

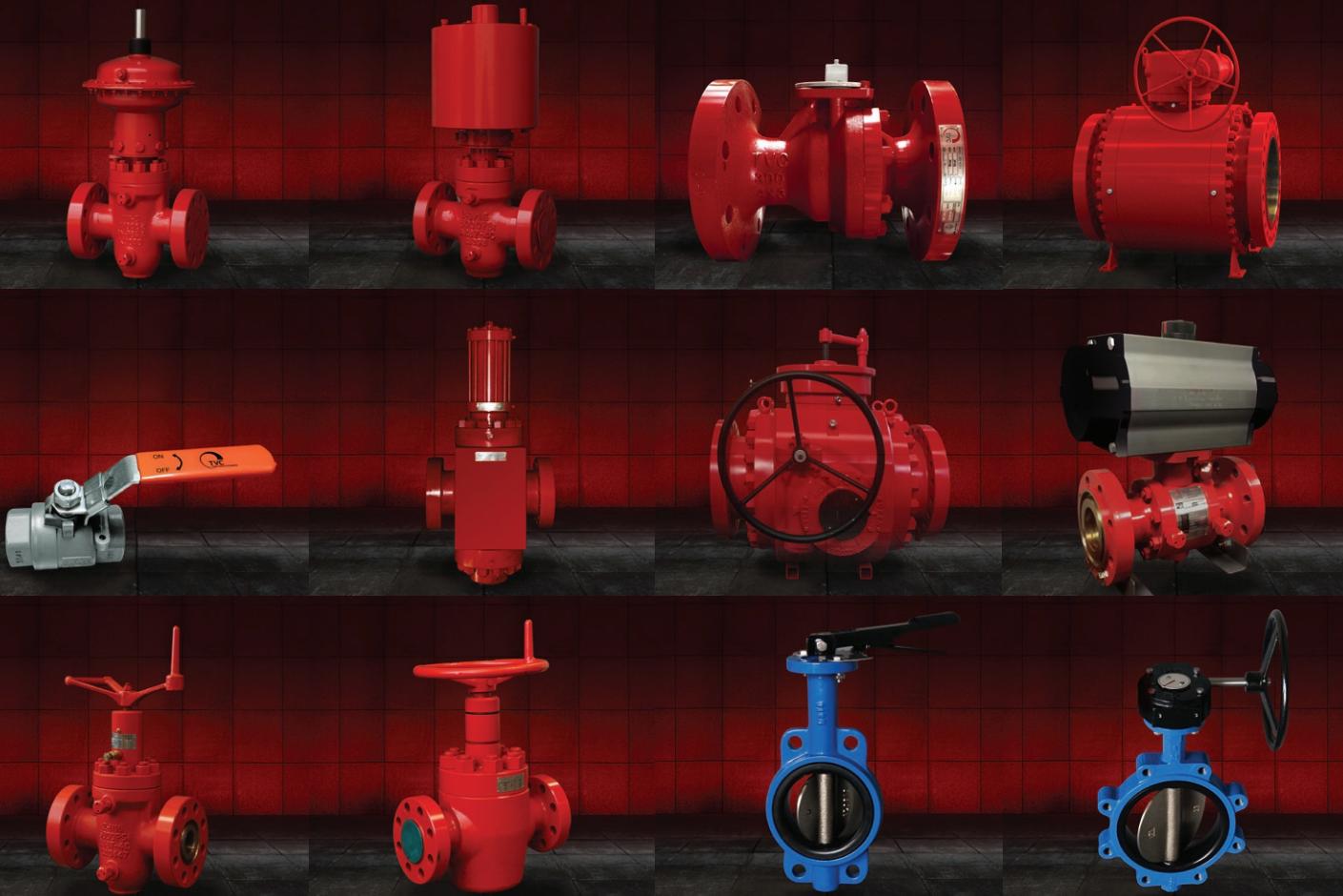


TVC

Quality Manual

COMPLETE

ENGINEERED FOR QUALITY & EXCELLENCE



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Quality Manual

OUTLINE

API Spec Q1 & ISO 9001 Latest Edition

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1.0 Purpose/Scope

1.1 General

Tiger Valve Company – focus is on the design, manufacture, and servicing of Gate Valves (Manual/Actuated) and Ball Valves for the Oil & Gas Industry. The design activities that are conducted at Tiger Valve Company are in accordance with the applicable industry standards, codes, and/or customer requirements. Applicable industry standards include but are not limited to; API, ISO, ANSI, NACE, ASME, ASTM, AWS. The goal of the quality management system at Tiger Valve Company referred to as the “Business Management System” (BMS), is continual improvement of processes and product to ensure ongoing customer satisfaction.

This manual establishes Tiger Valve Company policies concerning quality and refers to Quality Procedures that have been developed and implemented to ensure that all deliverables are in accordance with the latest editions of ISO 9001, API Spec Q1, API Spec 6A, API Spec 6D and specified customer requirements. The Quality Manager or designee is responsible for the control and distribution of this manual and of the processes contained within the electronic BMS. All elements of the BMS are considered proprietary/confidential and shall not be reproduced in any manner without the consent of the Quality Manager or their designee.

- 1.1.1** This manual shall be reviewed for continuing suitability and effectiveness at least once annually and when applicable standards are revised.
- 1.1.2** Nothing in this manual relieves Tiger Valve Company of its responsibility for complying with contractual requirements including work performed by Tiger Valve Company suppliers and subsidiaries. In the event of conflicting requirements between this manual and contract requirements, the contract requirements shall prevail provided no API requirements are violated, as it applies to Tiger Valve Company Certifications and API Licenses. Any conflicting requirements will be documented and the customer and/or the customer's representative are notified for resolution of differing requirements. This is to ensure that all applicable safety, environmental and industry standards are communicated to the customer to ensure that the customer's needs and expectations are met.

1.2 Exclusions

There are no exclusions.

Manufacturing of Tiger Valve Company products are carried out by approved suppliers. Tiger Valve Company inspects, assembles and tests all products, as applicable, by qualified personnel at the Tiger Valve Company facility. Personnel trained in accordance with the BMS processes may also verify the products offsite; such as at a vendor's facility or another Tiger Valve Company facility, when necessary. Final release of products shall be conducted by trained Tiger Valve Company personnel that are not responsible for the manufacture, assembly and/or repair of the product. Monogrammed product shall be monogrammed at the 15862 Diplomatic Plaza Dr. only.

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2.0 References

The Tiger Valve Company BMS was developed to simplify navigating and locating the necessary procedures, forms and instructions, etc. and further serves as a library for the revision management of the above described documents. When applicable industry standards are revised, a gap analysis is conducted by the Quality Manager, or designee, on the revisions and all affected processes in order to evaluate the extent and impact of any new requirements on the Tiger Valve Company BMS. If revisions are required, these will be made as soon as it is practical and in a timely manner. Revision history is maintained within the BMS which is a list of all revised procedures, forms and instructions. Department managers are informed by an email, a report or other effective means of communication of any revisions to processes that require revisions within their area of responsibility.

The general references are as follows;

- Business Management System Procedures,
- API Q1 – Latest Edition – Quality Management System Requirements,
- ISO 9001 & ISO/TS 29001 – Latest Edition – Quality Management System Requirements
- ISO 9000 Latest Edition – QMS – Fundamentals and Vocabulary Interaction of processes – See Figure 1.

3.0 Terms and Definitions

The terms and definitions listed in latest definitions or ISO 9001, API Spec Q1, API Spec 6A, and ISO 9000 latest edition – “Quality Management Systems – Fundamentals and Vocabulary” are used for general system and product items. Other terms used in this manual and in the procedures and instructions are defined within the respective documents.

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4.0 Business Management System Requirements

4.1 Business Management System

4.1.1 General

The BMS was set up with continual improvement of the system, processes, product, and customer satisfaction in mind. The system complies with the requirements of API Q1 and ISO 9001. When additional or revised customer requirements and/or industry standards are introduced they are added to the BMS as needed. Effectiveness of the Business Management System is measured through Management Reviews, Internal Audits, Non-Conformances, and Corrective Actions. Customer requirements, experience, API specifications along with other applicable industrial standards are used to determine what processes are necessary to produce products and provide services that meet and/or exceed standards and overall requirements.

4.1.2 Quality Policy

The Quality Policy,

Tiger Valve Company — is committed to providing our customers with products and services that comply with requirements while meeting or exceeding their needs and expectations. In support of this we will continually improve the effectiveness of our business management system by setting annual goals and objectives and monitoring them throughout the year.

