established procedure;

– personnel which are taking part in designing, manufacturing, control of products are trained and qualified;

– continuous analysis of design requirements and actual data on production of the equipment is carried out.

3. IMPLEMENTATION OF PROCESS

3.1. Development of process

3.1.1. Preplanning of processes

3.1.1.1. After final registration of the Agreement, plans of work performance are developed where amounts and terms of development of design and technological documentation are determined.

3.1.1.2. The Enterprise shall include standard, technical and other requirements on delivery into drawings, specifications, procedures, working instructions, plans of control and testing.

3.1.1.3. Procedures of engineering procedures, control and testing used during manufacturing are developed and carried out by the specialists of technological department according to the requirements of RKD (working design documentation) and Technical Design Assignment (TZ) for ensuring compliance of manufactured Equipment to the established requirements.

3.1.1.4. Engineering procedures contain a general route of manufacturing of the Equipment, and also procedures on work types such as welding, heat treatment, bending, in-process control (visual and measuring), nondestructive and laboratory methods of control and testing.

3.1.1.5. All necessary data for manufacturing of the Equipment, including processing equipment, tools, gages and etc. for accomplishment of specific production operations are entered in engineering procedure.

3.1.1.6. Types of developed engineering procedures, and procedure of its agreement and approval are shown in STO-010-002.

3.1.2. Process certification

3.1.2.1. Process certification is carried out for ensuring of fulfillment of the requirements, presented to the Equipment, at the Enterprise.

3.1.2.2. The special attention is paid to control of the special processes leading to deformation of parts and blanks, change of properties and structures of elements of the Equipment.

Special processes that lead to change of properties and structures of elements of the Equipment are: welding (surfacing), heat treatment.

3.1.2.3. All production processes are controlled according to the requirements of design and technological documentation, regulations, standards, specifications and other regulating documents according to the requirements of the Agreement.

3.1.2.4. Control procedures for accomplishment of processes contain:

– control of availability in all working documents of the requirements to process parameters, equipment, accessories and its control;

– requirements to procedures of carrying out of procedure control of technological process, and incoming inspection of incoming materials, components and semi-finished products and acceptance inspection of finished goods as well;

– limits of the administrative responsibility for quality assurance of accomplishment of engineering processes and for organization of its manufacturing supervision and inspections;

– procedure and frequency of carrying out of inspection check-up and independent checks of process;

– requirements to qualification and training of personnel, carrying out of checks of its qualification and certification;

– requirements to certification of processes;

– requirements to environment control.

3.1.2.5. Control procedures of production processes contain requirements to measuring instruments and test equipment and their metrological assurance according to i. 3.2.1.6 of this QAP for NPP (M).

3.1.2.6. Procedures of the analysis of non-conformities and carrying out of corrective actions specified in section 4.5 of this QAP for NPP (M) shall be applied in case of detection of operating troubles.

3.1.3. Quality planning

3.1.3.1. Required specification and level of its control and testing is determined, control points, and also requirements to traceability of all elements of the Equipment are established during development of technological documentation.

3.1.3.2. All activities on quality control and inspections at manufacturing of the Equipment of quality assurance categories QA1, QA2, and QA3 shall be recorded in Quality plans, responsibility for development of which is conferred on Deputy Director on quality. Requirements for Quality plan development are stated in the Agreement.

3.1.3.3. Activities on quality control shall be recorded in Quality plans for separate Equipment of quality assurance category QNC as well. The list of such Equipment is provided by the Buyer/Customer.

3.1.3.4. Enterprise states control points and detailed requirements for quality assurance at all manufacturing stages of the Equipment in Quality plans. Control points of the Enterprise shall be stated in all procedures of Quality plan with status "HP" (hold point).

3.1.3.5. While approval of Quality plans the Authorized organization, the Buyer/Customer / NPCIL establish control points in which they are planning to participate with indication of their status.

3.1.3.6. For the Equipment referred to quality assurance category QNC (except the Equipment specified in i. 3.1.3.3), inspections are carried out upon completion of manufacturing in the form of acceptance inspection of products within the terms established by schedules of production.

3.2. Process management

3.2.1. Complex processes

3.2.1.1. Control of documentation and records

3.2.1.1.1. Documentation management

3.2.1.1.1.1. General provisions

3.2.1.1.1.1.1. Document control system is created at Enterprise for ensuring that documentation is controlled at all stages of its development, check, approval, release, distribution and review.

3.2.1.1.1.1.2. Management of documentation is carried out according to STO-010-012, STO-010-040, STO-010-017, STO-010-019, STO-010-018, and STO-010-020 at the Enterprise.

3.2.1.1.1.1.3. Requirements to documentation shall be differentiated depending on relative importance for nuclear safety of an element or service which this documentation is applied to. Differentiation shall concern amount of control of documentation development, levels of check and approval, storage. Conditions and duration of documentation storage are stipulated in i. 3.2.1.1.4 of this QAP for NPP (M).

3.2.1.1.1.1.4. Management system of documentation covers all types of documentation used at Enterprise including the description of QAP for NPP (M), management procedures, working documents, requirements for safety, standards, drawings, calculations, specifications, procedures of accomplishment of engineering procedures, Quality plan, instruction on quality control, custom specifications, delivery documentation.

3.2.1.1.1.2. Documents preparation, review and approval

3.2.1.1.1.2.1. Under development of QAP for NPP (M) and management procedure they are controlled by the specialists of GUK according to the requirements of STO-010-004. Working design documentation and technological documentation are controlled by leading experts of the divisions that develop this documentation according to the procedure established by items 3.2.2.2 and 3.2.1.4 of this QAP for NPP (M). The special codes providing a possibility of traceability of documentation are assigned to the approved documents.

3.2.1.1.1.2.2. Before release each document is checked by the head of an appropriate department for compliance to existing norms and rules taking into account its importance for safety and operational reliability.

3.2.1.1.1.2.3. Date of check, inspector(s) and check results shall be specified after carrying out of this check.

3.2.1.1.1.2.4. Management procedures are approved and enacted by the order of the Director of the Enterprise according to STO-010-004. Working documentation is approved by the head of the division that developed this document according to STO-010-012 and STO-010-002.

3.2.1.1.1.2.5. Work planning on development and review of documents of quality system is performed on the basis of the annual Standardization plan.

3.2.1.1.1.2.6. Control of development and accomplishment of the Standardization plan is carried out by Deputy Director on quality.

3.2.1.1.1.3. Release and distribution of documentation

3.2.1.1.1.3.1. The system of registration, release and distribution of documentation is described in detail in STO-010-017 and STO-010-019. The system provides availability of special registration logs, registration card, etc. All activities on documentation control are controlled by Technical records department of Process Engineering Department. Participants of these activities shall be sufficiently competent, have appropriate knowledge, experience according to job descriptions, access and opportunity to use the documents relating to executing activities. Requirements to documentation which use is allowed at the Enterprise and also responsibility of a management and personnel during management of documentation are determined by STO-010-017 and STO-010-019. The system does not allow use of invalid and/or outdated documents.

3.2.1.1.1.3.2. Each document shall have the copy on paper. Storage of on paper copies is performed according to the requirements stated in STO-010-017, STO-010-019 and STO-010-020.

3.2.1.1.1.3.3. The documents prepared for release shall be approved, have registration/tag number and number of the copy. Original of the document is stored in Technical records department of Process Engineering Department. Copies of documents with registration number and number of the copy are distributed to users to destination. Further the specialist of records department sends revisions for used documents to users in case of their availability.

3.2.1.1.1.3.4. Originals of documentation withdrawn from circulation are stored in Technical records department of Process Engineering Department, and copies are destroyed according to procedures of STO-010-017, STO-010-019, and STO-010-020.

3.2.1.1.1.3.5. The specialist of Technical records department specifies the date of receipt, reference number, name and development organization in the documents received from third parties. All information on such document is brought in a special Incoming documentation log. The specialist of Technical records department is responsible for keeping this log.

3.2.1.1.1.4. Document change management

3.2.1.1.1.4.1. Entering of changes in documentation developed by the Enterprise

3.2.1.1.1.4.1.1. All changes before their entering in documentation are checked and approved in the same order, as initial documentation according to STO-010-017 and STO-010-018. Depending on nature of changes they can be entered in documentation by either the author of the document, or specialists of Technical records department of Process Engineering Department.

3.2.1.1.1.4.1.2. Changed parts of textual documents of QAP for NPP (M) and Management procedures, if it is possible, are recommended to be marked with underlining or other acceptable method.

3.2.1.1.1.4.1.3. If the change in one document influences over other documents, then these documents also shall be corrected.

3.2.1.1.1.4.1.4. Change of procedures, working documents is carried out by means of their reissuing with a new status of audit or entering changes in the document based on change notice.

3.2.1.1.1.4.2. Suspension and cancellation of documentation

3.2.1.1.1.4.2.1. If the document is suspended or the document is cancelled, it is immediately withdrawn from use by the specialist of archive. The document is appropriately identified depending on a new status to avoid its unintended use according to STO-010-017 and STO-010-019.

3.2.1.1.1.4.2.2. In case of necessity for suspension or cancellation of the document the order signed by the Director of the Enterprise is issued, and its copy is transferred to division managers for review of subordinate personnel, and also to Technical records department of Process Engineering Department for the notice of all users of official copies of documents.

3.2.1.1.2. Design documentation

3.2.1.1.2.1. General provisions

3.2.1.1.2.1.1. Design Department of the Enterprise is performed the development of design documentation for the products supplied to Kudankulam NPP.

3.2.1.1.2.1.2. Design is performed is performed based on Initial Technical Requirements (ITT) submitted by General Designer.

3.2.1.1.2.1.3. At development of the design documentation the differentiated approach based on relative importance for nuclear safety of each product, process or service shall be applied. The differentiated approach shall reflect the planned and admitted differences when using special requirements on quality assurance, according to the established quality category on manufactured/designed items according to the Agreement.

3.2.1.1.2.1.4. Design documentation activities are graded according to the following aspects:

- extent and depth of product development analysis;
- verification and approval levels of the design documentation;
- verification level of the developed products;
- inspection methods to be applied to modifications of the development;
- developed product content and shelf life;
- necessity to carry out alternative calculations;
- necessity to evaluate or verify development outputs;
- nonconformity monitoring;
- development (design) records and their storage period.

3.2.1.1.2.1.5. The graded approach is established according to the safety class of the systems (elements) specified in document NP-001.

3.2.1.1.2.1.6. The system elements to be developed are classified:

- by safety classes in accordance with the requirements of NP-001;

– by quality assurance categories;

– by seismic stability categories in accordance with the requirements of NP-031;

– by groups of impact on nuclear and radiation safety of NFs, in accordance with requirements of NP-043;

– by groups depending on the influence of the system on the safety of nuclear facilities in accordance with the requirements of PNAE G-7-008, NP-089 and NP-068.

3.2.1.1.2.1.7. The graded approach for Kudankulam NPP projects is detailed in the contractual and regulatory requirements for projects.

3.2.1.1.2.1.8. Design documentation shall include or refer to the requirements and regulatory documents established by the Agreement and Regulatory Authority.

3.2.1.1.2.1.9. Process of design documentation development is performed according to STO-010-012.

3.2.1.1.2.1.10. Chief designer is responsible for process planning of development of design documentation.

3.2.1.1.2.2. Initial data for design

3.2.1.1.2.2.1. Typical initial data for design includes:

– main functional requirements to the components;

– as-built requirements;

– used codes, standards and regulatory requirements including relevant: issue, audit or amendment;

– design specifications, such as pressure, temperature, chemical environment and electrical parameters;

– seismic, wind, temperature and dynamic loads;

– enviromental conditions;

– requirements to interactions including determination of functional and physical interactions of components;

– material requirements;

– mechanical requirements;

– requirements to structure;

– requirement to hydraulic controls;

– requirements to chemistry;

– electrical requirements;

– electromagnetic compatibility;

– requirements to fire prevention and fire protection;

– requirements to operability, requirements to withdrawal from operation;

– limits of radiation exploration and requirements to protection against radiation;

– requirements to control and techniques;

– reliability requirements;

– requirements to testing;

– requirements for maintenance;

– requirements to handling operations, storage and loading operations;

– failure probability analysis;
– safety matters for preventing from impacts on the personnel;
– feedback on the results of experience;
– ergonomic requirement;
– other requirements to prevention of excessive risk for health and safety of the population.

3.2.1.1.2.3. Process planning and execution

3.2.1.1.2.3.1. Initial data analysis for design

3.2.1.1.2.3.1.1. Initial data analysis is performed by Design Department of the Enterprise in order to confirm and clarify basic parameters initiated by General Designer.

3.2.1.1.2.3.1.2. Special attention shall be given to the items that affect the safety and operability including:

– nuclear and radiation Safety;
– fire safety;
– calculations and analysis of physical conditions, loads, stresses, seismic loads, accidents and etc.;
– materials compatibility;
– accessibility for control and testing;
– accessibility for maintenance and repair;
– reliability;
– safety for environment;
– requirements to testing and control;
– differentiated approach based on relative importance for nuclear safety of each item.

3.2.1.1.2.3.2. Technical Design Assignment

3.2.1.1.2.3.2.1. Technical Design Assignment (TZ) is a main initial document for development of the Equipment.

3.2.1.1.2.3.2.2. Technical Design Assignment is developed, agreed and approved according to GOST R 15.201, GOST 15.005, STO-010-012 and the requirements of the Agreement.

3.2.1.1.2.3.2.3. Technical Design Assignment is developed by Design Department of the Enterprise on the basis of ITT for the Equipment developed by General Designer.

3.2.1.1.2.3.2.4. Amount and sequence of work with General Designer shall be determined in the following sections of Technical Design Assignment "Development stages", "Requirements to acceptance" and "Requirements to testing".

3.2.1.1.2.3.2.5. The following data shall be given in the appropriate sections of TZ:

– carrying out or not of acceptance inspections according to GOST R 15.201, GOST 15.005 with the indication of organization-examiner and place of their performance;

– necessity for installation of protection valves;

– necessity to complete a set of KIP&A;

– necessity to complete a set of control valves;

– group and class of safety of the Equipment as per PNAE G-7-008, OPB-88/97 and category of seismic stability;

– quality assurance category;

– reliability rates.

3.2.1.1.2.3.2.6. The sections of Technical Design Assignment can be changed and supplemented depending on the type of the Equipment.

3.2.1.1.2.3.2.7. Technical Design Assignment for the Equipment supplied to Kudankulam NPP shall be agreed and approved according to the requirements of the Agreement.

3.2.1.1.2.3.3. Engineering design

3.2.1.1.2.3.3.1. Engineering design, if required, is developed according to the requirements of agreed and approved Technical Design Assignment.

3.2.1.1.2.3.3.2. Engineering design shall conform the requirements of Technical Design Assignment and contain the following documents:

– entire strength analysis;

– thermal and hydraulic analysis (if required);

– general view drawings and specifications of item structure essential to understanding of the Equipment structure;

– Quality Control Table of the base materials;

– Quality Control Table of the welded joints and weld map;

– component list;

– explanatory notes;

– Testing Programme and Procedure;

– manual on mounting and operation;

– list of allowable material substitution;

– amount incoming inspection of components;

– technical requirements;

– safety evaluation;

– strength analysis and report on its check;

– engineering analysis, justification and report.

3.2.1.1.2.3.3.3. Engineering design shall be agreed and approved according to the requirements of the Agreement and Technical Design Assignment.

3.2.1.1.2.3.4. Working Design Documentation (RKD)

3.2.1.1.2.3.4.1. Working Design Documentation is developed according to the requirements of Technical Design Assignment and Engineering design.

3.2.1.1.2.3.4.2. Developed RKD is passed technological supervision (control on fabricability) by agreement with Process Engineering Department, and metrological evaluation and examination of compliance with regulatory documents as well.

3.2.1.1.2.3.4.3. Working Design Documentation shall be agreed according to the requirements of TZ and the Agreement and shall be sent for approval to Authorized organization for carrying-out of an analysis of compliance with the requirements of regulatory documents in the field of atomic energy uses.

3.2.1.1.2.3.5. Strength analysis

3.2.1.1.2.3.5.1. The persons including the workers of the third parties that have necessary qualification are allowed to perform strength analysis.

3.2.1.1.2.3.5.2. Strength analysis performed by the third parties shall pass incoming inspection which is carried out by the specialists of Design Department of the Enterprise for its use.

3.2.1.1.2.3.5.3. The following specialists participate in strength analysis performance:

– performer whose qualification shall correspond to calculation complexity;

– checker whose qualification shall have better qualification than performer does;

– approver – Chief Designer;

– responsible for examination of compliance with regulatory documents.

3.2.1.1.2.3.5.4. Strength analysis sequence:

– strength analysis is performed in consideration of TZ on development of these items;

– before the performance of strength analysis performer shall review the requirements of TZ, drawings or sketches of the item, determine checking procedures, the list of used Regulatory documents and computer programs. Application of new calculation methods is subject to agreement with General Designer, if required.

3.2.1.1.2.3.5.5. Sequence of strength analysis agreement:

Strength analysis agreement is carried out by the specialist that is responsible for development of specific RKD. At agreement correctness of the dimensions, materials and design loadings accepted when calculating are checked (design pressure, temperature, mass, external impacts, etc.).

3.2.1.1.2.3.5.6. Application procedure of computer programs:

– programs of strength analysis developed in algorithmic languages and having user manual belong to computer programs;

– strength analysis is performed according to:

1) " Equipment and pipelines strength analysis norms for nuclear power plants" PNAE G-7-002, state and industrial standards;

2) programs for determination of stress strain behavior of the designed Equipment;

– when buying a new software Chief designer will organize training of employees on proper use of this software.

Application procedure of the software is regulated with STO-010-051.

3.2.1.1.2.4. Interaction control

3.2.1.1.2.4.1. Organizational and engineering supervision over all interrelations is imposed on Chief Designer.

3.2.1.1.2.4.2. Organization of internal interactions is regulated with the requirements of STO-010-012, Regulations on Design Department.

3.2.1.1.2.4.3. External interaction of the Enterprise with the Buyer/Customer, project organizations concerning the design is performed according to the requirements of the Agreement. Key questions on interaction are resolved by direct negotiations and/or official correspondence of authorized representatives. Organization of external interaction at designing is shown in Appendix H.

3.2.1.1.2.5. Design analysis

The present activity establishes compliance of outcoming design data to incoming requirements to the project and is carried out in the following sequence:

- check of RKD;
- technical inspection;
- metrological evaluation;
- examination of compliance with regulatory documents;
- check of design process (verification).

3.2.1.1.2.5.1. Check of RKD

3.2.1.1.2.5.1.1. At certain stages of design examination of design process as to form shall be planned, carried out and documented. Chief Designer is responsible for check of design process. Task of check is providing a guarantee that developed RKD is correct and fully conforms to the requirements of the Agreement.

3.2.1.1.2.5.1.2. When checking RKD the main matters shall be formulated. These matters include the following, but they aren't limited:

- selection and application correctness of initial data for design;
- fulfillment of initial requirements to design;
- completeness of incoming project data;
- adequacy of the description of the made suppositions and their justification;
- use of appropriate design methodology and compliance to the chosen standards;
- fulfillment of design procedures;
- compliance of incoming project data to initial data.

3.2.1.1.2.5.1.3. The specified checks shall be carried out by the representatives of Design Department of the Enterprise.

