QUALITY ASSURANCE MANUAL

CONTROL OF CONSTRUCTION PROCESS

GENERAL

Any construction activities shall be dully planned and organized before work starting. Any process to be adopted shall not only be evaluated under performance aspect, but also under quality aspect. Resources, facilities and materials shall be provided on time in order to avoid delay of work.

Responsibility for the quality of the work rest on those managing, supervising, planning the work and on the personnel performing it. However, in process inspection, installation and construction, items provided must conform with the required quality and carried out in accordance with the approved procedures. If deficient items or systems are found such must be removed from further usage in the construction of the project.

Inspections of the work in progress should be performed to verify that items are being installed, assembled, and constructed in compliance with the contract, and the latest approved specifications, drawings, installation procedures, codes and standards.

PROCEDURES AND INSTRUCTIONS

All activities shall be guided by adequate instructions, i.e. drawings work procedures, specifications. The project engineers at the project office shall timely issue above instructions to the work sites and forward any subsequent revision ensuring that personnel are provided with updated construction / installation documents.
The project **QA Manager** shall verify recording, filling and distribution of procedures and instructions to personnel concerned on field.

QUALITY CONTROL

The construction / installation work is subject to inspection on the basis of the testing requirements of the contract for each item. The inspection activities are detailed in quality control plan and procedures, to produce before commencement of any construction/installation work. Such quality plan shall be established under responsibility of the Project QA Organization on the basis of engineering and planning documentation.

The quality plan shall list:
- QC Organization against process description
- Process document references
- Verifying document references

Specialist inspectors are responsible to carry out all inspection activities as specified in relevant quality plans, provided with all necessary technical data, drawings, specifications, work procedures. Where subcontracts are involved in all parts of the contractual scope of work, they shall produce their own quality plans and provide internal Quality control, under surveillance by **VITAL CONTRACTS & CONSULTANTS LTD** representatives. Should any non-conformances be evidenced during operations,

they shall be processed as established whether in dedicated procedures or in the quality plans.

Assigned inspectors shall certify the quality control/inspection activities and the completed report shall be issued to the project QA Organization for incorporation in the final documentation package.

FINAL INSPECTION

Final inspections verify that the completed project is in conformance with specified requirements. These inspections also shall verify the readiness of the completed project to be put to use. Examples of things normally checked during final inspections are as follows:

1. Installation has been made in accordance with specified requirements
2. Items used have not sustained external physical damage
3. All non-conformances have been corrected as required
4. Safety features are being used and comply with applicable codes and regulations;
5. Items identification has been preserved throughout the installation process. The inspection techniques selected should be determined by considering the characteristics or parameters to be measured or the work operations being performed.

The basic criteria for the selection of inspection technique and processes are the requirements of the applicable specifications, codes and standards. When the physical inspection of completed project is impossible, or disadvantageous, indirect control by monitoring of the processing methods, Equipment, and personnel can be performed. Inspection and process monitoring should be performed when control is inadequate without both.

QUALITY RECORDS

The Quality Assurance Programme ensures that objective evidence of the quality of the work is provided by **VITAL CONTRACTS & CONSULTANTS LTD** to her client and any other concerned authority. For this purpose a system of records shall document the internal control on the project activities. Records shall be easily retrievable and traceable to the activities, which they are produced for. Therefore they will be properly filed, preserved and provided with identification, date, signature, and activity reference.

Each project function is responsible to produce maintain and records of his work. At the beginning of the works an indexing system shall be established for all records to be produced on the project. Subsequently then the records shall be identified according to the pre-established index.

INSPECTION RECORDS

Documentation of inspection results is important for evaluation purposes and to provide evidence that the inspected items or projects are acceptable. Checklists, list each inspection criteria, should be prepared to document the results of the inspection. At a minimum, they should identify the date of the inspection, the inspector, reference appropriate drawings and specifications, and note the type of observation, the results,

the acceptability of the results, and the action taken in connection with any deficiencies noted.

MONITORING INSPECTION RESULTS

The inspection results for the various construction processes shall be monitored to keep a running track of those processes, which are producing deficiencies. This monitoring is often called **Trends Analysis** statistically evaluation or simple methods (e.g. plotting the percentage of rejects on weekly basis). Whatever the method selected, it is important to perform these trend analyses, since they provide a much more objective and systematic appraisal than that achieved by simply relying upon the memory of the inspection or construction personnel. When the analysis reveals that there are numerous problems, the first step is to determine the cause of the problem.

When this known, steps should be taken to correct the cause. It is not sufficient to simply increase inspection, since this will only separate the good from the bad, increase inspections will increase costs because the money spent on work which was rejected cannot be retrieved and the increased volume of inspection work cost more money. The greater amount of rework also affects the schedule, since less acceptability work is completed.