The Tiger Valve Company quality policy has been reviewed and approved by the facilities Top Management. This can be verified by the signature of the Executive Vice President and the Quality Managers signature on the quality policy. The quality policy is reviewed during subsequent management reviews to ensure that it;

- Remains appropriate to the organization in regards to the activities, products and services of the organization,
- Complies with requirements and states that the organization intends to continually improve the management system,
- Establishes that the quality objectives will be reviewed,
- Is communicated and understood in the organization,
- Is reviewed to ensure that it remains applicable to the organizations commitment to the customers.

The quality policy at Tiger Valve Company is posted in several places throughout the facility. Training programs, competency exams, and objectives have been developed to measure and continually improve the employee's knowledge of the quality policy, objectives and the overall BMS.

4.1.3 Quality Objectives

The quality objectives that have been established at Tiger Valve Company have been defined to be measurable and consistent with the quality policy. The quality objectives are reviewed during the management reviews by the management team and adjusted, added or deleted as determined during the management reviews. The status of the quality objectives are updated monthly using a comparison chart

and line charts to indicate the current status of the objectives. The objectives are posted in the shop and in the office for the employees to review at their convenience. Training on the quality policy and on the status of the objectives is conducted periodically to ensure that all employees are aware of the relevance of the objectives.

4.1.4 Planning

The Business Management System (BMS) was developed to be user-friendly. The design of the BMS ensures that it is easy for the user to navigate and to understand. This is crucial to the success of the program. Customer requirements and the requirements of API and ISO and the changes associated with them are factored in all levels of the BMS program.

Changes to customer requirements, and industry standards are reviewed, analyzed and incorporated into the BMS as needed and as deemed necessary by the Quality Manager or designee. In most cases, a gap analysis is conducted by reviewing the changes to the standards and determining whether or not the changes affect the Tiger Valve Company BMS program. If deemed necessary the required changes will be recorded on a Corrective Action Report but changes can be made using only the gap analysis.

Procedures that are being revised or developed are not made available for public viewing until they are reviewed and approved by the Quality Manager. All revisions and control of documents in the BMS are to be controlled in accordance with the Control of Documents and Records Procedure and listed and hyperlinked in the BMS Library.

4.1.5 Communication

4.1.5.1 Internal

Top Management ensures that the appropriate communication processes are established and the effectiveness of the quality management system is communicated.

Tiger Valve has established processes to ensure that:

- a) Importance of meeting customer, legal, and other applicable requirements is communicated to relevant functions within the organization; and
- b) Results of analysis of data are communicated to relevant levels and functions within the organization.

4.1.5.2 External

Top Management ensures that the external communications with external organizations, including customers takes place through the following:

- a) execution of inquiries, contracts, or other handling and amendments
- b) provision of product information, including product nonconformities identified after delivery to the customer

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- c) feedback and customer complaints; and
- d) When required by contract, providing information required by product quality plans and subsequent changes to those plans.

a) Identification of Processes

The documentation structure of the Tiger Valve Company Business Management System is sequentially numbered to coincide with the structure of API Q1 and ISO 9001 and consists of five tiers or levels. The system is maintained by electronic media, backed up nightly and maintained at an offsite facility to ensure that all documentation is electronically retrievable in case of system failure, disaster or any other event causing local loss of documentation and data.

Tier 1 The documentation that is contained in the tier 1 section of the BMS Library are the Numbering format and section names (per API Q1), the Quality Manual, the Quality Policy.

Tier 2 The tier 2 documents are the core procedures (or the top level procedures) that are used for the operation. These procedures explain what should be done.

Tier 3 The tier 3 documents are the work instructions.

Tier 4 The tier 4 documents are the forms that are related to the tier 1, tier 2, and tier 3 documents.

Tier 5 Job Descriptions necessary to define the requirements and core competency of each position.

Tier 6 Miscellaneous warranties/policies that are stand-alone documents and are not referenced in procedures or forms.

b) Interaction of Processes

The interaction of processes is illustrated in Figure 1 below (see next page). The processes that require validation through are identified in Figure 1.

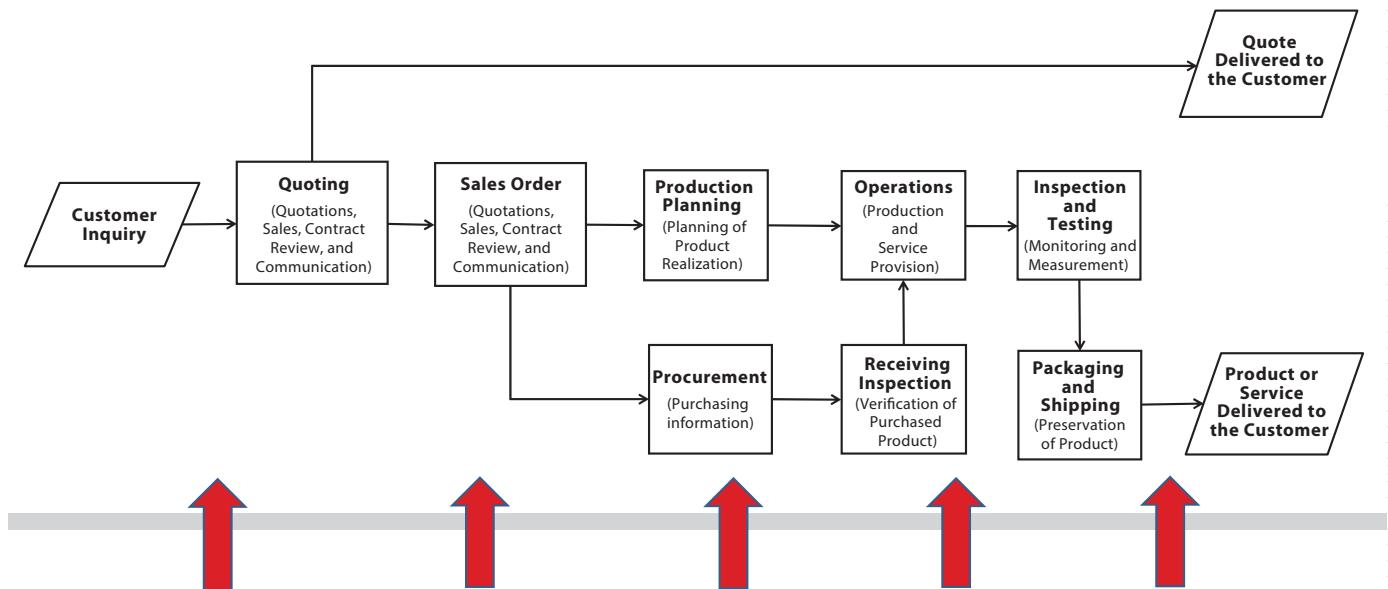
c) Process effectiveness

The criteria used to ensure that the processes and the use of the processes are effective are;

- Electronic BMS Program,
- Quality Manager responsibility and authority,
- Facility Manager and Department Managers responsibility and authority,
- Management Reviews,
- Internal Audits, and
- Corrective and Preventive Actions developed as a result of Management Reviews, Internal Audits or Non-conformances.

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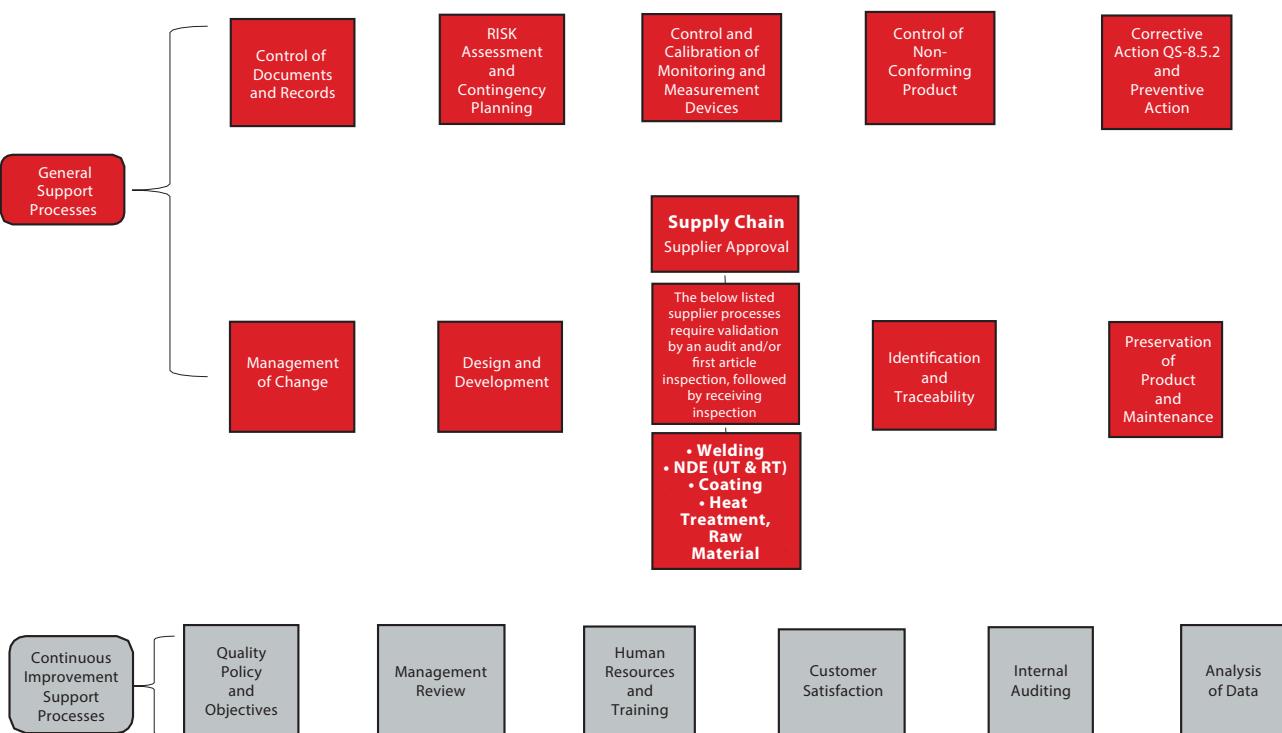
Interaction of Processes — Top Level Process Map