The results of checks of RKD by the representatives of Design Department of the Enterprise are certified by signatures of these representatives.

The results of RKD agreement by the representatives of General Designer (if required) are executed in writing (report, letter).

3.2.1.1.2.5.1.4. The specialist directly conducting the development of RKD shall perform the check of RKD. During the check the following shall be checked:

- conformity of RKD to the requirements of TZ;
- assemblability of the parts, assembly unit and elements;
- conformity of RKD to the requirements of Regulations, standards, norms and other ND;
- manufacturability of the item;
- availability and completeness of requirements to control and testing;
- availability of strength analysis, completeness of their confirmation and conformity to the current ND;
- completeness of documentation, its conformity to the requirements of the current ND;
- availability of approval by Chief Designer and, if required, by General Designer of deviations of engineering design /RKD from the requirements of TZ and the project of Kudankulam NPP.

3.2.1.1.2.5.2. Process control of RKD

3.2.1.1.2.5.2.1. Check of RKD on manufacturability of the item is performed according to STO-010-023.

3.2.1.1.2.5.2.2. Process control performance is certified with the signature of the process engineer in the column "Process control" of the document title.

3.2.1.1.2.5.3. Metrological evaluation of RKD

3.2.1.1.2.5.3.1. Metrological evaluation of RKD is carried out according to STO-010-022 in order to make analysis and assessment of engineering solutions on parameter selection which are subject to measurement, to set standards of accuracy of measurements and to provide with methods and measuring equipment of production processes and item testing.

3.2.1.1.2.5.3.2. Metrological evaluation is performed by the responsible for metrological evaluation.

3.2.1.1.2.5.3.3. Metrological evaluation performance is certified with the signature of the responsible for metrological evaluation in the field of general view drawing and in the first page of textual document (TZ, TU and others) according to STO-010-022.

3.2.1.1.2.5.4. Examination of compliance of RKD with regulatory documents

3.2.1.1.2.5.4.1. Examination of compliance of design documentation with regulatory documents is carried out according to STO-010-021.

3.2.1.1.2.5.4.2. Examination of compliance with regulatory documents is directed at:

- observance of the regulations and the requirements stated in the state, industrial standards and standards of the enterprise in developed projects;
- correctness of design documents according to the requirements of ESKD;
- rational use of grades of materials, shapes and dimensions of rolled stock.

3.2.1.1.2.5.4.3. Examination of compliance with regulatory documents is carried out by highly qualified specialists of the Enterprise appointed by instruction of the Director upon the recommendation of managers of departments.

3.2.1.1.2.5.4.4. Performance of examination of compliance with regulatory documents is certified with the signature in the column "Examination of compliance with regulatory documents" of the document title.

3.2.1.1.2.5.5. Check of design process (verification)

3.2.1.1.2.5.5.1. At design fulfillment of the following main requirements shall be checked:

– recording of the results of control of the set of received data for systems and elements including security systems;

– providing with safety assurance of systems and components operation by accomplishment of necessary amount of inspections, certifications and definition of maintenance procedures, engineering constraints;

– providing with completeness of operation manuals and instruction on failure-free service through necessary controls.

3.2.1.1.2.5.5.2. Verification shall be performed for confirmation of guarantee that all requirements of ND were met, design solutions confirmed with performed calculations, used methods and right calculation procedures conform to TZ. Verification shall be performed and recorded by competent staff that did not take part in design.

3.2.1.1.2.5.5.3. During design it is required to check the following:

– meeting all requirements of the project;

– quality assurance of calculations, software and calculation procedures;

– correctness and completeness of the specified requirements to items, processes and services, and selection of the measuring equipment and procedures for control of operating conditions and environment as well;

– efficiency of control arrangement of RKD.

3.2.1.1.2.5.5.4. Verification can be carried out by means of check, confirmation or justification of design development, and by means of method of testing and alternative calculations, if required. Chief Designer shall bear responsibility for fulfillment of verification according to the methods specified by General Designer.

3.2.1.1.2.5.5.5. The purpose of check of calculation quality, selection of software and calculation methods shall be warranty of correctness of their selection and application by all project participants. Calculation procedures and software used at design shall be checked before their application.

3.2.1.1.2.5.5.6. Design verification shall be carried out before manufacturing application to provide independent proof that special requirements (ND, TZ, Agreements) are executed for special application. This process is described in more detail in STO-010-012.

3.2.1.1.2.5.6. Confirmation of Equipment development (validation)

3.2.1.1.2.5.6.1. Validation of Equipment development is carried out in order to assure that the Equipment, available from development, is capable to meet the specified requirements.

3.2.1.1.2.5.6.2. Validation of development is carried out after receipt of positive results of design analysis before Equipment delivery or application.

3.2.1.1.2.5.6.3. Validation of development is confirmed by the results of testing. Amount and content of the testing necessary for prevention of launching into manufacture of unfinished, insufficiently reliable Equipment, are stated by the developer taking into account novelty, complexity, features of manufacture and use of the Equipment.

3.2.1.1.2.5.6.4. More detailed test procedure of the products made at production engineering is described in STP-010-012.

3.2.1.1.2.6. Design evaluation

3.2.1.1.2.6.1. Design evaluation (if required) is performed by independent expert organization upon the recommendation of the Enterprise.

3.2.1.1.2.6.2. The results are drawn up by the expert report of the organization.

3.2.1.1.2.7. Revision management

3.2.1.1.2.7.1. General provisions

3.2.1.1.2.7.1.1. Changes to the recorded design documents shall be made according to STP-010-018 and documented by notifications.

3.2.1.1.2.7.2. Procedure of agreement and approval of notifications

3.2.1.1.2.7.2.1. Chief Designer, approved the notification, is responsible for completeness of its agreement with interested divisions, and, if required, with General Designer.

3.2.1.1.2.7.2.2. Notifications for the items, which process preparation is completed for and which are being in production as well, shall be agreed with:

– Process Engineering Department - in case of a vast amount of work on amendment of technological documentation;

– OMTS – in case of amendment of RKD related to used materials and components if these changes are made not on the initiative of OMTS;

– Deputy Director on production – related to filling in the columns "Directive on in-process stock" and "Implementation directive".

3.2.1.1.2.7.2.3. Terms of notification agreement by services shall not exceed:

– for urgent notifications – not more than 1 day;

– for others – 3 working days.

3.2.1.1.2.7.2.4. Checked and agreed change notification shall be approved by Chief Designer. All changes that effect the safety shall be agreed in accordance with the established procedure.

3.2.1.1.2.7.3. Introduction of amendments

3.2.1.1.2.7.3.1. Approved notification shall be transferred to Technical Records Department of Process Engineering Department. The specialist of this Department registers the notification and makes changes in originals, duplicates and copies of RKD which are at users and sends the notification to appropriate divisions of the Enterprise.

3.2.1.1.2.7.3.2. Chief Designer is responsible for the presentation of the notifications, if required, to General Designer.

3.2.1.1.2.7.3.3. The list of revisions made in RKD is issued before the shipment of items to Quality Department. The list of revisions made in RKD is provided to the representative of Authorized organization when performing acceptance inspection.

3.2.1.1.3. Records on quality

3.2.1.1.3.1. General provisions

3.2.1.1.3.1.1. Record system on quality at the Enterprise is developed and operates at all stages of designing, manufacturing and operation of NPP Kudankulam. It covers all divisions of the Enterprise involving in designing and manufacturing.

3.2.1.1.3.1.2. Work purpose on data recording on quality is establishment and maintenance in working order of procedures of identification, filling in, keeping, gathering and storage of data on quality for confirmation of required quality of manufactured products.

Quality data presents objective evidence of quality and effectiveness of quality system and includes:

- data on personnel certification;
- results of checking of gages and equipment, material and sample tests;
- results of analysis, inspections, controls and testing;
- corrective actions and preventive measures;
- and other appropriate data.

3.2.1.1.3.1.3. Keeping records on quality of the Equipment manufactured for NPP Kudankulam at the Enterprise is assigned to personnel of technical and production divisions and Quality Department. For more on keeping records, their registration, storage and sending refer to STO-010-040, STO-010-020, and STO-010-034.

3.2.1.1.3.1.4. All records shall be:

- timely drawn up according to an actual state of manufactured Equipment;
- classified by work types;

– registered in case of storage;

– protected from unintended use;

– identified;

– placed in the specified places in appropriate folders.

3.2.1.1.3.1.5. Records on quality are carried out according to the regulations and rules on safety active in nuclear power and STO-010-040.

3.2.1.1.3.2. Record management

3.2.1.1.3.2.1. Record system on quality developed and implemented at the Enterprise provides timely appearance of necessary records. Received records shall provide their completeness and readability.

3.2.1.1.3.2.2. Data on quality includes:

– results of effectiveness analysis of quality system on the part of management;

– results of internal audits (inspections) of quality;

– data on the Agreement analysis;

– result of verification of design documentation;

– information about subcontractors/suppliers on quality of purchased products;

– data concerning identification and traceability;

– data confirming that products were subjected to control and tests;

– results of all types of controls and tests;

– data on certification of engineering procedures, equipment;

– data on compliance of manufactured Equipment to the requirements stated in engineering procedures;

– data on checking/calibration of gages;

– data on nonconforming products;

– data on studying of non-conformances reasons;

– data on rejects and claims;

– data on personnel certification;

– data on testing of knowledge of safety regulations and rules in nuclear power at management and specialists.

3.2.1.1.3.2.3. Responsibility for data recording on quality is conferred directly on management and personnel of divisions according to performed types of work.

Documentation on quality is subject to identification, gathering, accumulation, accounting and storage. Documentation is drawn up according to stated requirements and clearly and legibly dated.

3.2.1.1.3.2.4. Management of data recording on quality is stated and applied according to STO-010-040, STO-010-034, STO-010-041, STO-010-054, P-KK-010-003 and this QAP for NPP (M).

3.2.1.1.3.2.5. Records on quality are recognized original only if they have date, surname and signature of responsible person. It belongs to original documents and their copies. All records shall be clear, complete, attached to elements and/or NPP systems, services, processes. Records shall be made on the material preventing their damage during the storage period provided for them.

3.2.1.1.3.2.6. Records shall give sufficient information for identification of an element, service or process and shall contain:

– name or unambiguous identification of an element, service, process related to this record;

– organization or person made this record.

Storage period of records depending on their classification is provided in STO-010-020.

3.2.1.1.4. Classification of documentation and records

3.2.1.1.4.1. All documentation and records on quality are classified as documentation of permanent and temporary storage taking into account its importance for safety and operational reliability. The status of permanent or temporary storage is stated taking into account the requirements of STO-010-020, the Agreement and recommendations of Management of IAEA on safety GS-G-3.1. Storage period of documentation and records is accepted:

– for documentation of permanent storage – before unit removal from operation;

– for documentation of temporary storage – with a limited storage period according to STO-010-020 and rules on safety in nuclear power.

3.2.1.1.4.2. Listed below documents shall be stored before expiration of service life of designed and manufactured Equipment for NPP Kudankulam:

– technical documentation (TZ, TU) according to terms of the Agreement on the Equipment delivery;

– lists of equipment and assemblies and detail drawings (RKD);

– internal instructions for welding, heat treatment and nondestructive control active at time of performance of appropriate procedure, documents on sequence of production (Quality plans);

– reports on heat treatment (test charts, diagrams), and also reports on results of tests (reports, acts, protocols, etc.).

3.2.1.1.4.3. In some cases temporary documents concerning temporary actions can be necessary. The temporary document shall have a specified validity period. After validity period these documents are withdrawn from the use or entered in other documents, or their validity is extended. Permanent documentation is given to Technical records department of Process Engineering Department and is stored up to removal from operation of NPP Kudankulam.

3.2.1.1.4.4. Records on quality performed during quality assurance program (for example, survey reports) are considered as records of temporary storage.

3.2.1.1.5. Documentation storage

3.2.1.1.5.1. Storage procedure of documentation and records at the Enterprise is regulated with STO-010-017, STO-010-019, STO-010-020 developed taking into account the recommendations of Management of IAEA on safety GS-G-3.1 "Application of the Management System for Facilities and Activities" and the requirements of the Agreement as well.

3.2.1.1.5.2. Documentation and records on quality are supported in working order by Technical records department of Process Engineering Department within the periods stipulated by documentation of the Enterprise or the Agreement.

3.2.1.1.5.3. Storage conditions of documentation provide its effective protection against any damages by fire, excessive temperature, light, water or moistness, floods, hurricane, rodents, insects, unauthorized access and other events that can cause any damage (decrease in clearness and legibility of records) or loss of documentation, and fast extraction of the necessary information and restoring of documentation according to STO-010-020.

3.2.1.1.5.4. At the end of storage period of documentation which is subject to "permanent storage", the Enterprise shall request the Buyer/Customer about the subsequent actions with specified documentation: necessity of its further storage, direction to the Buyer/Customer or other actions.

3.2.1.1.5.5. During the whole storage period of documentation and records the Enterprise shall inform the Buyer/Customer on any change in its legal position or structure in order that the Buyer/Customer can take necessary measures for ensuring right storage of documentation.

3.2.1.1.5.6. All documentation specified in this section and influencing over quality of the performed works on the Agreement, and also containing results of checks, testing and controls of these works are stored according to the requirements of STO-010-020 and are open to the Buyer/Customer /NPCIL.

3.2.1.1.6. Delivery of documentation with the Equipment

3.2.1.1.6.1. The Enterprise transfers documentation set together with the Equipment:

- operating (technical) documentation;
- documentation on quality;
- forwarding documents.

3.2.1.1.6.2. During preparation of documentation for shipment the Enterprise shall follow the requirements of the Agreement regarding the list of documentation shipped with the Equipment, its quantity, the requirements to registration and packaging.

3.2.1.2. Product control

3.2.1.2.1. Process management shall be differentiated depending on its influence over product safety. Production activity shall be differentiated in such areas as:

– process and personnel certification;
– structure and specification of process and level of its control;
– necessity and specification of control and testing plan;
– establishment of control in a production process and points of inspection;
– requirements to traceability of materials;
– requirements to report documentation and its storage.

3.2.1.2.2. Control of engineering procedures is carried out according to check operations specified in PTD and points of inspection specified in Quality plan by:

– direct contractors and engineering employees performing management of works with use of engineering procedure;
– specialists of Quality Department.

3.2.1.3. Procurements

3.2.1.3.1. Evaluation and selection of subcontractors

3.2.1.3.1.1. Selection of sub-contractors

3.2.1.3.1.1.1. Evaluation and selection of Subcontractors are based on their opportunity to provide Equipment, materials, components or services conforming to the requirements of the Agreements.

3.2.1.3.1.1.2. During evaluation each Subcontractor shall show its opportunities of providing deliveries according to the requirements established with specifications, RKD and the Agreement on delivery.

3.2.1.3.1.1.3. Selection and evaluation of abilities of Subcontractors to meet the requirements shall be carried out before order on delivery.

3.2.1.3.1.1.4. Evaluation of Subcontractors is performed on the basis of the analysis of quantitative and qualitative indexes of their activities according to procedure П-КК-010-015 "Evaluation and selection of suppliers".

Criteria for selection of Subcontractors:

– specialization of this enterprise;
– available experience of mutual cooperation considering stability of quality of delivered goods and delivery terms;
– possibility of fulfillment of the requirements on quality assurance;
– adequacy of quality of deliveries and prices.

3.2.1.3.1.1.5. For evaluation of Subcontractors, for the purpose of establishment of product quality, the following is applied:

– written request to Subcontractors in questionnaire form;
– gathering of information at other consumers;
– evaluation audit (on-site visit of group of technical specialists for evaluation of quantitative and qualitative indexes of activities of a potential Subcontractor).

3.2.1.3.1.2. Evaluation of sub-contractors

3.2.1.3.1.2.1. For evaluation of opportunities of Subcontractor to deliver products conforming to purchasing requirements, Enterprise uses one or some evaluation criteria listed below:

– availability of the license of supervisory authorities for designing and manufacturing;

– ability of Subcontractor to perform works according to established requirements, experience in accomplishment of similar deliveries;

– availability of documentary system of quality assurance of Subcontractor according to the requirements of international standards, availability of conformance certificate of the quality system to the requirements of the international standard ISO 9001, ISO 19443.

3.2.1.3.1.2.2. Approved Subcontractors are put in the List of approved Subcontractors/Suppliers (hereafter referred to as – the List). Procedure of handling with the List is stated in procedure П-КК-010-015 which shall be approved with the Buyer (if necessary)/Customer.

3.2.1.3.1.2.3. Subcontractors, delivering the main products, shall be selected from the List.

3.2.1.3.1.2.4. If the Contract with Subcontractor is signed without preliminary evaluation, its evaluation, concerning ability to deliver products that meet established requirements, shall be manufactured during fulfillment of treaty obligations by Subcontractor. In case of a positive evaluation such Subcontractor is put in the List of approved Subcontractors/Suppliers.

3.2.1.3.1.2.5. Information on the chosen Subcontractors shall be provided to the Buyer (if necessary)/Customer. Such information shall include:

– full name of organization in Russian and English (with indication of legal organizational form);

– scope of the works performed by this organization;

– specification of products of the subcontract (at the request of the Buyer/Customer);

– Application on quality to the subcontract, if applicable;

– copies of current licenses (permissions), certificates (if required).

3.2.1.3.2. Purchase and service inspection

3.2.1.3.2.1. Management of delivery documentation

3.2.1.3.2.1.1. The specialist, responsible for purchases, shall prepare purchasing specifications (requests). The purchasing specification (request) shall include technical requirements and the requirements to quality assurance according to the Agreement.

3.2.1.3.2.1.2. After approval the purchasing specification (request) shall be sent to potential Subcontractors. The specialist responsible for purchase prepares the purchasing specification (request).

3.2.1.3.2.1.3. After receipt of quotations from potential Subcontractors, the requirements specified in the purchasing specification (request) are approved between the Enterprise and a potential Subcontractor.

3.2.1.3.2.1.4. After the analysis of counteroffers from Subcontractors by responsible divisions purchasing specifications are approved by the Director of the Enterprise and directed for final agreement to Subcontractor.

3.2.1.3.2.1.5. Person responsible for purchases shall prepare the first edition of the draft agreement and send it to a potential Subcontractor. The draft agreement (if required) shall be approved with all concerned divisions.

3.2.1.3.2.1.6. Based on analysis results of the first edition of the draft agreement Subcontractors shall prepare a final version of the draft agreement and transfer it for signing to appropriate division of Enterprise. The Director of the Enterprise shall make a final decision concerning execution of the Agreement.

3.2.1.3.2.1.7. Changes to the Agreement of purchase shall be formalized in the form of the supplement to the Agreement. Procedure of signing this supplement is the same, as execution of the Agreement.

3.2.1.3.2.2. Delivery evaluation

3.2.1.3.2.2.1. Subcontractor is responsibility for quality assurance of delivered products.

3.2.1.3.2.2.2. Check of purchased products, in the cases stipulated in the Agreements on delivery is performed by presence of the Enterprise representatives at points of inspection of Quality plans developed by specialists of the Enterprise or Subcontractor. Development procedure of Quality plans, their agreement and designation of points of presence are stated in the Agreements.

3.2.1.3.2.2.3. Deputy Director on quality shall provide the following: in cases covered by the Agreement, the Buyer/Customer (including their Authorized persons) can exercise the right to perform check of products delivered by Subcontractors in the territory of Subcontractors or in the territory of the Enterprise. This check shall not substitute quality control of products which are carried out by the Enterprise or Subcontractor.