FINAL DATA BOOK

All projects records shall be collected in the final data book, which documents the complete history of the work, performed. The detailed list of the record to be included shall be finalized after contract award under the responsibility of the Project.
Typical records are:

- Engineering documentation – As built drawings (last issue) Computer Outputs
- Approved procedures
- Vendor data books – Purchase Or

SUB-CONTRACTOR CONTROL DURING WORK IMPLEMENTATION

The process of subcontractor's qualification, inquiry issue, bid evaluation and issue of subcontract is the same as described in the section 6 Procurement prior to contract award the subcontractor shall produce a plan of work execution including:

- Sequence of activities and schedule
- Dedicated organization
- Project QA system
- List of applicable documentation (engineering, quality control, procurement, and records) Such planning shall be incorporated by **VITAL CONTRACTS & CONSULTANTS LTD** in the overall planning of the project. In particular the subcontractor shall produce quality plans covering his production activities, with reference to acceptance standards, inspection stages and certificates. A project engineer shall be responsible for the engineering coordination of the subcontractor in order to clarify all design requirements and ascertain the compliance of design documents produced by subcontractor.

The Project QA organization is responsible to evaluate subcontractor QA system and quality plans.

QUALITY STATEMENT

VITAL CONTRACTS & CONSULTANTS LTD engages in contract services required by the individuals, government ministries and parastatals including oil and Gas industries.

Our area of operations are, but not limited to Engineering, Design and studies in civil, mechanical and electrical engineering. It is the policy of **VITAL CONTRACTS & CONSULTANTS LTD** to provide our clients with products and services, which conform to all specified requirements in a timely and cost effective manner. Delivering Quality service is one of the most important means for achieving the objectives of our engagement.

The concept of quality control includes all aspects and features of a product or service having the purpose to satisfy client requirements and expectation. We have established a Quality System based on ISO 9001 and a quality system model for quality assurance in design/development, production, installation and servicing. All procedures, documentation and practice, in all areas, are equipped to meet the requirement of international standard.

The achievement of these quality objectives and, as a consequence, of the basic objective to keep on operating as a competitive and successful company, depends on the quality of personnel, on the adequacy of organization, on commitment to work and above all on everybody's attitude to the problem of quality. All personnel have the responsibility, the authority and organizational freedom to identify and evaluate quality concerns and to initiate solutions.

The workers are committed to continuous improvements of quality and are encouraged to be actively involved in defect prevention and early detection and elimination of non-conformances.

The quality assurance and quality control department acts independently from other departments with the QA/QC manager as the head. The manager of QA/QC function has got the necessary authority and freedom of initiative to check that the quality system is correctly implemented and toe propose and start any corrective action whenever deemed necessary.

The QA/QC manager has the support of the top management to ensure, by any means that the quality policies outlined in this Quality Manual are fully implemented and that proper development and improvement programs are prepared, put into effect and monitored.

The resources and system direction shall be saddled with analysing feedback information and return to the Head, Quality Assurance of the Division with any corrective action or

modification to the Quality Assurance System. The QA Manager of the Division shall be responsible for the implementation of the management review provisions.

The QA Head Manager in cooperation with Project Quality Assurance Manager should perform audits to verify compliance with the Project Quality Assurance Manager program and to measure the effectiveness of the programme during all phases of the design process, procurement and construction activities. The essential steps of the audit are as follows:
a) Planning of the audit by means of planning documents which defines the organization and activities to be audited and the frequency of the audits.

b) Providing audit personnel who are familiar with the types of activities to be audited and who do not have direct responsibilities in the areas being audited

c) Performing the audit in accordance with guidelines, which identify those activities.

d) Preparing the audit report that summarizes the audit results and details the nonconformances observed.

e) Submitting of audit report to management responsible for the area audited for review and corrective action for the non-conformances.

f) Re auditing of non-conforming area when it is considered necessary to verify implementation of the required corrective action.

AUDIT SCHEDULING

The audits should be regularly scheduled on the basis of the status and importance of work activities. They are normally conducted at the beginning of the project, at three months intervals during peak periods, and near the completion of work. Regularly scheduled audits should be supplemented by additional audits when any of the following conditions occur;

a) It is suspected that the quality of the item is in jeopardy due to deficiencies in the quality management programme

b) Significant changes are made to the quality management programme such extensive reorganization or procedure revisions.

c) Independent assessment of programme effectiveness is considered necessary.

d) It is necessary to verify implementation of required corrective action.

AUDIT PLANNING

Audits are performed in accordance with check lists used by the auditor to enter all pertinent area in an orderly sequence and with a minimum of wasted time and effort. Without a checklist, the auditors enter an area with procedures at hand. It is difficult to leaf through the requirements, documents, or procedures on the spot and pick out the

specific items that can be checked at the point.