Tiger Valve Company Process Map Support Processes

NOTE 1: The process that are undefined require validation

NOTE 2: The below listed support procedures all play a role within the above Top Level Process Map



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d) Resources

It is the responsibility of Executive Management, the Quality Manager, and Operations Manager, to ensure that resources are provided, and proper information is available, and; that support level of the operation is monitored. These managers are also responsible to communicate any requirements and needs to top management on an as needed basis and/or during the management reviews depending on the situation or need.

e) Monitoring and Measurement of Processes

Status of processes with continual improvement in mind will be monitored at least once annually in the internal audit and during management reviews which take place at least once annually. As processes are identified during the internal audits, third party audits, customer feedback, management reviews and as a result of corrective actions improvements to the processes can also be monitored as part of the quality objectives which are monitored on a monthly basis.

f) Continual Improvement Results

Improvement is the main goal of the Tiger Valve Company BMS program and to ensure products and services meet or exceed customer's needs and expectations. During management reviews, the products, processes, procedures, etc. are reviewed to evaluate the systems effectiveness and identify areas that may require improvement through utilization of corrective and preventive actions.

g) Outsourced Services

When products are outsourced to suppliers Tiger Valve Company is responsible for conformance to the specified requirements. To ensure that supplied product meets the defined requirements, the suppliers will be monitored and measured on a continual basis through receiving inspection, trending non-conformances and by conducting supplier audits and/or review of the supplier's quality program.

4.2 Management Responsibility

4.2.1 Management Commitment

Tiger Valve Company top management is committed to the continual improvement of the Business Management System (BMS). This commitment is verified by the following;

- Signature and approval of the Quality Policy,
- Review of the Quality Policy to ensure suitability with the operation,
- Reviewing the Key Performance Indicators (KPIs)
- Holding information meetings that are held as needed for communication purposes with the shop personnel,
- Weekly meetings held to discuss the process of the projects,
- Monthly monitoring of the quality objectives including addition or deletion as necessary,
- Management Reviews that are conducted annually.
- Ensuring that necessary resources are available when and where they are needed.

a) Customer Focus

The main goal of Tiger Valve Company is making sure that the customer's requirements are met and that the customer is satisfied. To ensure that this goal is met, Tiger Valve Company will continue to meet or exceed the requirements of the customers by;

- Conducting contract reviews
- Conducting management reviews
- Customer Satisfaction Program
- Training Program

4.2.2 Responsibility and Authority

Responsibilities and authority are defined and communicated in the;

- Organization Charts located in the BMS,
- Job Descriptions which are controlled and maintained in the BMS.

4.2.3 Management Representative

The Quality Manager has been appointed by Management. That position is responsible for the implementation and the maintenance of the Tiger Valve Company BMS. It is the Quality Manager's responsibility to ensure that Top Management is continually informed and updated on the status of the BMS effectiveness through;

- Internal Audits
- Management Reviews
- Quality Objectives
- And the Customer Satisfaction Program

The quality manager has the responsibility and authority to;

- ensure that processes needed for the quality system are established and maintained,
 - These processes are located in the BMS.
- reporting to top management the performance of the quality management system and needs for improvement,
 - This is done through management review and internal audits
- ensuring actions needed to minimize occurrence of non-conformities takes place,
 - This is done through the use of Non-conformance reports (NCR), Corrective Action Reports (CARs), and Preventative Action Reports (PARs)
- ensuring awareness of customer requirements.
 - This is done through the customer satisfaction process and Sales Contract Review.

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Tiger Valve Company personnel are updated on the requirements of the customers and the product regulations through training and through the daily and/or weekly toolbox meetings that are conducted. Results of Data Analysis, which is reviewed during management review, is communicated to relevant facility personnel either by email or a meeting.

The Quality Manager has the authority, the freedom and the responsibility to stop products or services that do not meet the customer's requirements or that do not meet the requirements of the applicable industry standard. An NCR is issued and dispositioned by engineering and / or quality. If there are conflicts between QA/QC and Operations in regards to interpretation of requirements they shall be resolved either by the disposition of the NCR or by Engineering.

4.3 Organization Capability

4.3.1 Provision of Resources

Resources are reviewed during the Management Review as well as throughout the year from review of;

- Corrective Actions
- Non-Conformance Reports
- Contract reviews of the customer requirements,
- Monitoring and Measurement of Processes and Product
- Customer Satisfaction, and
- Preventive Actions

The Tiger Valve Company BMS goal is to continually improve the system processes to better serve the customers. The insurance that the necessary resources are in place makes it easier to maintain the BMS and the operations.

4.3.2 Human Resources

4.3.2.1 General

Employees that work for Tiger Valve Company are verified that they can perform the work and that they are competent at the time of hire by a review of their resume, by interview and in some cases verification from other employees that have worked with the new employee in the past. Employees new to a position are trained on the job as well as in classroom situations. Training for all personnel is carried out in accordance with defined procedures.

4.3.2.2 Personnel Competence

Personnel shall be competent based on the appropriate education, training, and experience needed to meet product and customer requirements. Evidence of the determination shall be recorded and maintained.

4.3.2.3 Training and Awareness

The Quality Manager will ensure training takes place and that the training records are maintained per Control of Documents and Records.

The department managers are responsible for identifying, defining and ensuring that the identified trainings for their departments take place. This is done by reviewing the needs of their department and needs of the employees. If there are training needs identified that are not covered in the Job Description Training they will be updated with the new requirements. Other training needs for the employees will be reviewed on an as needed basis and scheduled as needed. This will be discussed and reviewed in the management reviews.

When training is specified by the customer and/or provided by the customer, the training requirement is recorded on the Sales Contract Review Form.

All employees shall be trained and continually made aware of the status of the quality policy and the quality objectives and how they contribute to achieving those goals and objectives.

New employees and contract employees shall be trained and indoctrinated before they are released to work by themselves in positions that affect the quality of the product. The training can be "on-the-job" training, orientation training, classroom training, or job specific training. All training conducted regardless of the nature must be recorded in the BMS. When an employee transfers from one department to another or from one position to another their training needs will be reviewed and scheduled within 30 days.

All employees are evaluated for training effectiveness by one or more of the following: competency exams, on the job effectiveness, yearly employee evaluations or degrees and/or class certifications.

4.3.3 Work Environment

Tiger Valve Company has determined the work environment that is necessary to achieve product conformance in regards to environmental, safety, and shop conditions, noise, temperature, lighting and weather. Meetings are conducted as needed to discuss safety, environmental and work issues for the

given day. All employees are encouraged to participate as well as input suggestions and/or comments relevant to the issues of safety, environmental or product quality. Order and cleanliness of the facility is stressed by management to enhance safety and product quality.

a) Infrastructure

Tiger Valve Company will monitor and maintain the necessary infrastructure needed to ensure product conformity by ensuring that workspaces, buildings and utilities, computers with the necessary programs and backups, printers, fax machines, telephones, and trucking are available and operable.

Preventive maintenance for items such as cranes, forklifts, air compressors, test pumps and if applicable machine tools will be maintained.

All tools needed for Monitoring and Measurement of Product are available and controlled in accordance with Control of Monitoring and Measurement Devices.

The company will provide the support services required to maintain and improve the Tiger Valve Company BMS.