3.2.1.3.2.2.4. Check of Subcontractor products by the Buyer/Customer does not deliver the Enterprise from liability for product quality within the Agreement and does not deprive the Buyer/Customer of the right to reject products of the Enterprise in case of their subsequent control.

3.2.1.3.2.2.5. All activities on quality control and inspections during manufacturing of the Equipment, accessories, semi-finished products by Subcontractor shall be recorded in Quality plans development requirements of which shall be included in the Agreements on delivery (Quality management), if required.

3.2.1.3.2.2.6. The specialist, responsible for purchases, organizes a check of purchased products at the Subcontractor according to Quality plans involving specialists of Quality Department and other divisions, if required.

3.2.1.3.2.2.7. Subcontractor interactions concerning quality assurance are performed by means of:

– directional contacts with representatives of the enterprise-subcontractors, including for the purpose of solution of the specific emergent problems;

– periodical inspections and evaluation of activities on quality assurance at the enterprise-subcontractors (according to the terms of the Agreement/Contract);

– timely dispute resolution.

3.2.1.3.2.2.8. All materials/semi-finished products, entering the Enterprise irrespective of whether special requirements are specified to them or not, are passed for incoming inspection and kept down in the area of incoming inspection before release for manufacture.

3.2.1.3.2.2.9. The chief of Quality Department is responsible for carrying out and registration of the results of incoming inspection of materials/semi-finished products.

3.2.1.3.2.2.10. Amount and procedure of incoming inspection is performed according to STO-010-034, STO-010-050.

3.2.1.3.2.2.11. Materials/semi-finished products which do not conform to the requirements of the regulating documentation and/or special requirements shall be marked by an attachment of a tag with inscription "REJECT" ("STOP") or writing this inscription with a chalk or other inscription explaining inadmissibility of use of these products in works and are processed as it is described in i. 4.5.1 of this QAP for NPP (M).

3.2.1.3.2.2.12. Any products (welding and surfacing materials, paints and varnishes completing, etc.) received from Subcontractors pass the same incoming inspection as it is described above to provide compliance to requirements of RKD, the regulating documentation and to special requirements.

3.2.1.4. Manufacture

3.2.1.4.1. General provisions

3.2.1.4.1.1. The Enterprise is engaged in manufacturing and development of the Equipment for NPP Kudankulam.

3.2.1.4.1.2. This section regulates general requirements to quality assurance during manufacturing and supervision over manufacturing of the Equipment specified in the Agreement. The section is based on the regulations and the recommendations of IAEA and rules on safety in nuclear power of the Russian Federation.

3.2.1.4.1.3. The Enterprise is responsible for establishment of detailed requirements for quality assurance at all stages of manufacturing of the Equipment. These requirements are determined by design documentation.

3.2.1.4.1.4. Meeting on check of readiness of production shall precede the beginning of manufacturing of the Equipment of quality assurance categories QA1, QA2, and QA3.

Meeting is held for the purpose of an assessment of accomplishment of necessary conditions by the Enterprise, sufficient to start manufacturing of important for safety the Equipment according to the requirements of the Agreement. The following can enter in the list of necessary conditions:

– availability of licenses of Rostekhnadzor for appropriate type of activity, according to the Act of the Russian Federation "About use of atomic energy";

– availability of developed and approved Quality assurance program;

– availability of the design and technological documentation developed, agreed and approved in accordance with the established procedure;

– availability of Testing Programs and Procedures developed, agreed and approved in accord-

ance with the established procedure;

– availability of documentary system of accounting, storage, change and issue in production of technological documentation;

– availability of internal regulating documents determining the requirements to quality control of purchased materials, semi-finished products and components at the Enterprise;

– availability of developed forms of reporting documents (acts, protocols, data sheets/certificates, etc.);

– availability of approved and agreed Quality plans;

– availability of certified personnel occupied with designing and manufacturing of the Equipment (welders, inspectors, specialists);

– availability of engineering procedures (instructions) on special work types (welding, heat treatment) agreed with Head material organization in accordance with the established procedure;

– availability of certified welding procedure;

– readiness of processing equipment and metrology provision of production, such as:

1) availability of the schedules and documents confirming accomplishment of scheduled preventive maintenance and check on manufacturing accuracy of processing equipment;

2) availability and organization of accounting of measuring, control and test equipment;

3) availability of verification certificate/calibration stamp on measuring and control equipment;

4) availability of protocols of test equipment certification.

3.2.1.4.1.5. Deputy Director on quality organizes meeting on check of readiness of production. Meeting takes place in the territory of LLC Polesye offering an invitation to representatives of UO, the Buyer/Customer and NPCIL. Representatives of UO, the Buyer/Customer and NPCIL shall be informed about meeting within the time period determined by the Agreement.

3.2.1.4.1.6. Positive result of meeting and permission to release equipment are signatures of representatives of LLC Polesye, UO, the Buyer/Customer and NPCIL in appropriate columns of Quality Plan and/or Meeting act on production release.

3.2.1.4.2. Requirements to quality assurance at manufacturing of the Equipment

3.2.1.4.2.1. All works on manufacturing of the Equipment for NPP Kudankulam are performed according to acting NTD, given in Appendix B, standards and organizational and administrative documents of quality system specified in Appendices C and D, requirements of the Agreement.

3.2.1.4.2.2. Special processes such as welding and surfacing at manufacturing of the Equipment at the Enterprise shall be carried out according to qualified procedure with involvement of certified personnel and providing with continuous monitoring and regulation.

3.2.1.4.2.3. Standard, technical and other requirements on delivery shall be included in drawings, specifications, procedures, work instructions, plans of control and testing.

3.2.1.4.2.4. All elements necessary for conducting of production process shall be identified and clearly marked to ensure and facilitate their traceability. The requirements for identification are specified in RKD. In specific cases it is allowed to write down the requirements for identification in delivery documents.

3.2.1.4.2.5. The processing and test equipment used at manufacturing of the Equipment shall pass necessary servicing, tests and certification for the purpose to prevent decrease in their accuracy up to the level when there is a reject in products, during the period between planned repairs, and also to determine quality of executed medium or capital repairs based on documented plans and according to the requirements of STO-010-031, STO-010-032.

3.2.1.4.2.6. Procedures of engineering processes, control and testing used at manufacturing shall be developed and performed by personnel of the Enterprise for ensuring compliance to the established requirements.

3.2.1.4.3. Identification and control of materials, assemblies and components

3.2.1.4.3.1. Identification and control of elements are carried out for the purpose of the prevention of their wrong use or use of the elements having defects or not meeting the requirements of design, regulating and delivery documentation.

3.2.1.4.3.2. Element identification is performed based on "Coding system of power facilities (KKS)". Heads of functional divisions are responsible for fulfillment of the requirements on identification of materials, products and their components on all production stages, and for safety of marking during storage and delivery based on the requirements of the project or regulating documentation.

3.2.1.4.3.3. Quality Department chief is responsible for control of marking at all stages of production process from production launch of material to shipment of final manufactured product.

3.2.1.4.3.4. Requirements for extent and method of marking of details, assembly units and items are stated in design documentation, and marking process is described in engineering procedures taking into account these requirements.

Identification and control of products and elements shall be carried out by personnel of the Enterprise according to the requirements of design and technological documentation.

3.2.1.4.3.5. When designing the condition that the same elements have similar designation in all design documents shall be provided and controlled for all elements.

3.2.1.4.3.6. Identification, as a rule, shall be carried out by physical methods using marking by stamps, tags, inscriptions, etc. Where it is impossible, it is necessary to carry out physical separation of elements, to apply special control procedures or other methods of identification that prevent use of inappropriate or defective units and control.

3.2.1.4.3.7. When selecting a method of marking the following is to be considered:

– dimensions of products and components, characteristics of material depending on its chemical composition, purity of a surface;

– ensuring readability, resistance against impact of environment, extent of information;

– ensuring visibility after painting or packaging of a product.

Application of marking shall not worsen technical characteristics of the element.

3.2.1.4.3.8. In addition, all the marked elements have accompanying quality documents such as a certificate, data sheet or other relevant document in which all data on the blank material are included: material grade, class, group, category, batch heat number, drawing number, and, if necessary, serial number.

The procedure for the identification of elements is regulated by the procedure STO-010-062 "The procedure for marking parts, blanks, products of main production"

3.2.1.4.3.9. During storage and handling works (transportation) of materials, blanks and details in production divisions of Enterprise the possibility of matching of marking with data of certificates and/or accompanying passports is provided.

3.2.1.4.3.10. When there is a doubt about correctness of element identification, determination of their indicators is carried out by check tests described in engineering procedures.

3.2.1.4.3.11. Finally manufactured product is marked to the extent according to the requirements of design and technological documentation, and the Agreement.

3.2.1.4.3.12. Marking data is entered in documentation delivered together with the Equipment. All delivered elements and executed services are controlled according to delivery documents and quality control plans.

3.2.1.4.3.13. Identification provides traceability of products, such as:

– origin of raw materials and materials;

– location of products after release;

– location of products during manufacture process;

– location of products before and after delivery to the Customer.

Traceability required during manufacturing, realization, mounting and maintenance is provided with common nature of identification of blanks, details and assemblies of a specific item and its registration in appropriate documentation on quality from material launch in production up to the end of manufacturing of a product.

Traceability is necessary for the Enterprise for a possibility, if required, of recovery of ture history of a product beginning with data on used material up to the results of acceptance tests of manufactured product.

3.2.1.4.4. Handling operations, storage, packaging, preservation and transportation

3.2.1.4.4.1. General information

3.2.1.4.4.1.1. Quality and safety of elements in case of their handling, during their storage and transportation is provided, first of all, with observance of the requirements of standards and technical documentation at production process, handling operations and storage on sites.

3.2.1.4.4.1.2. Quality assurance control of works on storage of elements on sites during handling operations for transportation, control on providing with requirements for safety of elements during these works are performed by Deputy Director on production.

3.2.1.4.4.2. Performance of handling operations, storage, packaging, preservation and transportation of elements

3.2.1.4.4.2.1. Quality and safety of the Equipment after the end of production at preservation, packaging, storage, represervation and handling as well is provided with observance of the requirements established by regulating, design and engineering-manufacturing documentation, if it is required.

3.2.1.4.4.2.2. Requirements and methods of preservation, packaging and marking of the Equipment are stated by technical design assignment on manufacturing, design documentation and engineering-manufacturing documentation taking into account mode of transport according to the requirements of the Agreement.

3.2.1.4.4.2.3. Methods of packaging and marking of elements shall conform to the requirements of GOST 23170 "Packing for products of engineering industry" and GOST 14192 "Marking of cargoes", and to the requirements of the Agreement as well.

3.2.1.4.4.2.4. Necessity for preservation of the Equipment using means of temporary anticorrosive protection is stipulated by design documentation according to the requirements of GOST 9.014 "Temporary corrosion protection of products".

3.2.1.4.4.2.5. Date of preservation, option of temporary anticorrosive protection, option of inner package, storage conditions and storage life of elements without preservation are specified in accompanying documentation of elements.

3.2.1.4.4.2.6. Technical documentation on lifting equipment for handling is developed by Design department of the Enterprise according to the requirements of GOST 12.3.009 for handling works "Occupational safety standards system. Loading and unloading works. General safety requirements" and "Regulations on Installation and Safe Operation of Cargo Cranes".

3.2.1.4.4.2.7. Requirements to schemes and methods of strapping on transport facilities, and the requirements to transport facilities and rules of transportation are stated by loading drawings drawn and approved (if required) according to "Specifications of placement and fastening of cargoes aboard the train and in containers" and/or "Shipping rules by road".

3.2.1.4.4.2.8. Storage of the Equipment on sites is under supervision of Deputy Director on production or his authorized persons who are also responsible for training of personnel of this division regarding storage procedures.

3.2.1.4.4.2.9. Storage conditions shall be followed by the personnel of division and controlled by the representatives of Quality Department by means of regular survey of stored the Equipment for absence of damage, pollution, loss of identification and breakdown.

3.2.1.4.5. Servicing

Enterprise does not perform this kind of activity as it is not stipulated by the Agreement.

3.2.1.5. Inspection and tests for acceptance

3.2.1.5.1. Inspection and test programs

3.2.1.5.1.1. General provisions

3.2.1.5.1.1.1. The Enterprise carries out technical control and tests during manufacturing of the Equipment for checking of compliance of elements to established requirements in points of inspection specified by Quality plan.

3.2.1.5.1.1.2. When carrying out of inspections and tests differentiated approach, based on importance for safety of elements, services and/or processes, is used.

3.2.1.5.1.1.3. Requirements for testing and acceptance criteria for elements, processes or services are specified in design and technological documentation.

3.2.1.5.1.1.4. Personnel of Quality Department carry out controls within the scope of the requirements of RKD and PTD during manufacturing and participate in tests and inspections. In the absence of necessary specialists it is allowed to attract the third parties, under condition of ensuring appropriate qualification and certification of their personnel.

3.2.1.5.1.1.5. Monitoring of production process is carried out for special processes including control of technological modes, equipment and personnel. Where necessary, it is stipulated by the Enterprise, both quality control, and monitoring are carried out at the same time.

3.2.1.5.1.1.6. Inspections during manufacture and supply of the Equipment of quality categories QA1, QA2, QA3 (and separate items of quality category QNC) are carried out according to the approved Quality plans.

3.2.1.5.1.1.7. Checks of points of inspection of Quality Plan are performed based on the Notifications on check (for points of inspection with the statuses of HP and WP) drawn up according to the requirements of the Agreement.

3.2.1.5.1.1.8. Notifications on check is transferred to the Authorized organization, the Buyer/Customer and NPCIL beforehand, but not later than 10 days before the planned date of carrying out of check of point of inspection if other interval is not specified by the Agreement.

3.2.1.5.1.1.9. Notification on check is sent in electronic format in a bilingual format in Excel format with cover letter which shall contain the following information:

– Enterprise name;

– item name as per Contract with NPCIL (or as per supplement to a contract), subject to be inspected;

– Quality plan number;

– item reference, KKS code and quantity of products as per Contract with NPCIL (or as per supplement to a contract);

- number and name of the operation as per Quality plan;
- starting date of the inspection;
- expected date of end of inspection (according to manufacturing schedule).

3.2.1.5.1.1.10. In case of continuous presence of representatives of the Authorized organization and/or NPCIL at the Enterprise, sending procedure and terms of Notifications on check can be updated by coordinated decision of the parties by agreement with the Customer.

3.2.1.5.1.1.11. The Buyer/Customer confirms in writing form participation of its representatives and representatives of NPCIL in the planned inspection, or informs about possibility of continuation of works without their presence.

3.2.1.5.1.1.12. If the confirmation on presence of the Buyer/Customer and NPCIL representatives in a hold point (HP) was received, but at the fixed time they did not arrive at inspection site, then works in "hold points" are postponed additionally for 24 hours after renewed notification after that works are continued with or without presence of the Buyer/Customer and NPCIL representatives.

3.2.1.5.1.1.13. After manufacture is over acceptance inspection of the Equipment, ready for shipment, is carried out. Acceptance inspection is the last point of inspection (with the status of HP) in Quality plans.

3.2.1.5.1.1.14. Products which passed required inspections and tests and were accepted by Quality Department of Enterprise are submitted for acceptance inspection.

3.2.1.5.1.1.15. Authorized representatives of the Buyer/Customer and NPCIL carry out acceptance inspections of products in the following amount (at least):

- verification of reporting documentation of technical control;
- product completeness check presented for acceptance inspection;
- check of completeness and drawing up of technical and forwarding documentation;
- visual and, if necessary, measuring control of presented products;
- check of coat, preservation, package, marking of the products;
- check of marking and phytosanitary treatment of package.

3.2.1.5.1.1.16. In case of negative results of acceptance committee the Enterprise resolves the comments of representatives of UO, the Buyer/Customer and NPCIL stated in the Report on inspection and informs the Buyer/Customer about repeated acceptance inspection (draws up repeated notification of inspection according to the requirements of the Agreement).

3.2.1.5.1.1.17. Products are considered to be finally accepted when they are being measured, tested and inspected in amount and in the sequence specified by a procedure and/or the program of inspections and testing, technical documentation and Quality plan.

3.2.1.5.1.1.18. The Enterprise is responsible for timely development of Quality plan, notice to Authorized organization, the Buyer/Customer about readiness for inspections, all checking operations and tests provided by technical documentation and Quality plan, preparation of Non-conformity

Reports and removal of nonconformities, preparation of draft documents executed based on results of inspections.

3.2.1.5.1.1.19. Deputy Director on production and Chief of Quality Department according to their functional duties are responsible for preparation of the Equipment for inspections and arrangement of inspections according to the requirements of the Agreement.

3.2.1.5.1.2. Manufacturing inspections and tests

3.2.1.5.1.2.1. The Enterprise shall control fulfillment of the requirements of design documentation during manufacturing. Manufacturing inspections and tests are carried out at three stages of manufacturing supervision as per Quality plan:

- incoming inspection and tests;
- procedure control during manufacturing / monitoring;
- final inspection and acceptance inspections.

3.2.1.5.1.2.2. The amount of manufacturing inspections and tests, and the methods of their carrying out as well are established in technological documents (engineering procedures, production chart, technological instructions or other technological documentation).

3.2.1.5.1.2.3. Results of all types of inspections and tests are entered in appropriate records as per i. 3.2.1.1.2 of this QAP for NPP (M).

3.2.1.5.1.2.4. The personnel of all levels are obliged to report on all deviations and nonconformities revealed during manufacturing to functional managers that are responsible for performed works.

3.2.1.5.1.3. Incoming inspection and tests of the products supplied by the Sub-contractors

3.2.1.5.1.3.1. All activities concerning incoming inspection and tests of the products supplied by the Sub-contractors are performed according to the requirements of STO-010-034, List of incoming inspection.

3.2.1.5.1.3.2. QCD of the Enterprise is responsible for performing of incoming inspection and tests of the products supplied by the Sub-contractors.

3.2.1.5.1.3.3. NPP safety-related equipment is controlled as per regulations and safety rules, other equipment is controlled according to appropriate design and regulating documentation. Types of control are established in working documentation based on regulatory documents in force.

3.2.1.5.1.4. Presentation of the results of inspections and tests

3.2.1.5.1.4.1. All requirements to carrying out testing are provided in design documentation developed by design department. Process procedures for testing and Quality plans are developed based on the requirements of RKD. If necessary process procedures for testing are provided to the Buyer/Customer.

3.2.1.5.1.4.2. Point of inspections where the presence of the Buyer/Customer, authorized representative of NPCIL is obligatory for carrying out of testing or acceptance are established in Quality plans. According to the performed inspections the representatives of the Buyer/Customer/NPCIL draw the report on the inspection according to the Agreement and append the signatures in appropriate columns of the Quality Plan that is confirmation of positive result of inspection.

3.2.1.5.1.4.3. After acceptance inspection of the Equipment of quality assurance category QA1, QA2, QA3 the representatives of Authorized organization, the Buyer/Customer, NPCIL (for separate products of quality assurance category QNC – the Buyer/Customer and NPCIL) append the signatures in the final "Approval sheet of inspection results" of Quality plan. And Quality plan is considered to be closed, and the equipment and forwarding documents are considered to be ready for shipment. Certificate of acceptance inspection is signed by the representatives of Authorized organization and NPCIL according to the requirements of the Agreement.

