PURPOSE

To establish and maintain the monitoring, measurement, analysis and improvement policies and procedures necessary to meet and improve the effectiveness of the Quality Management System in order to achieve customer satisfaction.

SCOPE

All activities involved in measurement, analysis and improvement that affect the ability of the organization to achieve customer satisfaction with continual improvement.

REFERENCES

ISO 9001 – Quality Management Systems – Requirements
Quality Manual (QM) Procedures 4,5,6,7

DEFINITIONS

Organization:	Georgia Gulf Sulfur Corporation, including Georgia Gulf Sulfur, Holly Industries, International Sulphur, Inc., and S.F. Sulfur
QMS:	Quality Management System

RESPONSIBILITY

All responsibilities related to this element are found in the Procedure section of this document

PROCEDURE

8 Measurement, Analysis and Improvement

8.1 Measurement, Analysis and Improvement Focus

The MRC has established monitoring, measurement, analysis and improvement processes with a focus upon demonstrated product conformity, quality management systems conformity and continual improvement of the effectiveness of the QMS.

The MRC has determined appropriate statistical techniques to be used for the monitoring and measurement in order to provide the analysis necessary to the continual improvement of the QMS. These statistical techniques are listed in the Quality Objective Results (Form 33). Quarterly, SPC reports are generated and distributed to analyze product conformance.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

The MRC receives customer feedback related to customer perception and satisfaction by various means, including verbal and written customer feedback and Customer Complaints. Customer Service Representatives record customer complaints on the Nonconformance/Corrective Action Form (12).

The Sales staff polls the representatives of several of the Organization's customers at least once a year and will report the results on the Customer Survey (Form 15).

8.2.2 Internal Audit

The Organization will audit the entire QMS at least once a year, including process audits each year according to the Internal Audit Schedule (Form 32).

8.2.2.1 Basis for Additional Audits

The ISO MR schedules audits based upon one or more of the following:

1. Increase in scrap/rework
2. Decrease in production efficiency
3. Increased customer complaints
4. Past audit results
5. Procedure Noncompliance
6. Management Review

8.2.2.2 The Internal Auditor

Plans internal audits based upon the criteria listed in section 8.2.2.1 of this procedure. The ISO MR completes the Internal Audit Schedule (Form 32) and ensures that the schedule is followed in order to complete the yearly audit cycle of all major elements of the standard. The ISO MR may change the audit schedule based upon the importance and status of activities and documents these changes on the audit schedule.

8.2.2.3 Auditor Independence

The ISO MR ensures the independence of the quality audits.

8.2.2.4 Competent Auditors

In order to be qualified/competent as an Internal Quality Auditor, personnel receive the appropriate training and qualifications.

8.2.2.5 Audit Notification

The ISO MR notifies all parties concerned in advance of any audit. All pertinent information, including the scope of the audit, is documented on the Audit Notification (Form 34).

8.2.2.6 Working papers/documents

The ISO MR ensures that the following working papers are available to the internal auditor:

- Internal Quality Audit Questionnaire (Form 17)
- Internal Quality Audit Observation (Form 18)
- Copy of the element and/or procedure
- Copy of ISO 9001 standard
- Copy of past audit results

8.2.2.7 Conducting Audits

The internal auditor uses the working papers and documents listed in 8.2.2.6 to conduct the audit. The auditor completes an Internal Quality Audit Observation (Form 18) for each nonconformance discovered during the internal audit.

8.2.2.8 Reporting Audit Results

The ISO MR determines whom the Corrective Action section of the Internal Quality Audit Observation Form (Form 18) will be assigned to for each deficiency observed. Upon review, the appropriate department manager tracks the corrective action to completion. The plant manager analyzes and presents the results of all internal audits to the MRC.

8.2.2.9 Timely Corrective Action

The Department Manager is responsible for determining and implementing the appropriate corrective action without undue delay.

8.2.2.10 Corrective Action Effectiveness

The ISO MR/ISO Coordinator verifies the effectiveness of the Internal Quality Audit Observation Form (Form 18) as many as two times. If after the second verification the corrective action is judged to be effective, the Internal Quality Audit Observation Form (Form 18) is closed. If ineffective, the process will begin again.

8.2.3 Monitoring and Measurement of Process

The MRC has established suitable methods for monitoring and measuring processes within the QMS. These methods are identified in the Quality Objective Results (Form 33) or during MRC meetings. These methods are discussed at MRC meetings to evaluate if they are achieving planned results. Corrections or corrective actions are initiated when analysis indicates that planned results are not being achieved.

8.2.4 Monitoring and Measurement of Product

The MRC has defined product characteristics and monitors and measures these characteristics throughout the product realization process in order to ensure conformance to customer specifications. The details of these activities are located in the production work instructions. Product is not released until all process steps have been completed and verification of conformance to requirements has been verified. Records indicating the person authorizing release of the product are maintained.

8.3 Control of Nonconforming Product

The Organization identifies and controls nonconforming product in order to prevent unintended use or delivery.

8.3.1 Sources of Nonconforming Product

Identified sources of nonconforming product are:

- Incoming Raw Materials

- Product In Process
- Final Product
- Customer Returns
- Cleanout Material
- Fluid Plant Waste

8.3.2 Identification

Any employee who suspects or detects a nonconformity immediately notifies the plant manager. The plant manager determines if a Hold Tag (Form 10) is initiated for suspect product or a Nonconformance/Corrective Action (Form 12) is initiated for nonconformance product. Screened tailings are placed in a "No Ship" designated area and no identification is required.