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4.4 Documentation Requirements and the BMS (Business Management System)

4.4.1 General

a) The Quality Policy and Quality Objectives

The Tiger Valve Company Quality Policy was designed with the Customer and Customer Satisfaction in mind. As evidence of commitment to all parties concerned, Tiger Valve Company Top Management has reviewed, approved and posted the policy, with general objectives, throughout the facility. The policy and objectives serve as general indicators to all personnel as to what is done to maintain the BMS program and improve the system. The quality objectives and KPIs (Key Performance Indicators) are monitored and updated on a monthly basis and reviewed during the management reviews to show evidence of the overall improvement of the program. The quality policy and quality objectives are reviewed annually, at a minimum, during the management review scheduled for the end of each calendar year, however the policy and objectives can be updated during other reviews or as deemed necessary by management.

b) The Quality Manual

The Quality Manual is part of the Tier 1 documentation which explains and illustrates the overall structure of the BMS System and is a general look at the entire system.

The quality manual is revised when;

- A process change occurs,
- The numbering format changes,
- A new process or procedure is added, to the system that is not mentioned in this manual
- ISO 9001 requires the change
- API Q1 requires the change.

When an industry standard is revised to a new revision or edition the manual may need to be revised to meet the changes of the industry standards revision and/or edition.

c) Documented Procedures required by API Q1 and ISO 9001

The procedures that are required can be found in the BMS. All procedures are electronically controlled and can be easily viewed by clicking on the document number. This will pull up the latest revision of the document.

d) Support Procedures and Forms

Tiers 2, 3, 4, and 5 are the support procedures, instructions and forms that are needed by the organization to effectively plan, organize and control the processes.

e) Required Records

The records that are required as objective evidence for verification of completion of processes and operations performed to product are in accordance with ISO 9001, API Spec Q1 and API Spec 6A and API Spec 6D. All required records are controlled in accordance with Procedure Control of Documents and Records.

f) Quality Manual

The Tiger Valve Company Quality Manual is developed in accordance with the requirements of the Latest editions of ISO 9001 and API Spec Q1. The Quality Manual is developed and maintained in accordance with the requirements of Quality System Requirements procedure and per Control of Documents and Records procedure. The Quality Manager or designee is responsible for the maintenance of the Quality Manual. This manual may be revised in sections or if necessary revised entirely. If the manual is revised in its entirety, it shall be indicated at the beginning of the document. Section revisions shall be identified by highlighting the revised section in yellow. If the revision(s) are required by a regulatory body or code (API or ISO) the revision shall be implemented within the effective period of the revised standard or code or within three months of the initial change of the code. All revisions shall be recorded in BMS software – and controlled per Control of Documents and Records.

When a new revision of the quality manual is developed a controlled copy of the Quality Manual shall be issued to the API for review and approval. Revisions to the manual shall be submitted to API prior to implementation of the revised manual. Minor changes to the quality manual do not need to be sent to API Washington. Minor revisions of the quality manual will be reviewed by the API auditor as part of the audit process. The Quality Manager shall maintain document control of issued documents in accordance with Control of Documents and Records.

a) Scope of the BMS and Exclusions

Exclusions are identified in section 1.2 of this manual.

b) Documented Procedures

The procedures are located, in electronic form, on the Tiger Valve Company electronic BMS. A search can also be conducted by the name or number of the procedure. The procedures that are controlled within the electronic BMS are the latest revision of the document. The procedures are reviewed for continued suitability in the internal audits, during management reviews and during third party audits.

c) Interaction of processes

The "Interaction of Processes" can be located in Section 4.1, see Figure 1 of this manual. The interaction of processes should be reviewed at least annually to ensure that there are no processes missing, changed or processes that are no longer needed. This should be done as part of the management review that is conducted annually.

4.4.3 Control of Documents

All documents, both Internal and External are controlled in accordance with Control of Documents and Records. All external specifications which identify the legal and other applicable requirements are located in the corporate website link to TechStreet. Printed external specifications that are retained at the facility for use in design and manufacture will have the updates (such as addendums, errata's and revisions) to these

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documents incorporated in the document or attached with the controlled document. Documents that are accessed through TechStreet are automatically updated with the industry revisions.

The electronic BMS is the list of controlled documents that make up the Tiger Valve Company Business Management System. The Quality Manager or the facility quality representative is responsible for control of documents. All documents are controlled by a title block that indicates the control number, revision number and the date of issue. Revisions to documents shall be controlled in the same manner as the initial issue of the document. There are blank formatted MS Excel and MS Word forms.

Documents that are distributed and controlled shall be reviewed for legibility and identifiable during the internal audit. Personnel using the documents shall notify the quality manager if the documents become illegible. The electronic BMS is maintained on the company server and is backed up nightly, at a third party, offsite facility. Documents that are issued in hard copy format, for use at "points of use" are controlled using Internal Document Control Form. These documents are located at points in the facility that do not have access to the electronic BMS. The electronic version of the documents contained in the BMS are the latest version of the documents. Any printed documents that are not controlled using the Document Control forms are to be considered uncontrolled. External documents are to be controlled with External Document Control Form and are controlled by the quality manager or the facility quality representative. External documents shall be issued a control number and dated to ensure control. An external service may be used to automatically update selected versions of external standards and/or specifications.

Drawings and engineering specifications shall be reviewed and approved prior to use. This is done by indicating approval of the drawing in the approval block on the drawing. When drawings are needed the drawings should be requested from Engineering, to ensure that the latest revision of the drawing is being used. If critical dimensions are not indicated, engineering should be contacted for clarification of critical dimensions. API dimensions shall always be considered critical.

Documents that are out of date or are not the latest revision or edition are referred to as "Obsolete" and can be retained for historical purposes, if they are controlled and marked accordingly. When obsolete documents are retained they must be controlled in the BMS. The documents must be identified as obsolete by either stamping them with an obsolete stamp or writing obsolete on the cover and dating the obsolete date.

4.5 Control of Records

Records, including those originating from outsourced activities, are developed and maintained to ensure that objective evidence of conformity is available, for the product, processes and operation of the Tiger Valve Company facilities. Records are controlled in accordance with Control of Documents and Records. The procedure specifies identification, storage, protection, retrieval, retention time and the disposition of the records.

Records at Tiger Valve Company that are required by industry specifications shall be retained for a minimum of five (5) years. The procedure for Control of Documents and Records specifies in more detail how quality records are retained and maintained. The Quality Manager or their designee is responsible for the Control of Records.

5.0 Product Realization

5.1 Contract Review

5.1.1 General

Tiger Valve Company maintains a documented procedure for the review of requirements related to the provision of products and required servicing.

5.1.2 Determination of Requirements Related to the Product

Upon receipt of a request from a customer for a quote or for a product or service, the requirements for the request must be determined and reviewed to ensure if the requirements can be met and if the

product can be delivered in the time frame requested by the customer. The review will include verifying customer requirements, such as;

- Requirements for delivery and post-delivery activities,
- Industry requirements and/or general requirement that must be met for the product but that are not specified by the customer,
- The need for customer specified and/or customer provided training
- Requirements for the product in regards to external requirements, including the updates, revisions, addenda, and errata, or the Tiger Valve Company internal requirements are defined and incorporated into the design and manufacture of the products,
- Legal requirements, and
- Any other additional requirements that are determined by Tiger Valve Company.

This review is conducted per Contract Review procedure and recorded on Sales Contract Review form or equivalent when an order is placed by a customer.

5.1.3 Review of Requirements

Contract Review that is completed upon receipt of the order includes a review of the requirements related to the product via the Contract Review Form. This review is completed prior to acceptance of the order and serves as verification that the product can be supplied and that Tiger Valve Company can meet the needs and expectations of the order. Product requirements that are different from requirements that have been previously defined or referenced are reviewed and resolved. The reviews are recorded on the contract review form or equivalent and shall be maintained in the corresponding file. Changes or revisions to the requirements shall be recorded on the Contract Review and maintained in the file and controlled per Control of Documents and Records. The changes can either be manually changed on the original contract review or issuing another review form. If the order is already in progress the changes are reviewed to ensure that the product can still meet the requirements. This is done on the router, or on the received purchase order. Personnel are informed of any requirement changes.

When the customer does not specify or supply requirements for the order and the product, the organization shall specify the necessary requirements for the product on the Contract Review. If there is a concern with the

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requirements the customer should be contacted and the requirements discussed and resolved. Results of the discussion shall be recorded on the applicable contract review form.

Customer communication is a vital part of the processes. When changes are required to a customer order the review of the changes and the revisions for the changes are recorded on the contract review form. If there are concerns with requirements the customer is contacted and the issues are resolved. Results of the communication are recorded on the contract review.

Orders that are placed by the customer that reference a valid Tiger Valve Company quote or through an existing contract with the customer do not require communication back to the customer. Verbal purchase orders require communication back to the customer as do changes to the orders.

Customer feedback from Customer Satisfaction and Field Incident Reporting (FIR) is reviewed upon initial receipt of the issue and during the management reviews. Field Incident Reports are filled out for every incident that the customers report. The FIR is investigated and corrective actions are issued as necessary to ensure that the problem does not happen again. Completed FIRs are forwarded to the customer to give them the satisfaction that their complaint or concern was corrected.