For products of quality assurance category QNC the Certificate of acceptance inspection is signed by the representatives of the Buyer/Customer and NPCIL.

3.2.1.5.1.4.4. The results of the final tests are documented according to the requirements of regulatory documents and assessed to confirm the fact that the requirements to control are fulfilled.

3.2.1.5.1.4.5. The requirements to carrying out of necessary testing after assembling are included into delivery documents.

3.2.1.6. Calibration and control of measuring and test equipment

3.2.1.6.1. General provisions

3.2.1.6.1.1. The Enterprise controls measuring and test equipment on conformance to specified requirements to measurement type, measurement range, accuracy and sensitivity at all types of testing and quality control.

3.2.1.6.1.2. The Enterprise relies upon the requirements established in the regulatory documentation when choosing, definition, using, methods and frequency of carrying out of checking and metrological certification of measuring and test equipment: "Procedure for the conduct of checking of measuring equipment, the requirements to a verification mark and contents of the verification certificate".

3.2.1.6.2. Check of a measuring instrument

3.2.1.6.2.1. The Deputy Director on production provides control of metrological support. Checking of measuring equipment is made by state service of legal metrology headed by Federal Agency on Technical Regulating and Metrology and the enterprises/organizations accredited in accordance with the established procedure for execution of verification.

3.2.1.6.2.2. Metrological control of the measuring and test equipment provides:

– check on presence and compliance of plans of calibration, qualification and repair of measuring and test equipment;

– compliance with the measures for using only qualified measuring and test equipment at control, measurement and testing;

– ensuring compliance of metrological characteristics of measuring instruments and test equipment to requirements of techniques of testing and control;

– identification of measuring and test equipment by serialization with its application on a meas-

uring equipment;

– storage of verification certificate of measuring and test equipment;

– analysis of documentation for assessment of correctness of earlier performed measurements in case when measuring and test equipment are beyond the permissible check range;

– control of observance of rules of transportation, preservation, storage and use of the calibrated equipment for maintenance of its accuracy and operability;

– methods of inclusion and exception of measuring and test equipment from the calibration plan, including activities on calibration assurance of new or repaired equipment prior to its use;

– control system for transfer of measuring and test equipment to authorized personnel.

3.2.1.6.2.3. Procedure of verification (calibration) measuring equipment is regulated with STO-010-010.

3.2.2. Stage process

3.2.2.1. Site selection

The Enterprise does not perform this kind of activity.

3.2.2.2. Development

The Enterprise does not perform this kind of activity.

3.2.2.3. Site construction

Enterprise does not perform this kind of activity.

3.2.2.4. Put into operation

Enterprise does not perform this kind of activity.

3.2.2.5. Operation

Enterprise does not perform this kind of activity.

3.2.2.6. Removal from operation

Enterprise does not perform this kind of activity.

4. MEASURING, EVALUATION, REVIEWING AND DEVELOPMENT

4.1. Control and measurement

4.1.1. General provisions

4.1.1.1. Control and measurement are the compulsory provision for effective activities of the enterprise and for ensuring required quality of the equipment manufactured at the Enterprise and include:

- control and measurement of processes;
- control and measurement of products;
- control and measurement of customer satisfaction.

4.1.1.2. Objective evaluation criteria shall be stated for effective control and measurement. For this purpose at the Enterprise:

- the requirements to fulfillment of the processes applicable at manufacturing of the equipment for NPP, based on the main objectives and stated in Quality Assurance Policy, are established in regulating documents of the Enterprise (standards, regulations, instructions, etc.);
- for conformity confirmation of manufactured, assembled, modernized and repaired parts, assemblies and items to the requirements of ND, KD and the agreement/contract relative to process procedure developed by specialists Process Engineering Department checking and testing operations are provided for enforcement of control and measurement of the products;
- for control and measurement of a consumer satisfaction continuous analysis of the data obtained from the result of measurement and monitoring of products during manufacturing and testing, analysis of corrective and preventive actions, analysis of the results of incoming inspection of manufactured equipment at the Customer, analysis of the results of audits, analysis of quality management system is carried out for part of management.

4.1.2. Control and measurement of processes

4.1.2.1. Control and measurement of processes are carried out for definition of their efficiency and gains in performance.

4.1.2.2. Control and measurement of processes connected with product quality are carried out by quality control department in the following way:

- analysis of data on claims (reclamations) arriving from consumers on the shipped products,
- analysis of data based on the results of internal audits and external audits for part of the consumer,
- analysis of planned purposes of the enterprise (development strategy of the Enterprise / a comprehensive plan of quality improvement for a year),
- analysis of dynamics and tendencies in occurrence of nonconformities.

4.1.2.3. One of the methods of control and measurement, that is applied daily during management of processes, is planning which provides:

– accomplishment of production programs according to the nomenclature and in the terms provided by agreements;

– minimum labour intensity of planned work;

– continuity of manufacture of products;

– uniform loading of production;

– optimal utilization of means of production and working efficiency of personnel;

– themaximum acceleration of production and ensuring the maximum turnover of current assets in a production stage.

4.1.2.4. The main objectives of planning is calculation of regulations and standard rates, in case of need, schedule development of production on each product in case of the most effective organization of production process in time and space on the basis of the rational principles of its organization, calculation of production programs for the shop and operational accounting of a course of production.

4.1.2.5. Current accounting of a course of production allows to perform monitoring of a state and dynamics of indicators of movement of production and to show a capability to achieve the planned results.

The following is to be checked:

– progress of execution of the production program on the total production, the product range, completeness;

– status of in-process stock;

– providing of the production with materials, blanks, parts, components;

– product shipment to the consumer;

– compensation of rejected production.

4.1.2.6. Quantity of the following documents belong to criteria of measurement of a production process of products:

– acts on defect on manufactured products;

– violations of technological discipline;

– returns of products from Quality Department and external regulatory authorities;

– non-conformity reports.

4.1.3. Control and measurement of products

4.1.3.1. For confirmation of conformity of the purchased materials and the accessory equipment, parts, assemblies and items made at the enterprise, to the requirements of ND, KD and the agreement/contract at the enterprise control and measurements of products at relevant stages of its lifecycle is performed.

4.1.3.2. At the enterprise the following methods of monitoring are used:

– incoming inspection;

– procedure control;

– destructive and nondestructive control method;

– acceptance tests;

– acceptance inspection;

– final inspection (acceptance inspection).

4.1.3.3. Requirements to measurement of products, including amount and criteria for evaluation of results of testing and controls, necessary test equipment and measuring instruments by all methods of monitoring, are specified in general engineering procedures, in engineering procedures on work types, in methods and instructions which are developed by the specialists Process Engineering Department.

4.1.3.4. At the enterprise Quality plans of production of products reflecting the planned sequence of procedures of production by engineering procedures and control points for the consumer are used as well (or his authorized representative).

Quality plans are developed by the specialists of quality control group in the presence of appropriate requirements in the agreement/contract.

Interaction of the enterprise and the consumer (or his authorized representative) according to Quality plans is stipulated in the terms of agreement/contract.

4.1.3.5. Incoming inspection.

4.1.3.5.1. All materials / semifinished products and components arriving on the enterprise pass incoming inspection which is carried out by the representatives of Quality Department.

4.1.3.5.2. The amount and criteria of control are determined by the requirements of ND on delivery of the purchased products.

4.1.3.5.3. The organization and procedure of incoming inspection, recording of its results is carried out according to STO-010-034.

4.1.3.6. Procedure control.

4.1.3.6.1. Procedure control at manufacturing of products is carried out by the representatives of Quality Department in the sequence determined by engineering procedures.

4.1.3.6.2. The amount and criteria of control are determined by the requirements of regulating, design and production and technological documentation. Results of control are brought in internal accompanying technical processes-data sheets according to the requirements of STO-010-002.

4.1.3.6.3. The organization and procedure of this control and recording of its results is carried out according to STO-010-039.

4.1.3.7. Destructive and nondestructive control method

4.1.3.7.1. Destructive control methods: test for resistance to intercrystalline corrosion, micrographic test, mechanical test (elongation test at normal temperature, elongation test at elevated temperature, slow-bend test and flattening and impact bending), ferrite content determination, determination of the chemical composition, determination critical brittle point verification are carried out in test la-

boratory of the enterprise or in the laboratories accredited on technical competence and independence of the order established by Federal Agency on Technical Regulating and Metrology. Procedure of destructive control is regulated by STO-010-054.

4.1.3.7.2. Nondestructive control methods: visual, measuring, penetrant, radiographic, metallographic arc spectroscope, leakage checking, ultrasonic, magnetic particle test, metal ball chaser control etc. are carry out by the specialists of test laboratory of LLC Polesye. It is allowed for performing of nondestructive control to attract the third parties having the certified personnel, control facilities and control documentation and having the right to perform appropriate work types.

4.1.3.7.3. Nondestructive control methods are carried out at the enterprise with use of engineering procedures (instructions) and charts which are developed by the specialists on nondestructive control. Procedure of destructive control is regulated with STO-010-041.

4.1.3.7.4. The amount and criteria of testing, determined characteristics and indicators, their standard values, and types and quantity of samples are established with KD and PTD taking into account the requirements of ND.

4.1.3.7.5. Proficiency test and certification of the personnel involved in destructive and nondestructive control at the enterprise are performed for each of the above-stated methods according to STO-010-029.

4.1.3.7.6. Results of destructive and nondestructive control are arranged with appropriate reports on control according to STO-010-040.

4.1.3.7.7. Reports with the results of destructive and nondestructive control and films of radiographic control (both in case of full and selective control) are stored in Technical Records Department.

4.1.3.8. Acceptance tests.

4.1.3.8.1. Acceptance tests are carried out for verification of the chosen product characteristics and check of its conformance to the requirements of Technical Design Assignment, standard and design documentation.

4.1.3.8.2. The amount and criteria of testing are determined by design documentation which if necessary is agreed with the consumer.

4.1.3.8.3. Based on design documentation engineering procedures and instructions containing equipment and testing equipment necessary for testing are developed.

4.1.3.8.4. Tests are carried out after the end of process of production of a product and receipt of positive results of all types of control: visual and measuring, the control of marking of base metal and welded joints, destructive and nondestructive controls of base metal and welded joints.

4.1.3.8.5. Tests are carried out under control of the head of a production site (work manager) and the representative of Quality Department by qualified personnel with due regard to the requirements of KD and PTD.

4.1.3.8.6. Based on the results of testing reports or acts in the established form are drawn up.

4.1.3.9. Acceptance inspection.

4.1.3.9.1. For confirmation of conformity of developed technical documentation to initial requirements and the choice of the best decision (in the presence of options) prototypes (pilot batches) or head product samples are made. Need of production of prototypes (pilot batches) or head product samples, their quantity, amount and content of testing are reflected in TZ and the agreement/contract.

4.1.3.9.2. Acceptance inspection is carried out on prototypes (pilot batches) of products if it is supposed to serial production. For custom-made production head samples which in case of positive results of testing can be realized to the Customer are made.

4.1.3.9.3. Acceptance inspections are carried out according to the appropriate programs and techniques of testing developed on the basis of the requirements of TZ, KD and GOST P 15.201.

4.1.3.9.4. The results of acceptance inspections are drawn up by the act (report) according to STO-010-040.

4.1.3.9.5. When conducting acceptance inspections the personnel of Quality Department are a part of the committee on conducting acceptance tests if their carrying out is required by terms of the contract and technical documentation, for the purpose of the solution of a question of admissibility of use of a product to destination and/or about feasibility of statement of products on production.

4.1.3.10. Final inspection (acceptance inspection)

4.1.3.10.1. Final inspection (acceptance inspection) is carried out by the representatives of Quality Department, Authorized organization and the Buyer/Customer for the purpose of confirmation that activities for verification and validation are complete and approved.

4.1.3.10.2. The amount of final inspection (acceptance inspection) includes visual and measuring control of a finished product on compliance to the requirements of KD, check of accomplishment of all types of control and testing, check of completeness of the manufactured equipment, and check of completeness and execution of the accompanying and operational documentation delivered to the consumer with a product.

4.1.3.11. The equipment and measuring instruments for carrying out of all listed monitoring and test methods are supported in qualified condition according to item 3.2.1.6.

4.1.4. Control and measurement of customer satisfaction

4.1.4.1. Measurement and control of a consumer satisfaction is based on the analysis of information connected with consumers.

Such information contains the following:

- requirements of the market;
- information relating to the competition;
- consumer requirements and information on the agreement/contract;
- analysis of delivery dates of the equipment;
- results of the external audits which are carried out by consumer representatives or organizations authorized by them;
- results of incoming inspection of manufactured products at the Customer;
- offers and comments on the results of equipment operation coming from the consumer;
- etc.

4.1.4.2. Deputy Director on marketing will organize gathering, analysis and use of information that promote improvement of activities of the enterprise.

4.1.4.3. The specialists of the enterprise participate in external audits as the representatives of the enterprise for objectivity of assessment of QMS and for assistance in carrying out of audit, and develop corrective actions and control their accomplishment.

Corrective actions and interim reports on their accomplishment, in the presence of relevant requirements from consumers, are provided to consumers.

4.1.4.4. Considering that the consumer satisfaction is the important process including compliance to the requirements, requirements satisfaction and consumer expectations and price and delivery of products, Deputy Director on marketing uses various sources of information on consumer satisfaction.

4.1.4.5. Such sources of information are:

- direct interaction with consumers;
- claims and reclamations of consumers;
- questionnaire surveys and reviews;
- media reports;
- studying of industries and economy.

4.1.4.6. Methods of use of the obtained information are established in STO-010-042.

4.1.4.7. Measurement of a consumer satisfaction allows to control effectiveness of quality management system and to reveal areas in which it is necessary to carry out improvements. At the enterprise the purposes and activities which require improvement for increase in a consumer satisfaction are determined by analysis of the results of a consumer satisfaction, analysis of a quality management system.

4.2. Management self-assessment

4.2.1. The top management of the Enterprise periodically analyzes the quality system, estimates its efficiency and compliance to the requirements of ISO 9001, ISO 19443, QAP for NPP (M) according to STO-010-024. Reports of such analyses are stored in GUK.

4.2.2. The purpose of a self-assessment of a management consists in determination and prevention of problems of management which interfere with goal achievement of the enterprise. In case of a self-assessment the top management gives an assessment to such problems as:

- whether plans and purposes of the enterprise kept applicability and justification,
- whether quality of work in general on all processes is concentrated on effective goal achievement,
- what possibilities of increase in safety and improvement of quality,
- whether accomplishment of the planned purposes corresponds to the expected results,
- whether the personnel of the enterprise understand plans, purposes and tasks of the enterprise,
- prospects for the development of the Enterprise and etc.

4.2.3. In case of a self-assessment the following information is considered:

- results of internal and external audits of quality;
- results of assessment of Subcontractors;
- statistical data on claims;
- statistical data on nonconformities;
- reports on accomplishment of corrective/ preventive actions;
- analysis of planned purposes (annual plan of perspective development of the enterprise);
- offers on improvement of quality and safety of the manufactured equipment;
- periodic analysis of operating result;
- etc.

4.2.4. In more detail procedure of a self-assessment is described in STO-010-024.

4.3. Independent assessment

4.3.1. General provisions

4.3.1.1. The independent assessment of efficiency of accomplishment of quality assurance program and activities of the enterprise can include inspections from supervisory authorities, the audits executed by third parties, internal audits.

4.3.1.2. The enterprise provides checks of accomplishment of this QAP for NPP (M) by means of the organization and carrying out internal audits, and by the organization and carrying out external audits of Subcontractors. Process of preparation, planning and carrying out of audits is in detail described in STO-010-007.

4.3.1.3. Responsibility for the organization of carrying out of internal audits at the Enterprise and external audits at Subcontractors is born by Deputy Director on quality.

4.3.1.4. For the purpose of check of efficiency of accomplishment of the quality assurance program according to the Delivery agreement of the Equipment the Buyer /Customer (in the presence of the requirements in the agreement) carry out external planned and unplanned audits (checks) of LLC Polesye. NPCIL has the right to take part in audits performed by the Buyer/Customer.

4.3.1.5. Audits are performed to make sure that measures for quality assurance are carried out according to internal documents and the requirements of this QAP for NPP (M), especially on the questions connected with safety that the system of quality assurance of the Enterprise is effective and meets the national and international standards and rules, and also, for search of a possibility of enhancement of activities for quality assurance of the Enterprise.

4.3.1.6. Audits shall be performed, at least, in the following cases:

– when the systematic independent assessment of efficiency of quality assurance system is considered necessary;

– after making essential amendments in QAP for NPP (M), which includes check of accomplishment of corrective actions.

4.3.1.7. System of carrying out of internal audits is developed by Deputy Director on quality.

General rules of carrying out of internal audits provide, at least:

– purposes;

– requirements to the organization and planning of audits;

– requirements to the personnel that performs audits;

– rules of documentation of the results of internal audits.

4.3.1.8. Internal audits are intended for ensuring achievement of the following purposes:

– assessment of conformity of activities on quality assurance to the requirements established in QAP for NPP (M) and, first of all, in the statement for Quality policy;

– assessment of efficiency of the requirements of QAP for NPP (M) and activities connected with safety of NPP;

– assessment of necessity for corrective actions for improvement of activities and increase in safety.

4.3.1.9. External audits are intended for assessment of activities of Subcontractors and will be organized when:

– it is necessary to determine effectiveness and adequacy of documentation on quality of the Subcontractor before the conclusion of the Contract with it or before establishment of an order of deliveries;

– at the end of conclusion of the Agreement it is necessary to determine whether the Subcontractor carries out the obligations according to the requirements of regulations and standards of contractual documents and documentation on quality;

– essential amendments are made in QAP of the Subcontractor (as well as in procedures);

– there are doubts concerning quality of the performed works (delivered goods) or concerning the requirements of QAP.

4.3.1.10. The Buyer (in the presence of the requirements in the agreement)/Customer has the right to participate in the external audits performed by LLC Polesye at the Subcontractors.

4.3.2. Schedules

4.3.2.1. Activities of the Enterprise on carrying out of audits are regulated with STO-010-007.

4.3.2.2. Internal audits are performed annually according to the schedule (plan) of internal audits for the current year.

4.3.2.3. The annual schedule (plan) of carrying out of internal audits is developed by the head of auditor group appointed by the order of the Enterprise and approved by Deputy Director on quality. Planning is carried out taking into account importance of activities for safety of NPP.

4.3.2.4. External audits are performed in the presence of Subcontractors according to the quarterly schedule (plan) of external audits which is developed by Deputy Director on quality.

4.3.2.5. The quarterly schedule of external audits of Subcontractors shall be brought to the information of the Buyer (in the presence of requirements in the agreement) / Customer. On a basis of the above-stated schedule the Buyer (in the presence of requirements in the agreement) / Customer will inform the Enterprise on the participation in audit of the Subcontractor.

4.3.3. Quality assurance audit preparation

4.3.3.1. Based on the schedule (plan) of audit the head of auditor group in two weeks prior to the current check carries out preparation for the forthcoming audit which includes:

– studying of the regulating documentation – procedures, regulations, standards of the Enterprise which regulate work of the checked division;

– preparation of the questionnaire which shall not limit activities of the checking group on receipt of necessary information in the course of audit, and serves as a reference point;

– preparation of the Internal audit program where the purpose, amount and terms of audit are included.