AUDIT PERSONNEL

To avoid conflicts of interest, personnel who do not have direct responsibility in the area of being audited should allow the right personnel to perform audits. Personnel performing audits should be competent and have sufficient authority and organizational freedom to make the audit process meaningful and effective. When specific technical expertise is required in the performance of an audit, it is desirable to select approximately qualified technical personnel to participate in the audit.

AUDIT REPORTING

Audit results should be documented in an audit report, which is transmitted to management personnel having responsibility for the activity audited. An audit report includes the following:

1) Description of the audit scope
2) Identification of the auditors
3) Personnel contacted during the audit
4) Summary of audit results
5) Details of specific nonconformance observed
6) Recommendations for correcting quality programme non-conformances or improving the programme
7) Data of required response by the audited organization The report should be distributed to management of both the audited and the auditing.

QUALITY ASSURANCE PROGRAMME

The aim of Quality Assurance Programme for every project is to ensure that **VITAL CONTRACTS & CONSULTANTS LTD** all contractual services in accordance with her client's contract specifications and such quality requirements necessary for delivering quality service. The Quality Assurance Programme is designed to meet requirements of Quality Assurance Programme international standards and any additional requirements of any contract.

The Quality Assurance Programme covers all project activities affecting quality (namely; engineering, procurement, inspection and testing; site construction and installation together with relevant documentations.

The activities covered by the Quality Assurance Programme are carried out within a system where organizational structures, functional responsibilities, interfaces, reporting and communications lines are clearly defined; furthermore such activities are documented through adequate procedures. All personnel are responsible for the quality of the work that they carry out. For each project the project manager is responsible for implementation of the contractual Quality Assurance Programme.

The Quality Assurance Programme organization verifies the implementation of the Quality Assurance Programme and evaluates its adequate to realize established objectives. Whenever necessary corrective actions are requested to prevent and correct non-conformances. The scope of Quality Assurances Programme activities for construction projects is mainly to:

• Ensure that procedures and instruction are issued for the performance of all required work.

• Ensure that qualified inspection that the work is carried out to required quality

• Demonstrate b documented records that the work has been carried out and inspected to required quality.

Our client's Representatives have the right to verify all aspects of the Quality Assurance system established for the project. They shall have free access to documentation and facilities relevant to the contractual work with assistance by **VITAL CONTRACTS & CONSULTANTS LTD** Assurance Programme.

The training needs and provisions for the training of all personnel, performing quality affecting activities, are identified by the management and are part of the Quality Assurance Programme. In particular personnel performing special task (i.e. welding and NDT) shall be qualified on the basis of appropriate education and in compliance with applicable standards and regulations.

VITAL CONTRACTS & CONSULTANTS LTD shall maintain records of such qualifications. The documentation produced by all subcontractors is subject to review by **VITAL CONTRACTS & CONSULTANTS LTD** issuing to the client and is incorporated in the overall project documentation.

Copy of all reports, certificates and as-built documents produced by subcontractors shall be issued to **VITAL CONTRACTS & CONSULTANTS LTD** project QA Manager for incorporating in the overall final documentation package of the project.

AUDITMANAGEMENT REVIEW

In order to satisfy the requirements of the Quality Policy, a periodical evaluation and review of the adopted Quality Assurance System is provided by the Management. For this purpose, an internal Quality System Audit programme is established and implemented as follows:

The Divisional Quality Assurance Manager has the responsibility to verify that the Quality Assurance provisions set out in this manual are effective and will improve the management of the work within any specific project.

The project quality assurance manager shall develop and implement for each project as specific audit program as detailed. The results of such auditing activities are distributed by the Divisional Quality Assurance Manager to the Head of Technological Innovation and Quality Assurance for his evaluation. Depending on the findings reported by the auditing activities, corrective actions and suggestions are proposed by the Head of Quality Assurance to the Resources.

QUALITY ASSURANCE DOCUMENTATION STRUCTURE

The Quality Assurance documentation is structured as shown here below:

Level 1: QUALITY ASSURANCE MANUAL

Level 2: PROJECT QUALITY ASSURANCE PLAN

Level 3: PROCEDURES AND INSTRUCTIONS

LEVEL 1:
This is the Divisional Quality Assurance Manual, which describes the **VITAL CONTRACTS & CONSULTANTS LTD** quality policy, the Quality Assurance program, the head office and project organizations, the Quality Assurance criteria applied to each phase of the work.

LEVEL 2:
The scope of this plan is to identify all quality related activities of the specific project. Such plan shall describe the project organization, the sequence of planned activities, the list of applicable procedures and instructions, and the records to be produced. The Project Quality Assurance Programme plan is to be prepared by the appointment Project Quality Assurance Manager before issuing for client's approval.

LEVEL 3:
These procedures and instructions cover both administrative and technical/operational activities. For each project it is project manager's responsibility to decide whether to produce dedicated procedures or to utilize those already existing in the organization of Quality Assurance Programme **VITAL CONTRACTS & CONSULTANTS LTD.**