If the customer and/or the customers third party requests a Quality Plan (or similar document) one will be developed. If during the course of the manufacturing of the order there is a change, the quality plan will be revised and the revised plan will be reissued to the customer.

5.2 Planning

Tiger Valve Company has planned and developed the Business Management System (BMS) which includes this Quality Manual, the Procedures, Forms and Instructions. Quality plans are developed on an as needed basis, either as requested by the customer or if the Quality Manager deems that a Quality Plan is required.

The BMS processes that are needed for product realization throughout the procurement, manufacturing, assembly, installation, servicing of the product and servicing of the customer are specified in the process map for the interaction of processes in this manual.

The quality objectives for the product are reviewed in the quote process and in the contract review process per Sales Contract Review procedure. During the contract review the objectives for the product and/or service is determined and verified as to whether or not the existing processes meet the requirements or if new or special processes need to be developed for the order. This is identified and recorded on Sales Contract Review form or equivalent. Contingencies based on risk assessment and management of change needs are verified during the planning stage to ensure that product delivery and product quality are not compromised.

Planning for the order and the requirements for verification, validation, monitoring, inspection and test, and final shipping are determined and verified to ensure that products meet the criteria set in the design and manufacture of the product.

Records that are produced as a result of this process are maintained in accordance with "Control of Documents and Records" procedure. These records, when required, provide evidence that the product or service meet the requirements of the applicable industry code and the customer requirements. The

planning outputs shall be updated when changes occur to the product requirements. The changes shall be documented in the Sales Contract Review form and the work instructions using revision status and the date of the change.

Products designs that are developed from an outside source will be verified by the engineering group in accordance with Design and Development. Requirements for the product in regards to external requirements, including the updates, revisions, addenda, and errata, or the Tiger Valve Company internal requirements are defined and incorporated into the design and manufacture of the products, these products will be verified for acceptance in accordance with Monitoring and Measurement or Product.

5.3 Risk Assessment and Management

The Risk Management procedure provides Tiger Valve Company staff with guidance in how to apply consistent and comprehensive risk management. The procedure provides information on how to identify, analyze, evaluate and monitor risk and, when required, develop Contingency Planning for actions or issues that could impact delivery or the quality of the product.

Risk is the chance of something happening that will have an impact on objectives, KPIs, procedures, processes and delivery & quality of product. Risk analysis form is used to record the risk issues.

The risk team identifies all aspects of the risk item, determines severity, probability and detection methods on a scale of 1-10. These three items are then multiplied together to come up with a Risk Potential Number (RPN). If the RPN number is over 100 mitigation is required for the item. After mitigation if the RPN is reduced by at least 50% the issue is considered acceptable.

Some of the key business processes with which risk assessment is necessary are:

- **Internal, Third Party and Certification Audits** – Non-conformances issued as a result of Audits shall have risk assessment conducted.
- **Business planning (including budget)** – Identifying risk during the business planning process allows us to set realistic delivery timelines for strategies/ activities or to choose to remove a strategy/ activity if the associated risks are too high or unmanageable. Also see “Contingency Planning” below.
- **Management of Change** – Change has the opportunity to bring new risk or a potential hazard into the work environment; all changes need consideration and if necessary evaluation for risks and hazards.
- **Delivery of Product and Product Quality** – The following items shall have Risk Assessment conducted;
 - The facility resources and equipment needed to effectively produce product in accordance with customer requirements and the applicable industry standards to ensure product quality,
 - Maintenance of the facility and the equipment that affect product delivery and product quality,
 - Delivery of nonconforming product shall be assessed when a non- conformance is discovered after the product has shipped, when concession is made on product.

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- All personnel who have an effect on product quality as well as the need for competent personnel in regard to product quality shall be assessed by conducting risk assessment.
- Supplier performance and material availability.

5.4 Design and Development

5.4.1 Design and Development Planning

Designs are planned and controlled in accordance with Design and Development Procedure. It is the responsibility of the Engineering manager to ensure that the design is conducted in accordance with Design and Development Procedure. A current design package applicable to each product license, which provides objective evidence that the design meets requirements, is to be maintained and available during API audits.

The design plan checklist identifies and verifies completion of the required design and development stages for the product, the responsibility for each stage, verification and validation of the product design and as a record of the design completion. The completed checklist ensures that interfaces between groups are communicated by the assignment of the responsibility for each stage. All design documentation shall include methods, formulas and calculations. When design and development are outsourced, the design shall be reviewed by Tiger Valve Company Engineering and approved in accordance with Design and Development Procedure. Completed designs are controlled in accordance with Control of Documents and Records.

5.4.2 Design and Development Inputs

Inputs to the design and development of product is determined and recorded on the Product Design Review form and maintained in accordance with Control of Documents and Records. Inputs are the items that need to be considered or verified when developing a design package. The inputs that are considered are the;

- functional and performance requirements for the product,
- the required; legal, statutory and regulatory requirements,
- information acquired from previous like designs,
- other requirements that are essential for the design,
- Customer requirements, if applicable,
- Engineering Checklist and requirements therein,
- Environmental and Operational Conditions, and
- Reference to Risk Assessment.

The completed Product Design Review form indicates that the design inputs have been reviewed for adequacy and that the requirements are complete and do not conflict with each other.

5.4.3 Design and Development Outputs

Design outputs are provided in the design packages that are developed by the Tiger Valve Company engineering group. The design packages verify that the outputs meet the required inputs. The completed design packages and the completed design plan checklist are the approval of the outputs to the inputs. This

is conducted prior to the release of the product for manufacture. The outputs and the results of the outputs are verified and are documented using the Product Design Review form. The completed design package outputs shall include information for purchasing to procure product, contain or reference product acceptance criteria, and address the safe and proper use of the product, include results of calculations, and identify that critical components are items that are API Spec 6A PSL 3 and above.

5.4.4 Design and Development Review

The Design and Development Procedure, Engineering Checklist and the Product Design Review serves as the mechanism to ensure that reviews are conducted and documented as the stages of the design are completed. The review is conducted to evaluate the ability of the design to meet the requirements of the industry and the customer requirements, to identify problems, address concerns, and if necessary issue corrective actions.

It is the Engineering Managers responsibility to set up and record the reviews as they are needed. Personnel needed for a review may include but are not limited to;

- The Design Engineer,
- Engineering Manager,
- Operations Manager,
- Quality Manager.

The personnel or designees that are responsible for the area being reviewed shall be present for the review. Upon completion of the design, a final review shall be conducted by someone other than the person that developed the design.

5.4.5 Design and Development Verification and Final Review

Design and development verification is the process of ensuring that a design will work by verifying that the inputs meet the outputs through calculations to;

- confirm the requirements,
- Review and approval of the output documents such as; Bill of Materials, Drawings etc..
- Comparing new design to similar proven designs, and
- Includes a final review.

The pertinent design verification results shall be listed per procedure. The verification shall be recorded on the Product Design Review and maintained in accordance with Control of Documents and Records.

5.4.6 Design and Development Validation and Approval

Design and development validation which could include one or more of the following;

- Prototype testing,
- Functional and/or operational tests of product,
- Industry specified testing such as API standards, or customer requirements, and

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- Field testing and field review, if the organization cannot conduct the test prior to shipping to the customer, or
- Other recognized methods to prove the design.

Design validations are conducted to ensure that the design meets the requirements for the intended use for the product. The results of the validation shall be verified on the Product Design Review and maintained per Control of Documents and Records. Records of the validation may include, but are not limited to;

- Hydro test charts,
- Dimensional reports,
- NDE Reports (MP, LP, UT, RT),
- Hardness reports,
- Load test or pull test reports, and
- Welding records.

5.4.7 Design and Development Changes

Changes to a design require that the change must be controlled in the same manner as the original design per Design and Development. The change shall include a review and approval of all the parts that are being manufactured, in inventory, and that have been delivered, to ensure that the change does not affect the function of the parts. The change shall be recorded by either using a new Product Design Review for by using an Engineering Change Notice or equal method. All changes are controlled in accordance with Control of Documents and Records.

5.5 Contingency Planning

Contingency Planning – When Risks have been identified that could impact delivery or quality of product a contingency plan may be required to ensure that;

- There are actions implemented to mitigate potential issues and effects of potential disruptive incidents,
- There is identification and assignment of responsibilities and authorities, and
- Internal and external communication takes place to ensure that relevant personnel are aware of the actions and responsibilities.

NOTE: The Contingency Plan form is tied to the FMEA/Risk Assessment Form.

5.6 Purchasing Process

Purchasing personnel are responsible for the ordering parts and materials in accordance with Purchasing Procedure. Suppliers are evaluated and selected based on their ability to supply the products and services in accordance with the requirements of the Purchasing Procedure.