4.3.3.2. The schedule (Plan) and the Internal audit program are brought to the information of the head of the checked division in a week prior to check. The head of auditor group is responsible for bringing to the information of the Schedule (Plan) and Program to the head of production division.

The schedule (Plan) and the Program of external audit is brought to the information of a management of the checked Subcontractor in 14 days prior to audit of quality assurance. Deputy Director on quality is responsible for to the information of the Schedule (Plan) of external audit to the Subcontractor and agreement of its terms.

4.3.3.3. Audit of LLC Polesye from the Buyer/Customer /NPCIL is carried out according to the notification in terms determined by the Delivery agreement of the Equipment

4.3.4. Carrying out of quality assurance audit

4.3.4.1. Check (audit) is performed in the terms selected by the plan of its carrying out (scheduled inspection) and/or the order (instruction) of the director (unscheduled inspection).

4.3.4.2. Audits are performed by the persons who are not responsible for the checked works. Involvement of the specialists of the third parties having the appropriate qualification is allowed.

4.3.4.3. All required materials for audit are provided by the head of the checked division during check.

4.3.4.4. The representatives of the Buyer/Customers/NPCIL have right of access to structural divisions of the Enterprise, and to Documentation on quality connected to the Equipment manufactured under the Agreement

4.3.5. The actions following after quality assurance audit

4.3.5.1. Upon termination of audit (internal or external) the head of auditor group draws up Report on audit which is signed by all members of auditor group.

4.3.5.2. The following data is included into the report:

– audit group members;
– checked division (organisation);
– checked elements of quality system;
– results of audit on each item of the program;
– information on revealed violations;
– personnel who was in touch with when carrying out audit;
– the list of checked documents and/or products.

The list of documents based on which the corresponding assessments was made, is provided in the report as well.

4.3.5.3. The arranged reports on results of internal audit are transferred to the head of the checked division for preparation of corrective actions for the term of no more than 3 days with the subsequent return of the report to the head of auditor group.

Deputy Director on quality bears responsibility for control of accomplishment of required corrective actions, and heads of structural divisions – for preparation and their implementation.

4.3.5.4. After external audit the arranged report is transferred to the Subcontractor which shall study results of audit for preparation of corrective actions, constitute the plan of their accomplishment with indication of terms and transfer to the Enterprise.

4.3.5.5. On the termination of term of corrective actions the Subcontractor shall provide to the Entity documentary arranged proofs of elimination of all, revealed during audit, discrepancies and notes. Deputy Director on quality is responsible for receipt of necessary data from the Subcontractor,.

4.3.5.6. After carrying out external audit by the Buyer/Customer/NPCIL the report on audit is transferred to the Enterprise for the analysis and elimination of the revealed discrepancies, and also for development corrective and the preventive actions for results of audit.

4.3.5.7. Plans of carrying out corrective actions by results of the audit performed by the Buyer/Customer / NPCIL shall be sent to the Buyer/Customer within two weeks after receipt of the Report on carrying out audit or to the terms specified by the Buyer/Customer. The report on the carried-out corrective actions shall go to the Buyer/Customer in process of implementation of corrective actions.

4.3.5.8. Check of accomplishment of corrective actions and their effectiveness is carried out in case of planned or repeated audits, based on terms of accomplishment of corrective actions.

4.3.5.9. The report on audit, the plan of corrective actions and documents on their accomplishment are transferred to GUK for storage, and their copies go to Deputy Director on quality for carrying out efficiency analysis of the quality system and independent check of accomplishment of corrective actions.

4.3.5.10. All documents drawn up when carrying out of audit are subject to storage according to the instructions of item 3.2.1.1.4 of this QAP for NPP (M).

4.4. Reviewing

4.4.1. For demonstration of suitability and effectiveness of quality management system at the enterprise the data obtained as a result of measurements according to items 4.1.2 and 4.1.3, and also information on suppliers according to item 3.2.1.3 on a consumer satisfaction according to item 4.1.4, on nonconformities according to item 4.5.1, characteristics and tendencies of processes, including possibility of carrying out of preventive actions according to item 4.5.2 are gather, reviewed and analyzed.

4.4.2. Data collection is carried out according to items 4.1.3, 4.5.1, reviewing and analysis of data are made by the specialists of Quality Department and TO during preparation of materials for holding a meeting on quality at the director of the enterprise.

4.4.3. Reviewing (analysis) of data is applied in case of:

– assessment and selection of suppliers;

– determination of characteristics and tendencies of processes.

4.4.4. Data on assessment and selection of suppliers is gathered by carrying out of questioning and interview of suppliers according to item 3.2.1.3, and by results of incoming inspection according to item 4.1.3.

4.4.5. Incoming data is designed for reviewing and analysis of processes according to item 4.2.

4.4.6. Reviewing and analysis of data from various sources allows to estimate most fully the carried-out activities and to establish the prime cause of the existing potential problems, and, therefore, promotes decision making on corrective and preventive actions.

4.5. Non-conformities and corrective and preventive actions

4.5.1. Nonconformity management

4.5.1.1. Procedure and instructions

4.5.1.1.1. For control of nonconformities in this QAP for NPP (M) the differentiated approach based on relative importance of each element, service or process for nuclear safety is used. Nonconformity management is carried out according to procedure P-KK-010-003. Data on non-conformities are collected and processed using the EOS-Quality system.

4.5.1.1.2. The procedure establishes an order of gathering of information, registration, the regular technical analysis of nonconformities and methods of identification, isolation, up to removal from the production zone inappropriate to products, excluding its inadvertent use.

4.5.1.1.3. Nonconformity management at the Enterprise is imposed on Quality Department. However it does not relieve responsibility from each employee of the Enterprise which found any nonconformity, for accomplishment of all of the necessary in this case actions ordered by the procedure P-KK-010-003.

4.5.1.2. Identification

4.5.1.2.1. In case of detection of a deviation, the representative of Quality Department checks products and if nonconformity proved to be true, it is identified by an attachment of a label or marking. Process of identification of inappropriate products in case of incoming inspection and in case of production is described in the P-KK-010-003.

4.5.1.2.2. Identification remains on a defective product until the relevant decision is made. Defective products are stored, whenever possible, separately from the corresponding products. If rejected product is large-size, its storage in the territory of the shop on condition of strict observance of P-KK-010-003 is allowed.

4.5.1.3. Analysis of nonconformities and decision making on nonconformities

4.5.1.3.1. Information on nonconformities is gathered by Deputy Director on quality, Chief of Quality Department, Chief designer, Chief technologist, Chief of OMTS and Deputy Director on production by the monthly analysis of executive documentation and reports on results of testing, measurements, control, internal audits.

4.5.1.3.2. Analysis results of information on nonconformities and their reasons are used for correction of QAP for NPP (M) for the purpose of increase in its efficiency.

4.5.1.3.3. During analysis of nonconformities the following is detected:

- reasons of emergence of nonconformities;
- influence of nonconformities on safety;

– ways of prevention of these nonconformities appearance in the future.

4.5.1.3.4. Based on analysis results the decision on repair or alteration of the element having nonconformities and on its repeated control, testing and acceptance is made.

4.5.1.3.5. On the basis of the analysis influence of nonconformities on results of the related activity is detected, and necessary measures for compensation of these impacts are taken. At the same time confirmation of a successful completion of corrective actions shall be received. Besides, preventive actions are developed.

4.5.1.3.6. All found nonconformities are subdivided into 4 types.

4.5.1.3.6.1. Nonconformity, that can be corrected according to existing procedures and /or technical documentation, or non-conformity which the item can be accepted with and the item meets the requirements given in purchase documents, refers to I type.

4.5.1.3.6.2. Nonconformity, that cannot be corrected according to existing procedures and /or technical documentation and for that reason it is necessary to arrange new procedures and /or technical documentation in order to provide the item to meet the requirements given in purchase documents, refers to II type.

4.5.1.3.6.3. Nonconformity, that cannot be corrected with activities mentioned in items 4.5.1.3.6.1, 4.5.1.3.6.2 and to meet specified requirements to the item it is necessary to correct purchase documents, not addressing nuclear safety and/or NPP reliability and to prepare new specifications or item design, refers to III type.

4.5.1.3.6.4. Nonconformity, where specified requirements cannot be obtained with activities mentioned in items 4.5.1.3.6.1 ÷ 4.5.1.3.6.3, refers to IV type. This type of non-conformity has a negative impact on nuclear safety and/or NPP reliability, up to risk of the event determined in nuclear safety regulatory documents.

4.5.1.3.6.5. Nonconformities can be eliminated with one of the following methods:

To be rejected. An inappropriate element, service or process which is not suitable for accomplishment of the intended tasks. Such nonconformities are allocated and isolated after agreement and approval of corrective measures.

To be repaired/reworked. Inappropriate elements after repair/rework are capable to function according to the established requirements, i.e. the undertaken measures which are carried out in the corresponding conditions will correct the revealed nonconformity.

To be accepted as is. In this case the inappropriate element, service, process slightly deviate the established requirements in admissible limits, but are recognized suitable for use.

4.5.1.4. Recording

4.5.1.4.1. As soon as the inappropriate condition or deviation is revealed, the corresponding documentation is arranged according to P-KK-010-003.

The following information is specified in documentation:

– identification of rejected products;

– description of nonconformity;

– quantity of details, assemblies or components with nonconformity or rejected;

– offered corrective impacts or on nonconformity elimination (as far as it is possible), or on prevention of repeating;

– division, responsible for decision making;

– necessary interested functional divisions for carrying out of technical analysis;

– division and responsible persons providing data.

4.5.1.4.2. After detection of inappropriate products Nonconformity report is drawn up and approved according to P-KK-010-003.

4.5.1.4.3. All Nonconformity reports are registered by the specialists of TO according to P-KK-010-003, are stored at LLC Polesye according to STO-010-020 and can be shown to the Buyer/Customer / NPCIL or to the auditor according to their requirement.

4.5.2. Corrective and preventive actions

4.5.2.1. Determination of the reasons of emergence of nonconformities

4.5.2.1.1. Division managers gather data on nonconformities, the reasons of their origin and measures for correction for the purpose of development of corrective actions on elimination of the revealed nonconformities and preventive measures for prevention of repeating of emergence of nonconformities.

4.5.2.1.2. The analysis of engineering procedures, working activities, deviations from the established requirements, the registered data on nonconformities and control of the performed corrective actions and an efficiency evaluation is carried out.

4.5.2.2. Carrying out of corrective actions

4.5.2.2.1. Corrective actions are developed in the following main cases:

– nonconformities revealed in case of internal audits;

– nonconformities revealed in case of external audits and inspection check-up;

– in case of identification of abuses of regulations of work;

– in case of detection of discrepancy of quality of elements to requirements of the design and/or regulating documentation;

– in case of detection during check or audit of shortcomings of quality assurance programs;

– in the presence of special decisions of supervisory/regulating authority.

4.5.2.2.2. The corrective actions directed to preventing repeated cases of emergence of nonconformities to specifications include the following:

– modification of design and technological documentation;

– modification of the operating techniques, work instructions and release of new methods;

– enforcement of the requirements stated in methods, work instructions;

– withdrawal of the defective Equipment for repair or rework;

– retraining and repeated certification of the personnel responsible for emergence of the conditions which are negatively influencing on quality;

– replacement or enhancement of the Equipment, change of a method of control.

4.5.2.2.3. Control of execution of the actions plan on prevention of nonconformities is imposed on Chief of Quality Department. However it does not relieve responsibility from all contractors for implementation of the part of works charged to them. In more detail carrying out corrective actions is described in STO-010-008.

4.5.2.3. Documentation and report

4.5.2.3.1. The revealed nonconformities which are negatively influencing on quality, the reasons of their origin and taken corrective actions are documented according to P-KK-010-003.

4.5.2.3.2. Corrective actions are considered complete if the causes of the revealed nonconformities are removed, all corresponding documentation is modified, repairs (rework) are made, confirmations of check of completion of these works are received.

4.5.2.4. Analysis of data on nonconformities

4.5.2.4.1. The top management of the Enterprise shall analyze periodically coming information for identification of tendencies and reasons of emergence of nonconformities for the purpose of their identification and for confirmation of the fact that the corresponding operations were performed for prevention of repeated nonconformities and increase in safety and operability of the Equipment of NPP. The problems connected with product quality, arising nonconformities, their correction and the prevention are considered at meetings on quality at the director of the Enterprise which are held according to STO-010-024.

4.5.2.4.2. Measures for prevention of nonconformities can be performed in several stages. At each stage actions are accurately determined, and control of their accomplishment is provided. Control of accomplishment is, as a rule, imposed on Quality Department. It provides confidence that actions were effectively executed.

4.6. Development (improvement)

4.6.1. Development of the enterprise in modern conditions is systematic, purposeful strategically directed management activity. The strategic development of the enterprise is continuous evolutionary process which assumes continuous development (improvement) of processes for the purpose of increase in indicators of work of the enterprise.

Processes of improvement create a basis for perspective development of the enterprise.

4.6.2. It is necessary to distinguish from the main tools used by the enterprise for process management of development (improvement):

– operative planning, control;

– human resources management – formation and development personnel;

– process management;

– quality management;

– strategic management – strategic planning on the basis of the balanced performance indicators;

– management of technical innovations.

The main management tool of improvement and development is strategic planning (strategic objectives of the enterprise).

4.6.3. Possibilities of development (improvement) of the enterprise are based on a basis of:

– possibilities of an organizational structure of the enterprise to provide achievement of the planned purposes and accomplishment of plans;

– studying of experience of other organisations;

– studying of the advanced technological developments in the field of creation of the equipment for nuclear power plants;

– improvement made by individuals on the workplaces;

– improvement for increase in reliability and safety of the equipment, need for which arose by results of operation of the equipment at the consumer;

– results of audits, corrective actions, assessment of a management system and management by quality.

4.6.4. Continuous improvement is reached:

– at operating level personnel which are involved in daily work, due to gradual entering of small improvements within the existing processes (for example, use of new tools, more rational creation of accomplishment of separate procedures, etc.);

– at the level of process where the head of process is responsible for improvement (for example, implementation of more high-productive and more exact equipment, implementation of the advanced methods for accomplishment of processes, etc.);

– at the organisational level, through implementation of actions for essential improvement on all enterprise (at the level of a management system) which lead either to review and improvement of the existing processes, or to implementation of new processes (for example, entering of new organisational structures, expansion of technological capabilities of the enterprise, development of new more complex products, etc.).

The annual Plan of perspective development according to Corporate standard STO-010-024 is developed for management of improvement and a strategic development of the enterprise. Actions are developed for the perspective plan of development of the enterprise with participation of the top management and heads / specialists of all organisational structures of the enterprise.

4.6.5. The plan of perspective development includes:

– determination of the purposes and description of actions for improvement on the basis of the analysis of the existing process and a research of opportunities for its improvement / change;

– cost determination and planning of terms of improvement of process;

– improvement implementation;

– check and confirmation of improvement of process;

– assessment of the reached improvement.

4.6.6. Special attention is paid to encouragement of individuals who are generators of the progressive ideas promoting improvement of processes at the enterprise.

4.6.7. Heads/specialists who participate in implementation of any improvement are allocated with appropriate authority, the technical support and resources necessary for implementation of the changes connected with improvement is provided to them. Allocation of resources for implementation of improvements is planned and joins in the perspective plan of development in advance.

4.6.8. Continuous improvement is performed based on the regular analysis of activities of the enterprise. For fixed increase in the effectiveness developed and the implemented quality management system in LLC Polesye, the following operations are performed:

– informing personnel on Quality policy declared by the top management of the enterprise and on achievement of the planned purposes is carried out;

– audits and assessment of their results, the fixed analysis of data on processes of product lifecycle, development and accomplishment of corrective and preventive actions, and the analysis from a management in compliance are performed;

– the reason for improvement is determined: tasks are determined, and the area for improvement taking into account need of work in this area is appointed;

– assessment of the current situation is carried out: the efficiency evaluation and effectiveness of the existing process is carried out (for determination of the most often found type of problems data, including quality data of the made products, the data on notes coming from consumers, etc. are gathered and analyzed. Specific objectives are determined and the purposes for improvement process are established);

– the reasons of problems which shall be revealed and checked are analyzed;

– optimal solutions which are determined by results of consideration of alternative decisions are made. At the same time process with the best decision is selected and introduced. The best decision is that which will remove the causes of a problem and interfere with repeating of a problem;

– assessment of results is carried out (proves to be true that the problem and its reasons were eliminated or that their influence decreased that the decision was effective and that the objectives of process of improvement were achieved);

– new decision (technical processes, procedures, provisions, etc. are replaced) are introduced and standardized that interferes with repeating of a problem and the reasons of its origin;

– efficiency evaluation and effectiveness of new process is carried out (in case of its introduction in one of divisions) and need of use of this decision for other divisions of the entity is considered.

4.6.9. Systematic accomplishment of the specified actions allows revealing possibilities of further improvement of process performance and development of the enterprise.

APPENDIX A
Terms and definitions

This Appendix includes general terms and definitions specified in NP-090-11, ISO 9000, IAEA guidance and specific terms and definitions used in the present QAP for NPP (M).

Term	***Definition***
Accreditation	Official recognition by Council for accreditation of competence of person or entity to perform works in a specify conformity evaluation area.
Analysis	The activity undertaken for the establishment of suitability, adequacy, and effectiveness of item involved for achievement of the stated purposes.
Design review	Documentary, comprehensive and systematic verification of the project with the purpose of assessment of its opportunity to fulfill quality requirements, to reveal problems and to determine methods of their decision.
Analysis of quality system	Obligatory assessment by a management of a condition of the quality system and its compliance to Quality policy and to new purposes caused by changing requirements.
Nuclear power plant (NPP)	Nuclear plant designed for generation of electrical energy [without temporary structures (including housing settlement) and construction machines].
Certificated person	The person satisfying specific requirements and particular conditions, and officially appointed to perform particular duties.
Quality assurance audit	The documented actions, namely – the research, survey and assessment determining the objective proof of compliance and following to the adopted procedures, instructions, provisions, standards, administrative or operational programs and other applied documents.
Kudankulam NPP	Power units 3, 4, 5 and 6 of NPP Kudankulam with Reactor VVER-1000 with all related systems which shall be on the Platform, including all-station constructions of power units 3-6.
NPP safety	The ability of NPP at normal operation and in case of accident to reduce radiation exposure on the personnel, population and environment up to prescribed limits. The level of safety is considered acceptable, if the requirements of special norms and rules are satisfied.
Unit	A part of Nuclear Power Plant, consisting of one full set of reactor system, turbine generator system and all including systems for safe and reliable electric-power production and performing its function in scope specified for the project.
Warranty period	The period of time during which the Supplier guarantees in the limits set by the Agreement, quality of the delivered Equipment in obligation fulfillment under this agreement and undertakes to eliminate all revealed defects at own expense.
General designer	Joint Stock Company Atomenergoproekt (JSC AEP).
Lead material	The organization recognized by relevant authority of use of an atomic en-

Term	***Definition***
organization	ergy to render services to the operating organization or other organizations for the choice of materials, welding, quality assurance of production of the equipment and pipelines and to perform examination of project, design, technological documentation and the documents proving nuclear and radiation safety of NPU and having the license of Rostekhnadzor on these activities (for example, JSC NPO TSNIITMASH, Federal State Unitary Enterprise Central Research Institute of Structural Materials Prometey).
Schedule of work (plans)	All documents specifying the dates on which the development of the design and technical processes documents and manufacturing of products shall take place according to the Contract.
Agreement	Commercial document by means of which the bargain on equipment design and manufacturing has been made.
Document (documentation)	Any written or pictured information describing, defining, specifying, reporting or certifying activities, requirements, procedures or results concerning to quality assurance.
Customer	Joint Stock Company Atomstroyexport (JSC ASE).
Records (on quality)	Tangible information presenting objective evidence of actions have been realized or result have been obtained and confirming meeting the requirements.
Manufacurer	Limited Liability Company Polesye (LLC Polesye).
Foreign customer	Nuclear power corporation of India Ltd., Government of India Manufacturer from Department of nuclear power, city of Mumbai, Republic of India, incorporated and existing under the laws of Republic of India, including legal representatives and legal successors.
Inspector	The specialist performing operations on check of compliance of products or processes to the established requirements.
Inspection	Activities such as examination, observation or measurements that determine the conformity of materials, parts, components of units, structures, as well as processes and procedures to specified quality requirements.
Testing	Determination or check of a capability of a product to meet the established requirements by impact of set on it physical, chemical, ecological or operational conditions.
Test for quality check	Testing, check, the experiment necessary for demonstration of quality of deliveries and services in laboratories, shops and on the building site.
Category of quality assurance	Classification characteristic of NPP unit that sets the requirements to quality assurance.
Quality	Combination of specifications and parameters of the item or service that are based on its capability of meeting certain requirements.
Design documentation	Graphical and textual records, separately or as a whole, determining structure and the device of a product and the containing necessary data for its development or production, control, operation and repair.

Term	***Definition***
Contract	The delivery contract from the Russian Federation of the equipment with a long cycle of production and the first-priority equipment for sale of units No. 3, No. 4, , No. 5 and , No. 6 of the Kudankulam NPP concluded between the Joint-stock company Atomstroyexport accountable to State Atomic Energy Corporation Rosatom, Moscow, the Russian Federation and Corporation on an atomic energy of India Ltd., the Entity of the Government of India as a part of Department on an atomic energy, Mumbai, Republic of India.
Quality control	Quality activities intended to control specifications of an item, a process or a facility and to measure them in order to make them meet the specified requirements.
Point of inspection	Technological and/or control procedure of production of products, including special checks and testing, or set of the specified procedures, according to a production cycle of production, subject to control according to the Quality plan.
Corrective action	An action that are taken for removal the non-conformity causes and for prevention of their reappearance.
Quality managment	The coordinated activities for a management and management of the organization in relation to quality.
Quality surveillance	Continuous observation and check an object condition, and also the analysis of protocols for the purpose of the certificate that the established requirements are fulfilled.
Non-conformity	Failure to comply with requirement: error, fault, defect, unfinished work, error of omission, breach of requirements of technical documentation, standard, deviations from requirements of working regulatory and design documents, including the requirements to Equipment quality.
Quality assurance	All expected and regularly activities that are necessary for providing adequate assurance of the fact that the item or service will meet the specified requirements to quality.
Equipment	Equipment, manufactured by LLC Polesye, for KUDANKULAM NPP according to the Agreement.
Evaluation of supplier (Sub-contractor, Sub-supplier)	Evaluation for assessment of control system ability for providing manufacture of an item or performance of service of a given quality and receiving data for making a decision on usability.
Conformance assessment	Direct or indirect determination of observance of requirements imposed to the equipment, accessories, materials and semifinished products delivered on NPP. Assessment of conformity is performed in the form of control (supervision), testing, acceptance, confirmation of conformity.
Rework	A process that brings an inappropriate unit to conformity with predetermined requirements by rework, remachining, reassembling and by other corrective activities.
Program review	The program reviewing to confirm its fulfillment or possible improvement.
Quality plan	The document in which all activities for quality control and inspections of the Equipment of categories of quality assurance of QA1, QA2, QA3 shall be reflected.

Term	***Definition***
Buyer	Organization made a contract with LLC "Polesye" on design, manufacture and buying of Equipment.
Quality policy	The main intentions, purposes and tasks of the company with regard to quality as formally expressed by top management.
Supplier (Manufacturer)	Limited Liability Company Polesye (LLC Polesye).
Customer/Foreign customer representative	A person, authorized by Customer/Foreign customer to perform activities on its behalf according to the Agreement.
Quality check	Activities for review, inspection, reconciliation, carrying out audit, or different ways of determination and documentation of compliance of elements, services or documents to certain requirements.
Quality assurance program (QAP)	The document (set of documents), stating set of organizational - technical and other actions on quality assurance which directed on realization of specified criteria and principles of the NPP safety.
Project	Design project of KUDANKULAM NPP, units 3, 4, 5 and 6.
Procedure	The documentary established method of implementation of activities or process.
Control procedure	The procedures which describe administrative instructions to managing personnel and do not contain the detailed information about accomplishment of technical tasks.
Working design documentation	Set of the design documents intended for ensuring production, control, acceptance and supply of equipment.
Working procedure	The description of specific working processes and transfer of administrative and technical information to the personnel performing works.
Review	Study of documents for information and comments.
Repair	A process that brings an inappropriate unit to conformity with a state which ensures its reliable and safe service even if this unit does not meet original specification.
System	Complex of elements, intended for fulfillment of certain functions.
Agreement	Written approval and/or confirmation.
Sub-contractor (Sub-supplier)	Organization that renders and (or) provides work and services, products, items, material to LLC Polesye for fulfillment of obligations according to the Agreement.
Technological documentation	Complex of process control documents that determine process procedures for equipment manufacture.
Requirements	Need or expectation which is established and which is usually supposed or is obligatory.
Assembly	General term covering the structures, systems, their components, parts or materials.

Term	***Definition***
Designated institution	Specialized institution authorized by Customer to perform quality surveillance (control) at Equipment manufacture of QA1, QA2, QA3 quality assurance categories, and to perform acceptance inspections of Equipment of QNC quality category for KUDANKULAM NPP, units 3, 4, 5 and 6.
Customer authorised person (NPCIL)	Person or entity that represents Customer (NPCIL), and has part of Customer's authority (NPCIL) according to the document about delegation of authority signed by top management of Customer (NPCIL).
Quality management	Methods and activity of operative character used to satisfy requirements for quality.
Approval	Regulatory approval of a proposal.
Element	General term covering the materials, parts, components, systems or structures, including mathematical support of the computer.
Nuclear safety	Achievement of appropriate operational conditions, accident precaution or easing of consequences of failures due to what protection of the personnel on the site, population and environment are provided from inadmissible radiating danger.
KKS	(Kraftwerk-Kennzeichensystem) Coding system of power facilities.
EOC-Quality	Unified industry quality management system of State Corporation Rosatom

APPENDIX B

List of regulatory documents used by LLC Polesye during designing and manufacturing of the equipment for Kudankulam NPP, units 3, 4. 5 and 6

List of regulatory documents for Kudankulam NPP, Units 3, 4

Seq. No.	Title	Designation
IAEA documents		
1.	Safety Guides. Control system for units and activities. Series of regulations of IAEA, Vienna 2008	GS-R-3
Nuclear Power Regulations, Rules and Guidelines		
1.	General provisions for ensuring the safety of nuclear power plants OPB-88/97.	NP-001-97
2.	Rules for the design and safe operation of hoisting cranes.	PB 10-382-00
3.	Rules for design and safe operation of pressure vessels.	PB 03-576-03
4.	Rules for design and safe operation of steam and hot water pipelines.	PB 03-75-94
5.	Rules for design and safe operation of NPP equipment and pipelines.	PNAE G 7-008-89
6.	Rules for electrical installations.	PUE (edition 6)
7.	Unified methods of inspection of basic materials (semi-finished products), welded joints and cladding of NPP equipment and pipelines. Liquid penetrant test.	РБ-090-14
8.	Terms of delivery of imported equipment, products, materials and components for nuclear facilities, radiation sources and storage sites of the Russian Federation.	RD-03-36-2002
The Customer's documents		
1.	Quality Assurance Program for the Contractor's activities during implementation of the Kudankulam NPP Units 3 and 4 (QAP for NPP (G1))	QAP KK-34-01-2022

List of regulatory documents for Kudankulam NPP, Units 5, 6.

Seq. No.	Title	Designation
IAEA documents		
1.	Leadership and Management for Safety	GSR Part 2
Nuclear Power Regulations, Rules and Guidelines		
1.	General safety regulations for nuclear power plants	NP-001-15
2.	Requirements for Design and Safe Operation of Hoisting Cranes of Nuclear Facilities	NP-043-11

Seq. No.	Title	Designation
3.	Regulations for arrangement and safe operation of pressure vessels for nuclear facilities	NP-044-03
4.	Rules for Design and Safe Operation of Steam and Hot Water Pipelines for Nuclear Facilities	NP-045-03
5.	Rules for design and safe operation of NPP equipment and pipelines	NP-089-15
6.	Rules for electrical installations	PUE (edition 7)
The Customer's documents		
1.	Quality Assurance Program for the Contractor's activities during implementation of the Kudankulam NPP Units 5 and 6 (QAP for NPP (G1)	QAP KK-56-01-2022

List of regulatory documents for Kudankulam NPP, Units 3, 4, 5, 6.

Ser. No.	Title	Designation
IAEA documents		
1.	Safety Guides. Application of the control system for units and activities. Series of regulations of IAEA, Vienna 2008	GS-G-3.1
2.	IAEA safety standards for protecting people and the environment. The management system for nuclear installation. Safety guide.	GS-G-3.5
International standards		
1.	Quality management systems. Requirements.	ISO 9001:2015
2.	Quality management systems — Specific requirements for the application of ISO 9001:2015 by organizations in the supply chain of the nuclear energy sector supplying products and services important to nuclear safety (ITNS)	ISO 19443:2018
Nuclear Power Regulations, Rules and Guidelines		
1.	Safety rules for handling radioactive waste of nuclear power plants.	NP -002-04
2.	Installation and Safe Operation Requirements for Safety Containment Systems of Nuclear Power Plants.	NP -010-98
3.	Spent Nuclear Fuel Reprocessing Installations. Safety Requirements.	NP-013-99
4.	General provisions for general safety regulations of nuclear fuel cycle objects (GSR NFCO).	NP-016-05
5.	Collection, reprocessing, storage and conditioning of liquid radioactive waste. Safety requirements.	NP-019-15
6.	Collection, reprocessing, storage and conditioning of solid radioactive waste. Safety requirements.	NP-020-15
7.	Gaseous radioactive waste handling. Safety requirements.	NP-021-15
8.	Design norms for antiseismic atomic power stations.	NP -031-01

Ser. No.	Title	Designation
9.	Rules for arrangement and operation of ventilation systems for nuclear plants safety.	NP -036-05
10.	Regulations for arrangement and safe operation of industrial boilers for nuclear facilities.	NP-046-03
11.	Safety rules at storage and transportation of nuclear fuel at nuclear facilities.	NP-061-05
12.	Rules of nuclear safety for nuclear fuel cycle objects.	NP-063-05
13.	Valves for nuclear power plants. General technical requirements.	NP -068-05
14.	Rules for the Construction and Safe Operation of the equipment and pipelines of nuclear fuel cycle objects	NP-070-06
15.	Rules for assessing conformity of equipment, components, materials and supplies delivered to facilities of atomic energy	NP-071-06
16.	Nuclear Safety Regulations	NP-082-07
17.	Testing rules for base metal, welded joints and depositions while in operation of the equipment, pipelines and other facilities of nuclear power plants.	NP-084-15
18.	Requirements to quality assurance program for nuclear facilities.	NP-090-11
19.	Fire Regulations. Determination of categories of rooms, buildings and external installations on explosion and fire hazard.	NPB-105-03
20.	Fire safety of nuclear power plants. General requirements.	NPB 113-03
21.	Fire protection of nuclear power plants. Design standards.	NPB 114-2002
22.	Equipment and pipelines strength analysis norms for nuclear power plants.	PNAE G -7-002-86
23.	Certification rules for welders, equipment and pipelines of nuclear power units.	PNAE G -7-003-87
24.	Equipment and pipelines of nuclear power installations. Welding and overlaying, general provisions.	PNAE G -7-009-89
25.	Equipment and pipelines of nuclear energy facilities. Welded joints and beads. Testing rules.	PNAE G -7-010-89
26.	Standardized methods of base materials (semi finished products), weld joints and surfacing of equipment and pipelines of NPP. Ultrasonic inspection. Control of base materials (semi finished products).	PNAE G -7-014-89
27.	Standardized methods of base materials (semi finished products), weld joints and surfacing of equipment and pipelines of NPP. Radiographic inspection.	PNAE G -7-017-89
28.	Standardized methods of base materials (semi finished products), weld joints and surfacing of equipment and pipelines of NPP. Leak tightness control. Gas and liquid methods.	PNAE G -7-019-89
29.	Steel castings for nuclear plants. Rules of control.	PNAE G -7-025-90
30.	Standardized methods of base materials (semi finished products), weld joints and surfacing of equipment and pipelines of NPP. Ultrasonic inspection. Control of welded joints and depositions.	PNAE G -7-030-91

Ser. No.	Title	Designation
31.	Standardized methods of base materials (semi finished products), weld joints and surfacing of equipment and pipelines of NPP. Ultrasonic inspection. Thickness measurement of monometals, bimetals and anticorrosive coverings.	PNAE G -7-031-91
32.	Standardized methods of base materials (semi finished products), weld joints and surfacing of equipment and pipelines of NPP. Ultrasonic inspection. Control of welded joints made from steel of austensite class.	PNAE G -7-032-92
33.	Norms and methods of strength calculation for steel containments of NPP.	PNAE G -10-012-89
34.	Basic provisions for localizing safety system elements welding on nuclear stations.	PNAE G -10-31-92
35.	Requirements for welding seal element control of nuclear plant confining safety systems.	PNAE G -10-32-92
36.	Fire prevention rules in Russian Federation (approved by RF Government Regulation of 25.04.2012 No. 390).	
37.	Certification procedure	OIT-0004-1999
38.	Nomenclatures of the equipment, products and process for nuclear facilities, radiation sources and storage facilities subjected to obligatory certification in certification of the equipment, products and process for nuclear facilities, radiation sources and storage facilities.	OIT-0013-2000
39.	Certification system equipment, products and process for nuclear facilities, radiation sources and storage facilities. Procedure of development and maintaining "Nomenclatures of the equipment, products and process for nuclear facilities, radiation sources and storage facilities subjected to obligatory certification.	OIT-0015-2001
40.	Certification system equipment, products and process for nuclear facilities, radiation sources and storage facilities. Certification procedure.	
41.	Certification system equipment, products and process for nuclear facilities, radiation sources and storage facilities. Procedure of quality systems certification.	OIT-0016-2001
42.	Certification system equipment, products and process for nuclear facilities, radiation sources and storage facilities. Requirements to the regulating documents used at certification.	OIT-0019-2001
43.	About approval of Unified list of products subjected to obligatory certification, and Unified list of products where confirmation of conformity is performed in the form of adoption of declaration of conformity.	Russian Federation Government Resolution No. 982 of 01.12.2009
44.	Instruction about organization of examination of the software applied in case of reasons and/or safety provision of nuclear facilities.	RD-03-33-2008
45.	Procedure for delivery by Supplier of imported equipment, products, materials, semi-finished products and accessories for NPP "Kudankulam", Units 3 and 4 (approved by JSC ASE).	
46.	Standardized methods of control of basic materials (semifinished products), welded joints and cladding of equipment and of pipelines of NPP. Visual and a measuring control.	RB-089-14

Ser. No.	Title	Designation
47.	Standardized methods of control of basic materials (semi-finished products), welded joints and surfacing of NPP equipment and piping. Dye penetrant inspection.	PNAE G -7-018-89
48.	Health regulations on radiation safety of personnel and the population in case of transportation of radioactive materials.	SanPiN 2.6.1.1281-03
49.	Radiation Safety Standards (RSS-99/2009).	SanPiN 2.6.1.2523-09
50.	Hygienic requirements on ensuring radiation safety in case of x-ray defectoscopy.	SanPiN 2.6.1.3164-14
51.	Principal Sanitary Radiation Safety Rules (OSPORB 99/2010).	SP 2.6.1.2612-10
52.	Hygienic requirements on ensuring radiation safety in case of radio nuclide defectoscopy.	SP 2.6.1.3241-14
53.	Sanitary Regulations on Handling Radioactive Waste (SPORO - 2002).	SP 2.6.6.1168-02
State, industry standards, regulatory documents		
1.	Unified system for design documentation. General principles.	GOST 2.001-2013
2.	Unified system for design documentation. Requirements for models and templets used in projecting.	GOST 2.002-72
3.	Unified system for design documentation. General requirements for performing design and technological documentation on printing and graphical output devices of computers.	GOST 2.004-88
4.	Unified system for design documentation. Digital documents. General principles.	GOST 2.051-2013
5.	Unified system for design documentation. Electronic model of product. General.	GOST 2.052-2006
6.	Unified system for design documentation. Product electronic structure. General principles.	GOST 2.053-2013
7.	Unified system for design documentation. Types of products.	GOST 2.101-68
8.	Unified system for design documentation. Types and sets of design documentation.	GOST 2.102-2013
9.	Unified system for design documentation. Stages of designing.	GOST 2.103-2013
10.	Unified system for design documentation. Basic inscriptions.	GOST 2.104-2006
11.	Unified system for design documentation. General requirements for textual documents.	GOST 2.105-95
12.	Unified system for design documentation. Textual documents.	GOST 2.106-96
13.	Unified system for design documentation. Basic requirements for drawings.	GOST 2.109-73
14.	Unified system for design documentation. Normocontrol.	GOST 2.111-2013
15.	Unified system for design documentation. Group and reference design documents.	GOST 2.113-75
16.	Unified system for design documentation. Specifications.	GOST 2.114-95

Ser. No.	Title	Designation
17.	Unified system for design documentation. Product technical level and quality map.	GOST 2.116-84
18.	Unified system for design documentation. Technical proposal.	GOST 2.118-2013
19.	Unified system for design documentation. Preliminary design.	GOST 2.119-2013
20.	Unified system for design documentation. Technical design.	GOST 2.120-2013
21.	Unified system for design documentation. Sets of design documents for printing plates under automated design.	GOST 2.123-93
22.	Unified system for design documentation. Sequence of purchased products application.	GOST 2.124-85
23.	Unified system for design documentation. Rules for making sketch design documents. General principles.	GOST 2.125-2008
24.	Unified system for design documentation. Designation of products and design documents.	GOST 2.201-80
25.	Unified system for design documentation. Rules for making sketch design documents. General principles.	GOST 2.301-68
26.	Unified system for design documentation. Scales.	GOST 2.302-68
27.	Unified system for design documentation. Lines.	GOST 2.303-68
28.	Unified system for design documentation. Letters for drawings.	GOST 2.304-81
29.	Unified system for design documentation. Images - appearance, sections, profiles.	GOST 2.305-2008
30.	Unified system for design documentation. Graphical designations of materials and rules for their representation.	GOST 2.306-68
31.	Unified system for design documentation. Drawing of dimensions and limit deviations.	GOST 2.307-2011
32.	Unified system of design documentation. Representation of limits of forms and surface lay-out on drawings.	GOST 2.308-2011
33.	Designations system for design documentation. Designations of surface finish.	GOST 2.309-73
34.	Unified system for design documentation. Marking of designations of coverings, heat treatment and other types of treatment on engineering drawings.	GOST 2.310-68
35.	Unified system for design documentation. Image of screw.	GOST 2.311-68
36.	Unified system for design documentation. Symbolic designations and representations of welds and welded joints.	GOST 2.312-72
37.	Unified system for design documentation. Symbolic designations and representations of dead joints.	GOST 2.313-82
38.	Unified system for design documentation. Instructions for marking and stamping articles.	GOST 2.314-68
39.	Unified system for design documentation. Simplified and symbolic designations of fasteners.	GOST 2.315-68
40.	Unified system for design documentation. Rules for placing of inscriptions, technical data and tables of graphical documents. General principles.	GOST 2.316-2008
41.	Unified system for design documentation. Axonometric projections.	GOST 2.317-2011
42.	Unified system for design documentation. Rules of simplified marking of hole dimensions.	GOST 2.318-81