This is measured by an inspection of the product at the supplier's facilities, or conducting material receiving inspection, and/or conducting an on-site audit of the supplier. Suppliers that hold a current quality system API and/or ISO 9001 certificate can be approved by obtaining a copy of the certificate, but at the discretion of the Quality Manager the supplier may still be audited.

The AVL (Approved Vendors List) is located within the quality system. The AVL indicates the suppliers that have been approved for use, the supplier's scope, the supplier's location (site specific) and their criticality status.

Product supplied by the suppliers is controlled on a case by case basis by reviewing the criticality of the product supplied. Extent of control is measured by monitoring the suppliers, NCRs, NCR cost, Conformance to Purchase Order Requirements, On-Time delivery, and days late. Re-evaluation of suppliers is controlled per the Purchasing Procedure and shall be continuous unless otherwise specified. When an approved supplier either merges or is associated with other affiliations the supplier's quality system effectiveness should be monitored to ensure continuity. Record of the evaluations is controlled in accordance with Control of Documents and Records. Records of all outsourced activities are maintained in accordance with Purchasing Information procedure.

Product that is outsourced to a supplier will require that the supplier comply by meeting the requirements of the purchase order and;

- Have criteria for the review and approval of the process,
- Use approved equipment and trained and/or qualified personnel (per PO),
- Maintain and supply the applicable records (per PO), and
- Revalidation, if necessary

5.6.1 Purchasing Information

Purchase orders shall contain the necessary information for the supplier to deliver the required product, for the receiving personnel to know what was ordered, and what the requirements are for the order. The information shall be in accordance with Purchasing and Supplier Evaluation Process, and shall include;

- Requirements for the approval of the product, such as material type, grade and class, drawing number and revision, material specifications and revisions, inspection instructions (or Inspection and Test Plan, ITP), procedures, and equipment,
- The title (or positive identification) and revision of the identifying item shall be listed on the PO,
- Identification and Traceability requirements,
- Requirements for personnel, if applicable,
- Quality Management System requirements

The purchasing agent's signature (either signed manually or electronically) shall indicate that the PO has been reviewed for adequacy prior to being issued to the supplier.

Records for the purchase orders, which contains the outsourced activities, is maintained in the purchase order files.

5.6.2 Verification of Purchased Product or Activities

Purchased product will be verified upon receipt of the product to ensure that the product meets the requirements of the purchase order per Verification of Purchased Product. Verification is confirmed by either conducting receiving inspection when received at Tiger Valve Company or at the supplier's premises. If the product is to be inspected at the supplier's premises, either by Tiger Valve and/or the Customer, this should

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be stipulated in the purchase order. Product that does not meet the criteria of the purchase order shall be recorded on a Non-Conformance report. All records are controlled in accordance with Control of Documents and Records.

5.7 Production and Service Provision

5.7.1 Control of Production and Service Provision

5.7.1.1 Production

Production and services are conducted and controlled in accordance with Control of Production and Service Provision Procedure. Controlled conditions include;

- The availability of information that describes the product, such as BOMs, drawings, material certifications, and specifications, etc.;
- The availability of work instructions that describe the characteristics of the product. At Tiger Valve Company this could include one or more of the following;
 - Process control routers that are developed and documented for product(s) that require work to be performed such as assembly and test. The routers contain the required instructions to meet the requirements of the contract and shall include references to instructions, processes, inspections, acceptance criteria, hydrostatic testing, and if applicable customer or third party hold or witness points.
 - Purchase Orders for products that are received from suppliers which specify the requirements for the products. Because Tiger Valve Company does not conduct machining, welding or painting, all manufactured product is sent to approved suppliers to perform the work. When product is received and verified per Verification of Purchased Product. In some cases an Inspection and Test Plan (ITP) will be used by the receiving inspector to verify the parts received meet requirements.
 - the use of suitable equipment in accordance with provision of resources,
 - the availability of monitoring and measuring devices,
 - the implementation of monitoring and measurement in accordance with the ITPs,
 - the implementation of release, delivery, and post-delivery activities.
 - implementation of the product quality plan, when applicable,
 - ensuring that the design requirements and related changes are satisfied, when applicable, and
 - ensuring that identification and traceability requirements are maintained throughout the production and servicing processes.

5.7.1.2 Validation of Processes for Production and Service Provision

Tiger Valve Company (validates the processes for production and service where the resulting output cannot be verified by subsequent monitoring and measurement.

- Processes are established in accordance with Production and Service Provision, which specify:
- defined acceptance criteria for the review and the approval of the processes,
- approval of equipment and personnel,
- use of specific methods and procedures,
- requirements for records,
- Revalidation.

Validation of product receiving inspection procedure is verified by signing the purchase order and/or the use of Inspection and Test Plans.

5.7.1.3 Validation of Processes for Production and Service Provision

Procedure for Validation of Processes for Production and Service Provision specifies the requirements for critical processes such as;

- Welding and associated stress relief,
- Heat Treatment,
- Certain Raw materials,
- Certain coatings, and
- Non-Destructive Examination.

See Risk Analysis conducted for critical activities and processes.

5.7.2 Identification and Traceability

Product is identified in accordance with Identification and Traceability at Tiger Valve Company – from receipt of the product through shipment of the product by paint marker, permanent marker, tagging, or hard stamping. It is acceptable to identify the product by one or all of the listed processes. The procedure specifies requirements for the replacement of identification markings if removed during normal manufacturing processes. Lost identification will require that a Non-conformance be issued in accordance with Control of Nonconforming Product.

Product is identified by either the work order number, the purchase order number and if applicable the heat number.

Product is identified in regards to Monitoring and Measurement of Product by location staging areas, use of tags, status of the Inspection and Test Plans, and status of routers if applicable.

5.7.3 Customer Property

Upon receipt of customer property, including product, material and intellectual property such as drawings, the customer property is identified by marking or tagging the equipment with the customers name and if applicable the identification number for the equipment per Customer Property. If it is determined that customer property has been lost, or has been found to be unsuitable for use, an NCR will be issued and the customer shall be contacted and informed of the nonconformance. Corrective actions will be discussed and recorded on the NCR.

Customer property will be assessed annually at a minimum in accordance with Procedure for Customer Property to verify that the storage and maintenance of the product is controlled.

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5.7.4 Preservation of Product

Preservation of Product is controlled throughout the realization process and to the delivery of the product to the intended destination. This includes identification handling, packaging, storage, and protection. All product quantities and parts of an assembly shall be controlled in the same manner.

Assessment of stock shall be conducted yearly at a minimum in conjunction with the customer property assessment. Inventory and/or product found to be nonconforming will be issued an NCR.

It is a best management practice to measure inventory turn-over time (turns) and to when possible use inventory on a first in, first out (FIFO) basis.

Records of assessments shall be maintained.

5.8 Control of Monitoring and Measuring Devices

Tiger Valve Company uses routers and/or Inspection and Test Plans that specify the monitoring and measurement that each type of product will need go through. The necessary monitoring and measurement equipment is maintained and controlled in accordance with Control of Monitoring and Measurement Devices. Measurements to be taken are specified on the Inspection and Test Plans and in accordance with the dimensional reports and drawings.

The Calibration Procedure specifies the requirements for measuring equipment to verify results by;

- Specified intervals for verification and calibration of tools against standards that are traceable to International or National Measurement Standards. Tools are also verified prior to use to ensure conformity,
- adjustment and re-adjustments as needed,
- identification of tool calibration status, by issuing unique identification numbers,
- safeguarding tools from adjustments that would invalidate the result,
- be protected from damage and deterioration, during handling, maintenance and storage,
- When verification of an adjustable tool is needed the equipment used to conduct the verification shall be non-adjustable. In some instances an adjustable tool can be used to verify another adjustable tool if the tool is verified with a non-adjustable standard. (Example: To verify an ID micrometer an OD micrometer can be used, if the OD micrometer is verified using a micrometer standard and/or gage blocks)

The dimensional report contains a space to record the measurement tools serial numbers that were used for the inspection of the product. This would be used to locate product that was measured with specific tools in case a measurement tool is found to be out of calibration. If a tool is found to be out of calibration, product that was inspected would only need to be located and re-inspected for that day and the prior day. Measurement tools are verified prior to use on a daily basis. If product has shipped the tool was used on the product would be recalled and an NCR issued.