Ser. No.	Title	Designation
43.	Unified system for design documentation. Rules of drawing of dimensions, tolerances and taper fits.	GOST 2.320-82
44.	Unified system for design documentation. Letter designations.	GOST 2.321-84
45.	Unified system for design documentation. Rules for making drawings of springs.	GOST 2.401-68
46.	Unified system for design documentation. Conventional representation of gears, racks, worms and chain wheels.	GOST 2.402-68
47.	Unified system for design documentation. Rules for making drawings of spur gears.	GOST 2.403-75
48.	Unified system for design documentation. Rules for making drawings of sprocket racks.	GOST 2.404-75
49.	Unified system for design documentation. Rules for making drawings of bevel gears.	GOST 2.405-75
50.	Unified system for design documentation. Rules for making drawings of cylindrical worms and worm wheels.	GOST 2.406-76
51.	Unified system for design documentation. Rules for making drawings of worms and wheels of worm globoid gear pairs.	GOST 2.407-75
52.	Unified system for design documentation. Rules for making working drawings of sprocket wheels for roller and sleeve-type chains.	GOST 2.408-68
53.	Unified system for design documentation. Rules for making drawings of splined joints.	GOST 2.409-74
54.	Unified system for design documentation. Rules for making drawings of metal structures.	GOST 2.410-68
55.	Unified system for design documentation. Rules for making drawings of pipes, pipe-lines and pipe-line systems.	GOST 2.411-72
56.	Unified system for design documentation. Rules for making design documentation of products, manufactured with the use of electric mounting.	GOST 2.413-72
57.	Unified system for design documentation. Rules for making drawings of braids, cables and wires.	GOST 2.414-75
58.	Unified system for design documentation. Rules for making drawings of products with windings.	GOST 2.415-68
59.	Unified system for design documentation. Designation of magnetic wires.	GOST 2.416-68
60.	Unified system for design documentation. Rules for making design documentation for packaging.	GOST 2.418-2008
61.	Unified system for design documentation. Simplified representation of rolling bearings on assembly drawings.	GOST 2.420-69
62.	Unified system for design documentation. Rules for making working drawings of sprockets for plate-link chain wheels.	GOST 2.421-75
63.	Unified system for design documentation. Rules for making working drawings of spur gears of Novikov transmissions with two engagement lines.	GOST 2.422-70
64.	Unified system for design documentation. Rules for making working drawings of gear chain sprockets.	GOST 2.425-74
65.	Unified system for design documentation. Rules for making working drawings of dismountable chain sprockets.	GOST 2.426-74
66.	Unified system for design documentation. Rules for making working drawings of sprockets for round-link chain wheels.	GOST 2.427-75
67.	Unified system for design documentation. Registration and storage rules.	GOST 2.501-2013

Ser. No.	Title	Designation
68.	Unified system of design documentation. Rules of making modifications.	GOST 2.503-2013
69.	Unified system for design documentation. Exploitative documents.	GOST 2.601-2013
70.	Unified system for design documentation. Documentation to be sent abroad. General requirements.	GOST P 2.901-99
71.	Unified system for technological documentation. General principles.	GOST 3.1001-2011
72.	Unified system of technological documentation. Stages of designing and types of documents. General principles.	GOST 3.1102-2011
73.	Unified system of technological documentation. Basic inscriptions. General principles.	GOST 3.1103-2011
74.	Unified system of technological documentation. Form and rules of making general-purpose documents.	GOST 3.1105-2011
75.	Unified system for technological documentation. Terms and definitions of main concepts.	GOST 3.1109-82
76.	Unified system for technological documentation. Normocontrol.	GOST 3.1116-2011
77.	Unified system of technological documentation. General requirements for completeness and arrangement of sets of documents on single technological processes.	GOST 3.1119-83
78.	Unified system of technological documentation. General rules for presentation of labour safety requirements in technological documentation.	GOST 3.1120-83
79.	Unified system of technological documentation. General requirements for completeness and arrangement of sets of documents on typical and group technological processes (operations).	GOST 3.1121-84
80.	Unified system for technological documentation. Identifying system of technological documentation.	GOST 3.1201-85
81.	Unified system for technological documentation. Forms and rules of making documents on technical control.	GOST 3.1502-85
82.	Unified system for technological documentation. Rules of making documents for tests.	GOST 3.1507-84
83.	State system for ensuring the uniformity measurements. Permissible errors of measurement of linear dimensions to 500 mm.	GOST 8.051-81
84.	State system for ensuring the uniformity of measurements. Units of quantities.	GOST 8.417-2002
85.	State system for ensuring the uniformity of measurements. Procedure of measurements.	GOST P 8.563-2009
86.	State system for ensuring the uniformity of measurements. Certification of test equipment. General principles.	GOST P 8.568-97
87.	Unified system of corrosion and ageing protection. Temporary corrosion protection of products. General requirements.	GOST 9.014-78
88.	Unified system corrosion and ageing protection. Coatings of lacquers and paints. Classification and designations.	GOST 9.032-74
89.	Unified system of corrosion and ageing protection. Paint coating. Terms and definitions.	GOST 9.072-77
90.	Unified system of corrosion and ageing protection. Metal and non-metal inorganic coatings. Control methods.	GOST 9.302-88
91.	Unified system of corrosion and ageing protection. In-process corrosion protection. General requirements.	GOST 9.518-2006

Ser. No.	Title	Designation
92.	Occupational safety standards system. Terms and definitions.	GOST 12.0.002-80
93.	Occupational safety standards system. Fire safety. General requirements	GOST 12.1.004-91
94.	Occupational safety standards system. Industrial equipment. General safety requirements.	GOST 12.2.003-91
95.	Occupational safety standards system. Loading and unloading works. General safety requirements.	GOST 12.3.009-76
96.	Occupational safety standards system. Transporting process of loads in all fields of national economy. General requirements safety.	GOST 12.3.020-80
97.	Occupational safety standards system. Fire-fighting equipment for protection of units. Basic types. Location and maintenance.	GOST 12.4.009-83
98.	Technological inspection of design documentation.	GOST 14.206-73
99.	System of product development and launching into manufacture. General principles.	GOST P 15.000-94
100.	System of products development and launching into manufacture. Development of single and small-scale production units assembled at the place of use.	GOST 15.005-86
101.	System of products development and launching into manufacture. Patent research. Procedure and scope.	GOST P 15.011-96
102.	System of product development and launching into manufacture. Patent pattern.	GOST 15.012-84
103.	System of product development and launching into manufacture. Procedure of product development and launching into manufacture.	GOST P 15.201-2000
104.	System of product development and launching into manufacture. Test and acceptance of produced goods. Principal positions.	GOST 15.309-98
105.	Industrial product dependability. General principles. Terms and definitions.	GOST P 27.002-89
106.	Industrial product dependability. Dependability requirements: contents and general rules for specifying.	GOST 27.003-90
107.	Reliability in technique. Technological systems. Methods of reliability evaluation by parameters of product quality.	GOST 27.202-83
108.	Reliability in technique. Technological systems. General requirements for the methods of reliability estimation.	GOST 27.203-83
109.	Manual arc welding. Welding joints. Main types, design elements and dimensions.	GOST 5264-80
110.	Welded joints. Methods of mechanical properties determination.	GOST 6996-66
111.	Flux welding. Welded joints. Main types design elements and dimensions.	GOST 8713-79
112.	Hand arc welding. Acute and blunt weld joints. Main types, design elements and dimensions.	GOST 11534-75
113.	Marking of cargoes.	GOST 14192-96
114.	Gas-shielded arc welding. Welded joints. Main types, design elements and dimensions.	GOST 14771-76
115.	Machines, instruments and other industrial products. Modifications for different climatic regions. Categories, operating, storage and transportation conditions as to environment climatic aspects influence.	GOST 15150-69

Ser. No.	Title	Designation
116.	The state system of testing products. Product test and quality inspection. General terms and definitions.	GOST 16504-81
117.	Bolts, studs, nuts and washers for flanged and anchor connections, corks and yokes with medium temperature from 0 to 650 °C. Specifications.	GOST 20700-75
118.	Packing for products of engineering industry. General requirements.	GOST 23170-78
119.	Bolts, studs, nuts and washers for flanged connections for atomic power plants. Technical requirements. Acceptance. Test methods. Marking, packing, transportation and storage.	GOST 23304-78
120.	System of technical maintenance and repair of equipment. Maintainability and reparability for item development.	GOST 23660-79
121.	Verification of purchased product. Organization and methods of control.	GOST 24297-2013
122.	Reliability of atomic power stations and their equipment. General statements and reliability index nomenclature.	GOST 26291-84
123.	Electromagnetic compatibility of technical equipment. Technical equipment for NPP. Requirements and test methods.	GOST P 50746-2013
124.	Identification of products. General principles.	GOST P 51293-99
125.	General requirements for machines, instruments and other industrial products as to storage and transporting conditions.	GOST P 51908-2002
126.	Information technology. Software product evaluation. Quality characteristics and guidelines for their use.	GOST P ISO/IEC 9126-93
127.	Standards for engineering materials and welding consumables (semi-finished products) admitted for manufacturing of the equipment for nuclear power unit.	
128.	Standards for testing method and testing of materials, joints and items applied at manufacturing of the equipment for nuclear power unit.	
129.	Procedure for the conduct of verification of measuring instruments, requirements to verification mark and contents of certificate of calibration (approved by order of Russian Minpromtorg dd. 2 July 2015 No. 1815).	
130.	Requirements to calibration works.	PR 50.2.016-94
131.	National Uniform Measurement Assurance System. Precision and Accuracy. General terms and definitions.	RMG 29-2013
132.	NUMAS. Measurement performance engineering when controlling engineering processes. Metrological evaluation of technical documentations.	RMG 63-2003
133.	Manufacturing and quality control of steel structures for construction.	SP 53-101-98

APPENDIX C

List of control procedures

Ser. No.	Document designation	Document name
1.	П-КК-010-003-2019	Nonconformity management at manufacture of the equipment for "Kudankulam" NPP, units 3, 4, 5, 6.
2.	П-КК-010-015-2019	Evaluation and selection of suppliers.
3.	STO-010-004-2021	Procedure of development, updating, cancellation of standards of the organization, their implementation and control of implementation.
4.	STO-010-007-2018	Arrangement and procedure for the conduct of inspections (audits).
5.	STO-010-008-2018	Corrective and preventive actions.
6.	STO-010-012-2018	Procedure of design documentation development.
7.	STO-010-017-2018	Regulatory document management.
8.	STO-010-019-2018	Procedure of accounting, stacking and circulation of technical documentation at LLC Polesye.

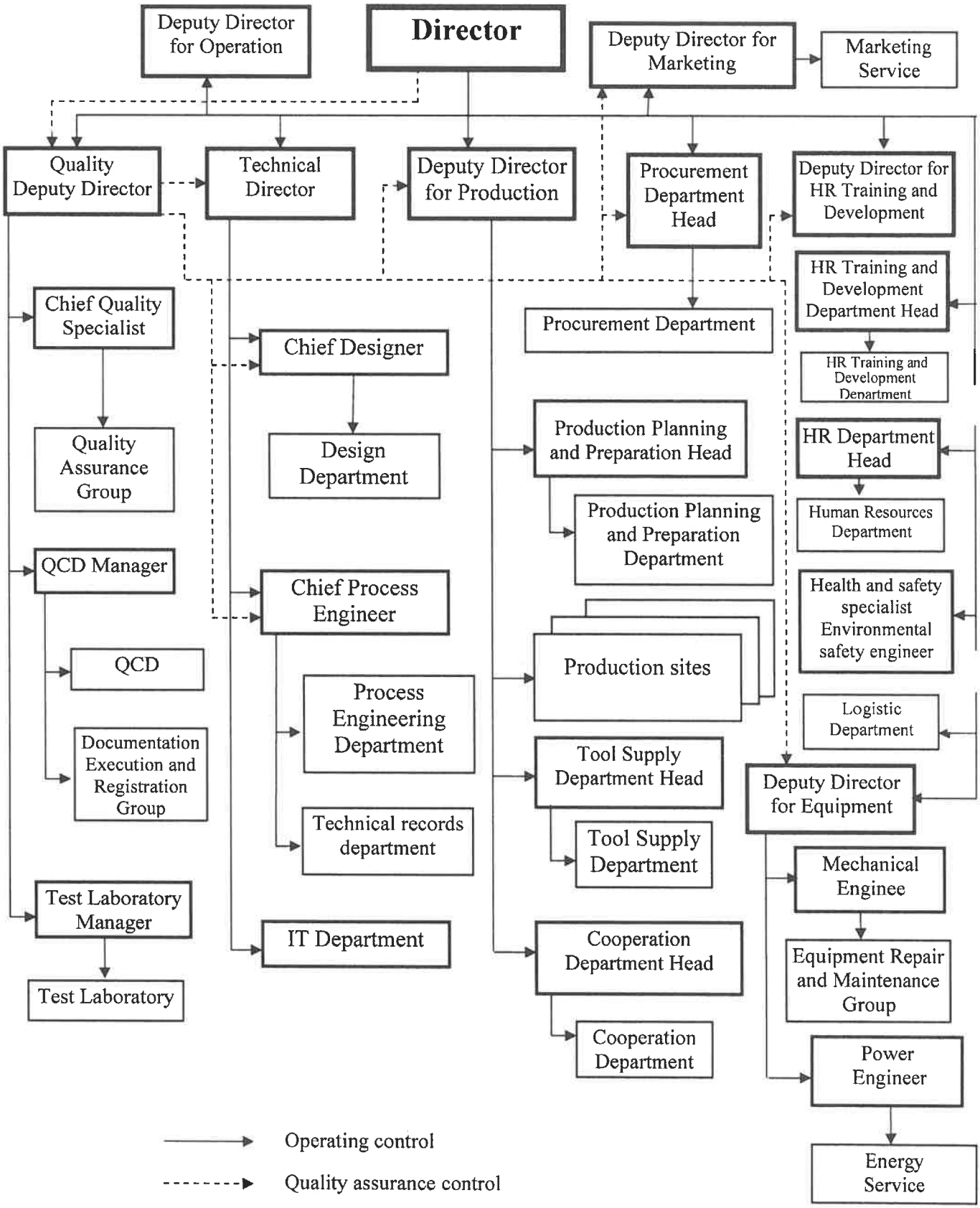
APPENDIX D

List of operating procedures

Ser. No.	Document name	Document designation
1.	CTO-010-002-2017	Engineering support of the product production/ Pre-production engineering
2.	STO-010-010-2013	Production operations metrology support .
3.	STO-010-018-2018	Procedure for the introduction of amendments into design and technological documentations.
4.	STO -010-020-2021	Document storage.
5.	STO -010-021-2018	Documentation normocontrol.
6.	STO -010-022-2016	Metrological evaluation of technical documentation.
7.	STO -010-023-2018	Process control of design documents.
8.	STO -010-024-2010	Assessment of quality management systems.
9.	STO -010-027-2021	Procedure of selection, preparation, advanced training, certification and permit to work of personnel.
10.	STO -010-028-2017	Certification order of assembly fitters on preparation and assembly for welding of the equipment of NPP.
11.	STO -010-029-2015	Certification procedure of inspectors.
12.	STO -010-031-2007	Accuracy test of cutting machines.
13.	STO -010-032-2007	Procedure for the conduct of scheduled preventive repair of processing equipment.
14.	STO -010-034-2021	Arrangement and procedure for the conduct of incoming inspection.
15.	STO -010-039-2015	Arrangement and procedure for the conduct of technical control and conformance evaluation of products of production work.
16.	STO -010-040-2021	Registration of documentation on recording of quality at manufacturing of products of production work.
17.	STO -010-041-2018	Organization of non-destructive testing.
18.	STO -010-042-2007	Regulations on the organization of information exchange system with the enterprises (organizations) manufacturing and operating the equipment developed by LLC Polesye.
19.	STO -010-046-2017	Certification procedure of the workers that carry out heat treatment of the blanks, parts, welded joints and clad parts (products) at manufacturing of the NPP equipment.
20.	STO -010-051-2014	Software asset management.
21.	STO -010-053-2020	Organization procedure for safety culture development and maintaining.
22.	STO -010-054-2017	Organization of laboratory inspection.
23.	STO -010-062-2016	The procedure for marking parts, blanks, products of main production
24.	STO-010-050-01	Incoming inspection of NDT materials.