Tool calibration records are maintained in accordance with Control of Documentation and Records procedure. When computer software is used to satisfy the requirements for monitoring and measurement it shall be confirmed and re-confirmed as necessary. Tools used at Tiger Valve Company for monitoring and measurement are calibrated in accordance with the applicable Calibration Tool Instructions (MT&E)

which specify the tolerance and accept/reject criteria for the individual tools groups. The Quality Manager is responsible for the maintenance and control of the monitoring and measurement tool calibrations. It is their responsibility to ensure that tools are calibrated per the procedure and that the purchase orders that are issued to the calibration suppliers contain the necessary information for the supplier to effectively calibrate the tools. Verification of calibrated tools, calibrated by a supplier or in-house shall include a review of the tools actual measurement, compared to the tools accept/reject tolerance. Tools found to be out of tolerance shall be tagged in accordance with QS-5.10 – Control of Nonconforming Product, and segregated to ensure that the tool is not used.

a) Control of Monitoring and Measuring Devices

Control of Monitoring and Measurement Devices, the calibration forms and the MT&E instructions specify the device type, unique identification, location, frequency of checks, check method, and the accept/reject criteria for each tool.

When proprietary measurement equipment is used (customer, employee, or third party) to satisfy the requirements of product testing or measurement it is Tiger Valve's responsibility to verify that the measurement equipment conforms to the requirements of this procedure.

A calibration log is maintained in the BMS which contains monitoring and measurement tools used at the facility.

b) Environmental Conditions

Calibration, inspection and the tests conducted to verify the calibrations should be carried out in conditions that are suitable to the environment. Records of the calibration shall be recorded so as to indicate conformity to the required tolerances and conditions. All tools used for inspection of product that are either company owned or employee owned shall be calibrated. The record of calibration should include;

- the equipment identification number, and the identification number of the standard used,
- if applicable, any revisions after engineering changes,
- as received inspection readings both in tolerance and out of tolerance,
- an assessment of the impact of the out of tolerance items,
- notification to the customer for items that may have been delivered.

If product is found out of tolerance and there are products that may have shipped, it is the quality manager's responsibility to ensure that an NCR is issued and that the impact of the out of tolerance areas is assessed on the NCR. The customer will be notified of the discrepancy if necessary. This notification is recorded on the NCR in accordance with API Q1.

5.9 Product Release

Tiger Valve Company maintains a documented procedure to ensure release of product to the customer shall not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by the relevant authority and, where applicable by the customer.

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5.10 Control of Nonconforming Product

Tiger Valve Company ensures that product that does not conform to requirements is identified and controlled to prevent unintended use or delivery in accordance with Control of Non-Conforming Product. Responsibilities and authorities are specified to ensure that product does not get used or delivered by accident.

Non-conforming product is resolved by;

- taking action to eliminate the nonconformity,
- by a relevant authority issuing release under concession or by the customer where applicable, or
- by downgrading the product to an acceptable application.

Product that is reworked or corrected is re-inspected to ensure that the nonconforming item has been corrected. This re-verification is recorded on the NCR in accordance with Control of Nonconforming Product. If product that has been delivered is determined to be nonconforming an NCR will be issued

for the product and the product will be recalled if necessary. This will be determined through the NCR and through formal or informal meetings with relevant personnel and discussions with the customer.

Product that does not conform to requirements is identified by either attaching a yellow tag or segregating the product by placing it in the designated NCR hold area or both. Product that is in the NCR hold area or that has a red or yellow tag shall not be used or shipped unless the tag is removed or the part is released from the NCR hold area by the Quality Manager.

All records are controlled in accordance with Control of Documentation and Records. Nonconforming items that need additional correction or where the process needs correction shall be issued a Corrective Action.

5.10.3 Release or Acceptance of Nonconforming Product

Product that has been detected as nonconforming shall be released with written justification (concession) in accordance with one or more of the following conditions;

Acceptance of product that does not satisfy the manufacturing criteria if the engineering department determines that;

- the product satisfies the design criteria,
- the nonconforming attribute is categorized as unnecessary to the design acceptance criteria, or
- the product/s are reworked or repaired to meet the requirements.

Acceptance of product that does not satisfy the original design criteria if engineering approves the product due to;

- The original design acceptance criteria has changed, or
- The product satisfies new design acceptance criteria (DAC) that has been developed.

All release of product shall be clearly identified and recorded on the NCR. Acceptance of the release is verified by the signature and date on the NCR.

5.10.4 Field Nonconformity Analysis

Tiger Valve Company uses a Field Incident Report (FIR) in accordance with Field Incident Reporting to record all customer complaints and incidents that occur in the field. All FIRs are recorded on the FIR and are reported to the Quality Manager for review. If necessary an investigation is conducted and the cause of the incident is determined. The field nonconformities are analyzed by trending and reviewing the failure with the relevant personnel. Completed FIRs are reviewed by the Quality Manager, the Engineering Manager, the Operations Manager, and the Sales Manager or their designee prior to being sent to the customer as evidence to the customer that the incident has been resolved.

Field incident reports are controlled per Control of Documentation and Records.

5.10.5 Customer Notification

Product that has been delivered that does not conform to design requirement or that has been accepted by concession, will require that the customer be notified of the nonconformance. This notification can be recorded either by sending the filled out FIR, NCR or by email, phone call or fax. Results of the notification shall be maintained per Control of Documentation and Records.

5.11 Management of Change (MOC)

Management of Change manages and controls change to the organization, its processes, facility, policies and operations and is utilized to ensure that when changes are made, the integrity of the Quality Management System remain intact. Management of Change form is used to record the details of the issue.

Management is responsible to oversee and evaluate changes before they are implemented. All applicable management and employees are requested to participate in the assessment and evaluation of change, particularly in the identification of potential risks and hazards involved and safety of personnel, both internal and external to the organization.

Management of Change is implemented for the following items that may have an impact on the quality of product;

- Changes in the organizational structure,
- Changes in key or essential personnel,
- Changes in critical suppliers,
- Any changes to quality management system or procedures, and
- Changes resulting from corrective and/or preventive actions.

Change management may be initiated at any level of the organization. Completed forms are submitted to the Quality Manager followed by submission to the appropriate department manager.

When required by a customer contract, the customer shall be notified when new or a current risk, due to changes, develops.

Top management shall review MOC form records at management review.

6.0 Business Management System Monitoring Measurement, Analysis and Improvement

6.1 General

Monitoring, measurement, analysis and improvement processes have been implemented through;

- Monitoring and measurement of Product and Control Production and Service Provision to ensure that the products conform to customer and industry requirements,
- Management Reviews, Internal Audits, and Third Party audits, are conducted to ensure that the Tiger Valve Company BMS conforms to the requirements of API Q1 and ISO 9001 Latest Editions.
- The Quality Policy and the Quality Objectives are developed and reviewed along with the above listed items to continually improve the effectiveness of the BMS.

Statistical techniques are determined in accordance with Analysis of Data, and by using the Management Review Template.

6.2 Monitoring, Measuring, and Improving

6.2.1 Customer Satisfaction

Customer Satisfaction Forms are mailed or sent out during service jobs with service hands or during sales follow-up calls on customers when reviewing their satisfaction with the product, performance

and delivery times of the product. It may also be ensured through documented phone calls, faxes or e-mails or other correspondence to the customers especially involving field incident reports. The documented survey's are forwarded to the Quality Manager and logged for trending and tracking purposes in accordance with Customer Satisfaction Program. Records in regard to customer satisfaction and customer perception shall be maintained.

6.2.2 Internal Audit

Tiger Valve Company plans and conducts Internal Audits, at a minimum annually by auditors that are not responsible for the department, the work, or the system that is in place. The internal audits are conducted to verify that the processes and the system in place meet the requirements of the organizations certifications and the Tiger Valve Company BMS.

At least once a year, all areas of, the Tiger Valve Company Business Management System shall be audited by a qualified lead auditor.

The auditor's certification certificate, which verifies that the auditor has been trained and is competent to perform the internal audit, shall be stored in the file folder for the internal audit conducted. Auditor competence is to be verified prior to the start of the audit on the cover sheet of the Internal Audit Checklist form.

The internal audit program takes into account the results of previous audits and the corrective actions that were issued. Concerns issued during a prior audit are reviewed and re-audited for the possibility of upgrading to a finding if the concern is still present. Outsourced activities that impact the quality of the product, which are contracted to conduct in-house, are included as part of the internal audit in accordance with Internal Audits Procedure and listed on internal audit checklist.

Non-conformance trends reviewed in the Management Review may indicate that a partial audit of a department or process may be necessary. This would be logged and tracked on a Corrective Action.

At the completion of an internal audit it is the Quality Manager's responsibility to ensure that Corrective Actions are issued for the findings. It is the responsibility of each department manager to respond to the corrective actions issued with a plan to correct the findings. The responses and the completion of the corrective action shall take place without undue delay. Suggested response times and completion times are specified in Corrective Action Procedure. The Quality Manager is responsible to ensure that all corrective actions are followed up on and are being addressed and closed in accordance with the corrective action procedure.

6.2.3 Monitoring and Measurement of Processes

The processes at Tiger Valve Company are monitored and measured in accordance with Monitoring and Measurement of Product and Processes through the management reviews, internal audits, customer satisfaction program, and trending of NCRs and CARs. When planned results are not achieved it is discussed in the management review and corrective actions are issued where necessary. This will be issued to specific members of management with Response Times and Completion Dates defined.

The processes of the quality management system shall be audited prior to claiming conformance of the process or procedure in the annual internal audit or as determined by management.

6.2.4 Monitoring and Measurement of Product

Monitoring and Measurement of Product is carried out at appropriate stages of the product realization in accordance with Production and Service Provision and in accordance with the Routers and/or Inspection and Test Plans (ITPs) for each product line. It is the Quality Managers or designees responsibility to ensure that monitoring and measurement of product is conducted. The Router and ITPs are followed to ensure that product requirements are followed, met and verified at the required stages of the product realization. When product does not meet the specified requirements, or the customer's requirements, an NCR is issued in accordance with Control of Non-Conforming Product.

Product is not released until the specified requirements that are listed in the Routers and/or the ITPs have been verified and met. Final inspection for shipment, which is conducted by personnel that did not perform or supervise the production of the product, is to verify that all product, records are completed and that all NCRs issued for the product are closed. Final inspection shall be indicated on the router and/or the ITP by the person conducting the final inspection putting their initials on the final inspection stop of the router and/or the ITP. A green tag is also applied to the product that is ready to ship to the customer.

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Product that does not conform to requirements or that has not met all the requirements will not ship unless it is approved by a relevant authority or by the customer. Records of the verification are maintained in accordance with Control of Documentation and Records.

6.3 Analysis of Data

Tiger Valve Company demonstrates effectiveness and continual improvement of the BMS by conducting management reviews using the Management Review Measurement Analysis Template and through;

- analysis of data
- customer satisfaction,
- product conformance through NCR trending and quality objectives,
- characteristics and trends of processes and products in the management reviews and by the issued preventive actions (PARs),
- data analysis of the suppliers.

Quality Objective data analysis is controlled and tracked using the form for the quality objectives and in the Management Review Measurement Analysis Template. The quality objectives form tracks the status of the current objectives on a monthly basis and indicates the metric goals. The management review form measures the current year's objectives against the prior year's objectives to indicate facility improvement.

Results of Data Analysis, which is reviewed during management review, is communicated to relevant facility personnel either by email or a meeting.

6.4 Improvement

6.4.1 Continual Improvement

Continual improvement is measured through;

- The quality policy,
- the quality objectives,
- internal audits and the results of the audits,
- corrective actions,
- preventive actions, and
- Management reviews.

Although all of the above tools are used to measure continual improvement the tool that ultimately measures improvement is the Management Review Measurement Analysis Template. The Management Review Measurement Analysis Template measures the status of the system from one year to the next and indicates facility improvement by percentage of improvement in regards to processes and product data.

6.4.2 Corrective Action

Corrective Actions Reports are issued as a result of internal audits, customer audits, third party audits, management reviews, and non-conformances. Corrective actions are aimed at trying to ensure that the problem does not happen again. The Quality Manager or designee is responsible for the corrective actions

and ensuring that the actions are appropriate to the nonconformity that they are issued for. The CAR procedure and form specify the requirements for;

- review of the non-conformities, (including Customer Complaints)
- determination of the cause of the non-conformities,
- evaluating the actions that ensure that the problem does not happen again,
- evaluating response times for the evaluation of the actions and closure of the report,
- ensuring that the determined actions are being implemented and closed in a timely manner,
- A final review and closure of the actions taken to ensure effectiveness of the actions taken.
- Changes resulting from corrective and/or preventive actions where the change that may affect product quality or the safety of the Employees. Management of Change is implemented when the corrective actions require a change of control in the quality management system.

Records of corrective actions are controlled in accordance with Control of Documentation and Records.

6.4.3 Preventive Action

Preventive Action Procedure is used to develop documented actions used to prevent potential nonconformities that have not yet occurred and to ensure that the preventive actions are appropriate. The procedure outlines the requirements for;

- Determining potential non-conformities and their possible causes and opportunities for improvement,
- Evaluating the need for actions to prevent non-conformances,
- Determining and implementing the actions,
- Identifies the responsible person and timeframe,
- Recording the results,
- Reviewing the preventive actions to ensure that they are appropriate and that they are completed,
- Specifies that the final signature of the Quality Manager indicates that the actions have been reviewed and deemed effective and that the root cause is eliminated or controlled.
- Changes resulting from corrective and/or preventive actions where the change that may affect product quality or the safety of the Employees.
- Management of Change is implemented when the corrective actions require a change of control in the quality management system.

The Quality Manager or designee is responsible for maintenance and control of preventive actions. Records for the preventive action process are controlled in accordance with Control of Documentation and Records.

6.5 Management Review

6.5.1 General

Tiger Valve Company conducts Management Review at least once within a 12 month period. During the Management Reviews the information listed in the Management Review Template, and the Management Review Summary shall be used to ensure that all inputs and outputs are accounted for. Following these two forms will ensure that the requirements of API Q1 and ISO are met.

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6.5.2 Review Input

The inputs for the management review include;

- Results of audits;
- Customer Feedback;
- Process performance and product conformity;
- Results from Risk Assessments;
- Status of preventive and corrective actions;
- Follow-up actions from previous management reviews ;
- Changes that could affect the quality system;
- Recommendations for improvement;
- Trends of product NCRs;

6.5.3 Review Output

The outputs from the management reviews are;

- Completed Measurement Analysis Template;
- Completed Management Review Summary;
- Corrective actions that are issued for areas that are noted as needing improvement;
- Preventive actions for the areas on the summary noted as preventive actions needed.

Use of the above listed forms will ensure that the output such as improvement related to the BMS, product and customer requirements are reviewed and discussed. Resource needs are also reviewed in the Management Review Summary.

Results of the management review data analysis and status of the quality system is communicated to the relevant facility personnel either by email or a meeting.

7.0 Monogram Program

Tiger Valve Company product marking procedure incorporates the requirements of the applicable API Monogram marking requirements and control of the application of the API Monogram. The procedure specifies;

- The location that the monogram is applied on the product,
- The monogram shall only be applied to the product at the certified facility,
- The required information that is to be stenciled and/or listed on the name tag, including the license number and the date of manufacture.
- Responsibilities and authorities for the application and the removal of the monogram,
- Stamping of the license number with the monogram when the monogram is applied to the product and/or the name tag,
- Removal of the monogram if the product does not meet requirements.

A current design package applicable to each product license, which provides objective evidence that the design meets requirements, is to be maintained and available during API audits. A product data book that coincides with the design package for the applicable part or assembly number shall also be on hand and available during audits.

The Quality Manager or designee shall control, have the authority, and responsibility for application and removal of this API Monogram.

The Quality Manager is responsible for ensuring that the API Monogram is not used on any Tiger Valve Company letterhead, advertising, or on the website without written authorization from API.



TVC

Quality Manual

COMPLETE

ENGINEERED FOR QUALITY & EXCELLENCE

Limited Product Warranty

Tiger Valve Company (TVC) manufactured products warrants for, (a) twelve (12) months from date of installation or (b) eighteen (18) months from date of sales, whichever period expires first, to be free from defects in workmanship and materials, not caused or resulting from improper usage or application, provided all equipment is maintained in accordance with TVC "Valve & Equipment Storage Procedure".

Any repair work performed by TVC is warranted for twelve (12) months after completion of such repairs and applies only to work performed. Should TVC receive notice from Buyer within these twelve (12) months of any alleged defect in or nonconformance of any repair, then Buyer shall return the part or product to TVC specified service location at TVC request.

In the event TVC shall determine that the product is defective as a result of factory workmanship based upon such examination of the product which TVC may deem appropriate, TVC shall thereupon, at its sole option, (a) cause the defective product to be repaired, (b) replace with a substantially identical product, or (c) accept the return of a defective product and refund the purchasing price to the original purchaser. TVC shall bear all normal surface transportation costs to the original purchaser but shall in no event bear any installation, re-installation, engineering or other costs incurred in connection with repair or replacement.

TVC warranty liability shall be limited to repair, replacement or refund and shall not include claims for labor costs, expenses of Buyer resulting from defects, recovery under general tort law or strict liability or for damages resulting from delays, loss of use or other direct, indirect, incidental or consequential damages of any kind.

TVC will not be responsible for failures of products which have been in any way tampered with or altered by anyone other than an authorized representative of TVC utilizing the TVC Installation and Maintenance Procedure (IOM).

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, STATUTORY OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE WHICH EXCEED THE FOREGOING WARRANTY.

If you have questions regarding this warranty or if you need additional information concerning Tiger Valve Company products or services, please contact us at the address and number below.

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