APPENDIX E

Organization structure



APPENDIX F

Information about LLC Polesye

Postal details, fax, e-mail:	Russia, 347360, Rostov reg., Volgodonsk, Stepnaya St., 16/1. Tel./fax: (8639) 22-58-71 E-mail: secretar@vpolesye.ru
Activity type:	Design and manufacture of the equipment for nuclear power plants

Position	Field of responsibility
Director	Performs general management of LLC Polesye and work controls on Agreement. Responsible for: ▪ development of strategy of Enterprise; ▪ realization of economic reforms and structural transformations; ▪ management development; ▪ forming and realization of general policy in the field of quality assurance; ▪ efficiency analysis of quality management system; ▪ personnel and social policy; ▪ solution to financial and technical and organizational questions.
Technical Director	Responsible for: ▪ work organization and control of activities of all structural divisions of Enterprise in the field of technical training of production; ▪ organization of work performance for development and implementation of the technical measures designed to quality assurance during production of products; ▪ control of organizational and technical relations among Enterprise, Buyer/Customer, Designated institution and General designer; ▪ organization of personnel certification involved in the quality assurance system described with this QAP for NPP (M); ▪ participation in efficiency analysis of quality management system; ▪ decision making on corrective actions and measures for prevention of non-conformities, control of their execution.
Deputy Director for Quality	Appointed by representative of quality top management. Responsible for: ▪ carrying out of the requirements of the Quality assurance program by personnel; ▪ provision of information the director of Enterprise on accomplishment of QAP for NPP (M) for the purpose of its analysis and improvement; ▪ participation in efficiency analysis of quality management system; ▪ approval of working documents regarding their compliance to the requirements of this QAP for NPP (M); ▪ approval of made decisions on the non-conformities concerning functioning of this QAP for NPP (M) at Enterprise; ▪ organization of carrying out of internal audits and audits of Subsuppliers (if necessary); ▪ analysis of corrective actions and preventive measures; ▪ coordination of interfaces of all functional divisions of the Enterprise among each other and with the external organizations on the questions concerning realization of this QAP for NPP (M).
Deputy Director for Production	Responsible for: ▪ participation in technical training of production; ▪ planning of production activities; ▪ organization of rhythmical work of production sites; ▪ operational regulation, coordination and control of production; ▪ organization of training and certification of the subordinates; ▪ participation in efficiency analysis of quality management system; ▪ organization and accomplishment of a certain amount of works on production of the equipment for the NPP by the specified time; ▪ quality assurance of manufactured equipment; ▪ organization of production operations metrology support;

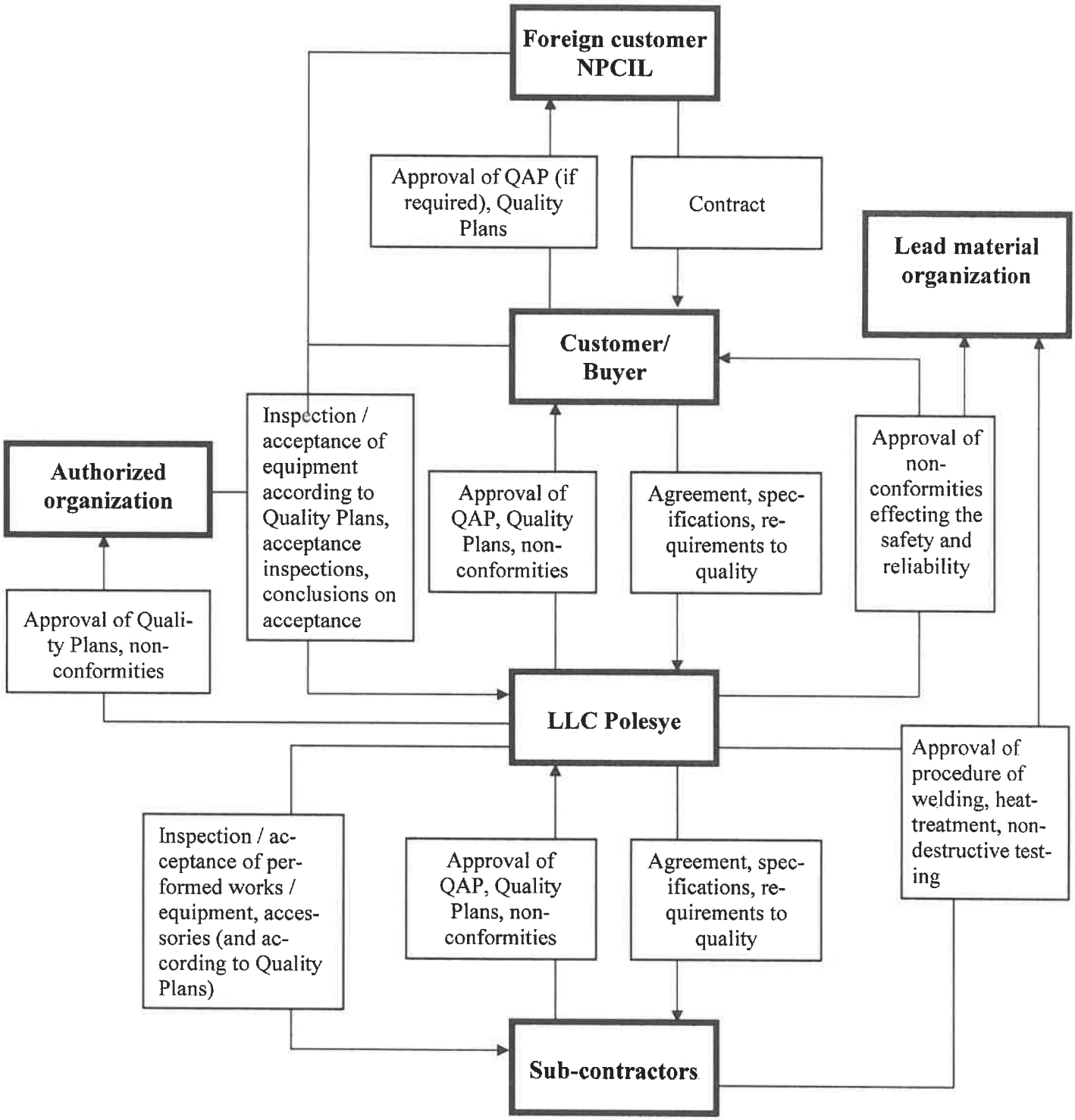
Position	Field of responsibility
	▪ accomplishment of the requirements of normative-technical, design and technological documentation by subordinates; ▪ decision making on corrective actions and preventive measures and control of their execution.
Deputy Director for Marketing	Responsible for: ▪ entry into Agreement on production of the equipment with Buyer/Customer and full and definitive formulation of quality requirements in Agreement; ▪ implementation of a continuous communication with Buyer/Customer, reporting on progress of manufacture as per Agreement, financing and accomplishment of terms of Agreement up to shipment of ready equipment; ▪ participation in efficiency analysis of quality management system.
Deputy Director for Operations	Responsible for: ▪ repairs and maintenance of buildings and constructions.
Deputy Director for Equipment	Responsible for: Organisation of repairs and maintenance of technical facilities (process equipment).
Chief Designer	Responsible for: ▪ design-engineering department management; ▪ guarantee that design developments meet the requirements of Agreements on equipment delivery; ▪ management of activities for product quality improvement, increase in its useful life and competitiveness; ▪ decision making on nonconforming products; ▪ management of activities for performance improvement of work of personnel, efficiency and product quality based on implementation of progressive processes at design works; ▪ providing with carrying out of Authorial Supervision for production of the equipment developed by Enterprise; ▪ participation in efficiency analysis of quality management system.
Chief Process Engineer	Responsible for: ▪ management of process engineering department and technical records department; ▪ process control of design documents; ▪ engineering process preparation; ▪ preparation and presentation of information on quality to Deputy Director on Quality; ▪ organization of drawing up of Non-conformity reports; ▪ organization of storage, registration and circulation of normative and technical documentation; ▪ participation in efficiency analysis of quality management system; ▪ implementation of corrective actions and preventive measures.
Quality Chief Specialist	Responsible for: ▪ management of Quality Control Group; ▪ organization and development of documents of quality management system (procedural documents on quality assurance); ▪ participation in efficiency analysis of quality management system; ▪ organization of development and approval of Quality plans; ▪ organization of preparation of the proving documents for receipt of the corresponding licenses for designing and manufacturing of the equipment for NPP; ▪ organization of accounting and analysis of notes/claims for manufactured equipment; ▪ registration and storage of documentation on personnel certification.
Head of QCD	Responsible for: ▪ management of Quality Control Department and group of accounting and registration of documentation on quality control;

Position	Field of responsibility
	▪ organization of incoming inspection of purchased products; ▪ organization of technical control over equipment quality manufactured for NPP "Kudankulam", drawing up of acceptance documentation; ▪ organization of interaction with representatives of Designated institution, Buyer/Customer / NPCIL during quality surveillance and acceptance inspections of the equipment; ▪ participation in gathering and assessment of quality data; ▪ participation in assessment of Subsuppliers; ▪ participation in efficiency analysis of quality management system; ▪ control over the implementation of corrective actions and preventive measures.
Head of Test Laboratory	Responsible for: ▪ Test Laboratory management; ▪ implementation of tests and analyses (controls) of materials, semi-finished products and raw materials entering in LLC Polesye, determination of their compliance to regulating documents (TU, GOST); ▪ registration and drawing up of results of tests and controls; ▪ control of condition of laboratory equipment; ▪ control of carrying out of timely training and certification of test laboratory personnel.
Procurement Department Head	Responsible for: ▪ management of procurement department; ▪ equipment and material procurement; ▪ quality of purchased products; ▪ carrying out of assessment of an opportunity and capability of the Enterprises-Subsuppliers to deliver products meeting necessary quality requirements and delivery dates; ▪ selection of Subsuppliers from the list of the approved ones; ▪ approval of delivery documents; ▪ control of condition observance of Agreements of the Enterprise with Subsuppliers; ▪ arrangement of product storage; ▪ participation in efficiency analysis of quality management system.
Cooperation Department Head	Responsible for: ▪ organization of works on order placement and execution of Agreements on manufacturing of the equipment (assemblies, parts and semi-finished products), accomplishment of separate technological and control processes at Enterprise-Subsuppliers; ▪ carrying out an assessment of opportunity and capability of the Enterprise-Subsuppliers to manufacture products, to carry out separate technological and control processes meeting necessary quality requirements and delivery dates; ▪ selection of Subsuppliers from the list of the approved ones; ▪ control of observance of conditions of Enterprise Agreements with Subsuppliers; ▪ cooperation arrangements with Enterprise-Subsuppliers.
Production Planning and Preparation Department	Responsible for: ▪ production department planning; ▪ operational accounting of production process; ▪ providing timely release of products.
Tool Supply Department Head	Responsible for: ▪ organization of identification, calibration, checking of instrumentation and measurement and keeping protocols of calibration, checking; ▪ performance of works on maintenance of measuring instruments in working condition and their maintenance; ▪ registration and storage of documents on metrological providing (including protocols of calibration and checking of measuring instruments).

Position	Field of responsibility
Chief accountant	Responsible for: ▪ financial and economical activity of Enterprise.
Head of technical records department	Responsible for: ▪ incoming inspection of the incoming documentation regarding its conformity to the stated requirements; ▪ storage, registration and circulation of normative and technical documentation; ▪ identification and traceability of documentation.
Deputy Director for HR Training and Development	Responsible for: ▪ management of the human resources department and HR training and development department, ▪ determination of the current staffing needs of the company, ▪ registration and storage of staff qualification documents, ▪ the staffing of the Company with qualified personnel of workers, employees, specialists and managers in the required professions and specialties; ▪ organisation of staff development.

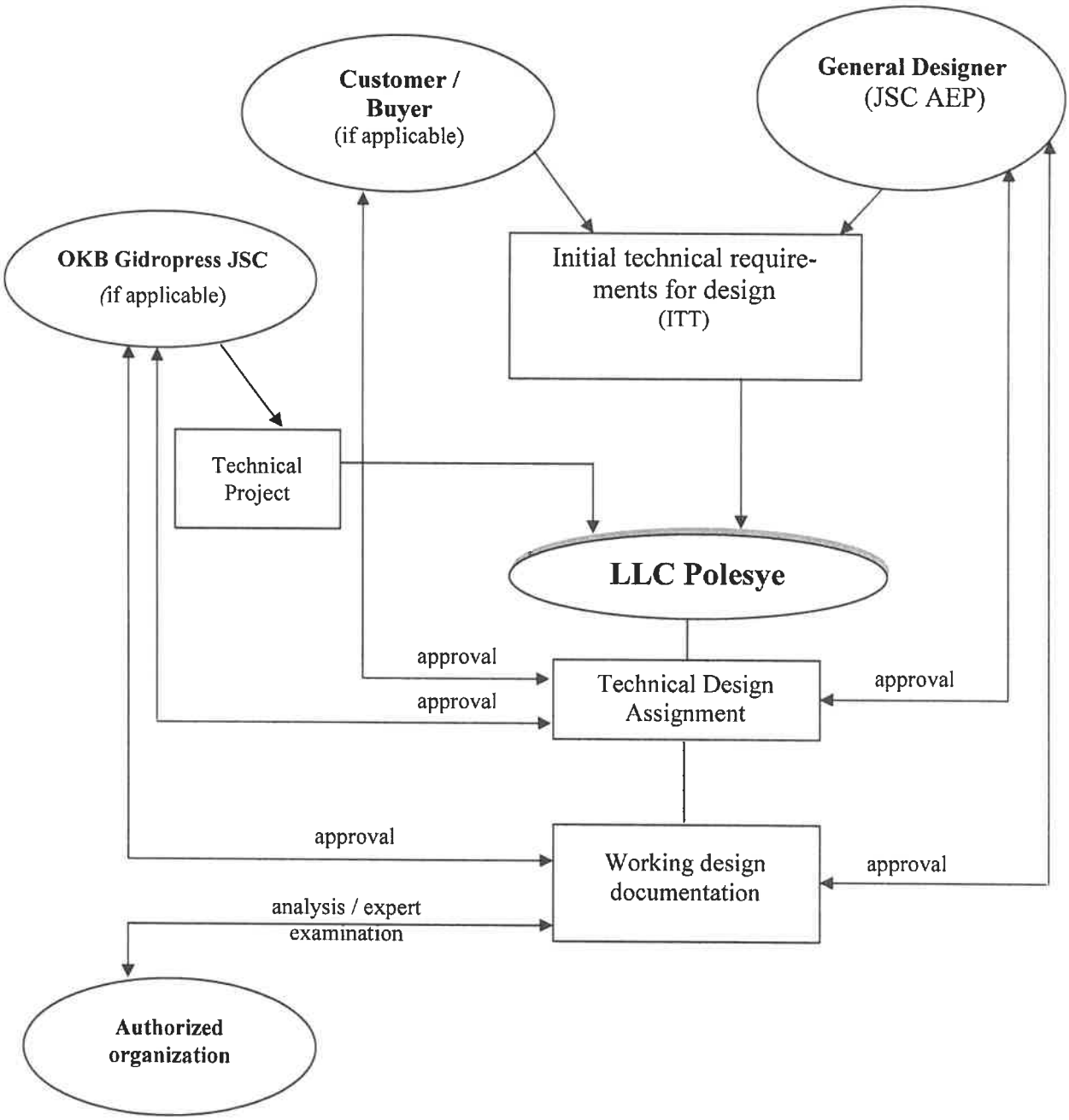
APPENDIX G

Organization structure of external interactions at manufacturing



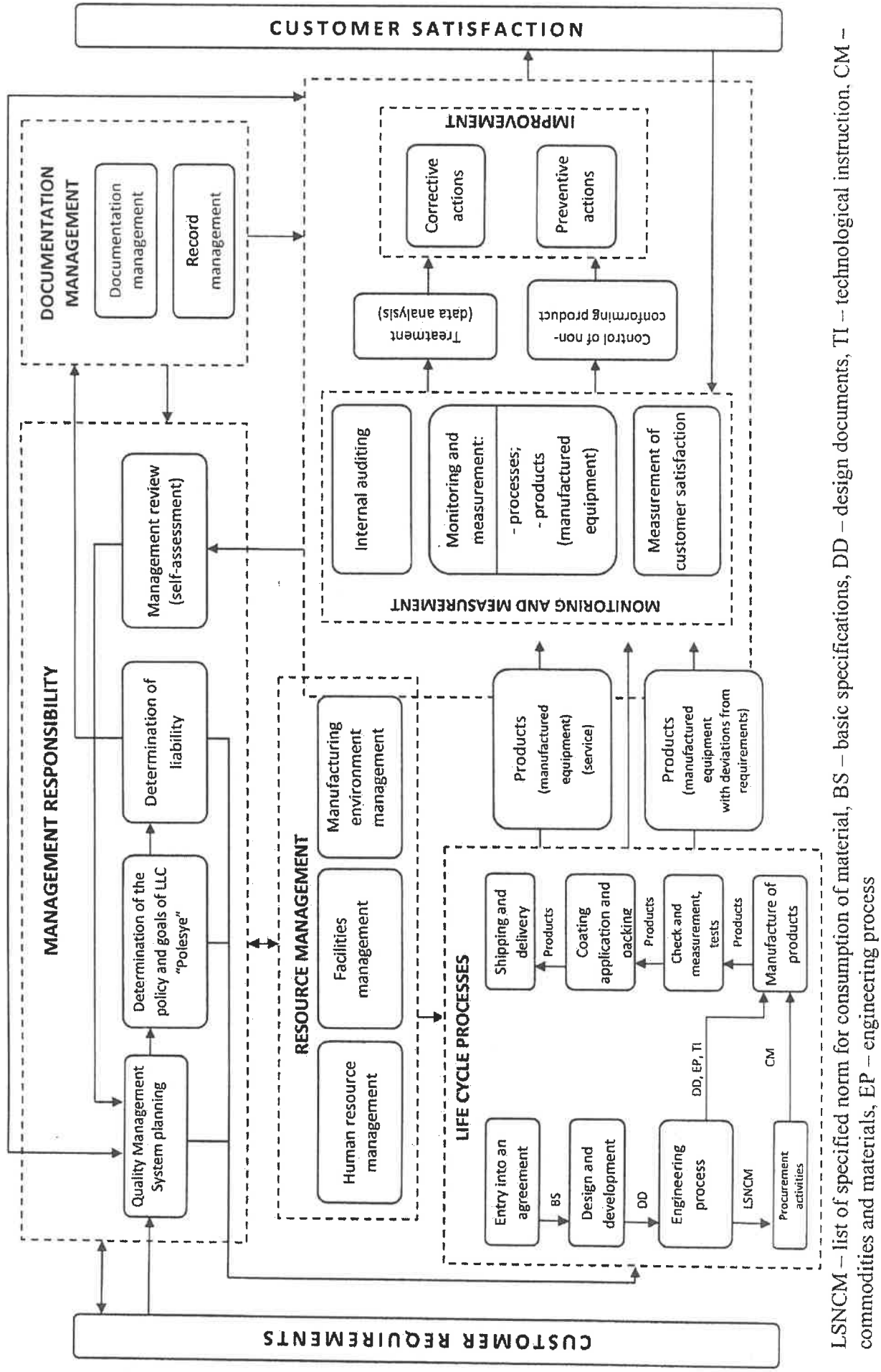
APPENDIX H

Organization structure of external interactions at designing



APPENDIX I

Interface chart and process chain of LLC "Polesye" Quality Management System



LSNCM – list of specified norm for consumption of material, BS – basic specifications, DD – design documents, TI – technological instruction, CM – commodities and materials, EP – engineering process

APPENDIX J

Abbreviations

NP	Nuclear plant;
JSC ASE	Joint Stock Company Atomstroyexport (JSC Atomstroyexport);
NPP	Nuclear power plant;
NPU	Nuclear power unit
BIKH	Tool supply department
GOST	State standard
GSI	State measurement system
GUK	Quality Control Group
ESKD	Unified system for design documentation
ESTD	Unified system for technological documentation
NPCIL	Nuclear power corporation of India Ltd., Government of India Manufacturer from Department of nuclear power;
ISO	International Organization for Standardization;
ITT	Initial technical requirements
KD	Design documentation;
KIP&A	Control and measuring devices & automatic equipment
IAEA	International Atomic Energy Agency
ND	Regulatory documents;
NTD	Standards and technical documentation
LLC	Limited liability company
OMTS	Procurement Department
QCD	Quality control department
PNAE	Rules and norms in atomic energy industry (RF)
QAP	Quality assurance plan
PR	Rules on precision and Accuracy
PRB	Production Planning and Preparation Department
PTD	Production and technical documentation
RB	Safety guide for nuclear power
RD	Russian Guideline
RKD	Working design documentation
RMG	Interstate standardization recommendations
Rostechnadzor	Federal Service for Ecological, Technological and Atomic Inspection
RF	Russian Federation
SI	Measuring equipment
OIT system	Statutory certification system for equipment, products and processes for nuclear facilities, radiation sources and storage facilities
QMS	Quality management system
SP	Code of regulations for design and construction
STO	Company standard
TZ	Technical Design Assignment
TO	Technical department

TU	Specification
UO	Authorized organization
ECM	Electronic computing machine(s)
OJSC NPO CNIITMASH	Open joint stock company Science and production association Central Heavy Engineering Research Institute
FSUE CRISM Prometey	Federal State Unitary Enterprise Central Research Institute of Structural Materials PROMETEY

Revision Record Sheet

Rev.	Sheet (page) numbers				Sheets in all	Document No	Signature	Date
	Revised	Replaced	New	Cancelled				