8.3.3 Segregation

Each plant manager ensures that all suspect, screened tailings and nonconforming product is segregated in a designated "No Ship" area.

8.3.4 Nonconforming product review

Each Plant Manager ensures that all nonconforming product is accurately reviewed. This review is documented on the Nonconformance/Corrective Action (Form 12).

8.3.5 Nonconforming product disposition

Each Plant Manager is authorized to decide the disposition of all nonconforming product. This disposition is documented on the Nonconformance/Corrective Action (Form 12), with signature and date.

Each Plant Manager assigns appropriate personnel to carry out the documented disposition. The assigned personnel sign and date the Nonconformance/Corrective Action (Form 12) upon completion and forwards this report to the ISO MR.

8.3.6 Disposition categories

The following are nonconforming product disposition:

1. Alternate use
2. Concession
3. Rework/Repair

8.3.7 Customer concessions

The VPM/ ISO MR contacts the customer to request concession for nonconforming product that may be used as is based upon the review and disposition. The appropriate disposition action is taken and is documented on the Nonconformance/Corrective Action (Form 12).

8.3.8 Control of reworked product

Each Plant Manager ensures that all reworked nonconforming product is re-inspected to meet customer specification. Instructions for rework are documented on the Nonconformance/Corrective Action (Form 12).

8.3.9 Nonconforming product analysis

Each plant manager reviews and analyzes all nonconforming product reports and presents this analyzed data for evaluation during management review meetings.

8.3.10 Re-inspection

Each Plant Manager ensures that all nonconforming products are dispositioned as rework/repair are reinspected and documents this on the Nonconformance/Corrective Action (Form 12).

8.3.11 Nonconforming product recall

The designated sales representative visits the customer to evaluate nonconforming product that is detected after delivery. If necessary, the sales representative will make the appropriate arrangements to facilitate the return of the suspect product. The VPM/ISO MR ensures that any related suspect in house product is segregated and inspected in order to guarantee that no further nonconforming product is delivered to a customer. When necessary, the VPM/ISO MR initiates corrective action for customer rejections.

8.4 Analysis of Data

The MRC analyzes the data collected in the following areas:

- Non-conformities including product/process/system deficiencies)
- Supplier Evaluation
- Customer Satisfaction

- Quality Objectives
- Corrective Action
- Trends for preventive action
- Audit Results
- Any other critical requirements in enhancing customer satisfaction as identified by the MRC.

8.5 Improvements

8.5.1 Continual Improvement

The MRC ensures that the effectiveness of the quality management system is continually improved through the application of the quality policy, monitoring and achievement of quality objectives, audit results, analysis of data, corrective/preventive actions and the results of management reviews.

8.5.2 Corrective Action

This procedure consists of the following elements required for taking action to eliminate causes of nonconformities and to prevent reoccurrence of those nonconformities.

1. Review of customer complaints
2. Determination of level of risk
3. Corrective action initiation
4. Root cause analysis
5. Corrective action determination/implementation
6. Corrective action effectiveness
7. Corrective action results
8. Corrective action review

8.5.2.1 Review of Customer Complaints

Any CSR who receives a customer complaint, either verbally or in writing, initiates a written Nonconformance/Corrective Action (12) and forwards to the VPM/ISO MR for evaluation. The VPM/ISO MR analyzes the Customer Complaint and assigns to appropriate personnel for further investigation. The VPM/ISO MR ensures that investigation is complete, root cause analysis is determined and cost is assigned on Nonconformance/Corrective Action (12).

The VPM/ISO MR determines whether a formal Corrective Action is required as defined in 8.5.2.3. Results of all Customer Complaints are reviewed at MRC meetings.

8.5.2.2 Determination of level of risk

The MRC has determined that the criterion for initiating corrective action is dependent on each particular situation. This determination is based on the possibility of reoccurrence, impact on the customer, dollar value, safety, and product reliability.

8.5.2.3 Corrective action initiation

Any employee may request a formal Corrective Action by filling out the appropriate section of the Nonconformance/Corrective Action (Form 12) and forwarding it to the ISO Coordinator. A tracking number is assigned and given to the VPM/ISO MR who issues the Nonconformance/Corrective Action to the appropriate personnel for further investigation.

8.5.2.4 Root cause analysis

The assigned person is responsible for investigating and determining all possible root causes and documenting the most probable root cause on the Nonconformance/Corrective Action (Form 12).

8.5.2.5 Corrective action determination/implementation

The assigned person is responsible for determining/implementing the appropriate Corrective Action and documents this determination on the Nonconformance/Corrective Action (Form 12) and upon completion, forwards the form to the VPM/ISO MR.

8.5.2.6 Corrective action effectiveness

The Plant Manager/MRC member verifies the effectiveness of the corrective action implementation as many as two times. If after these two verifications the implementation is effective, the corrective action is closed. The Plant Manager/MRC member may

determine the first verification is effective with no further verification required. If any of the verifications prove ineffective, the Plant Manager/MRC member reissues the corrective action.

8.5.2.7 Corrective action results

The Plant Manager/MRC member ensures that the corrective action results are recorded on Nonconformance/Corrective Action (Form 12). A copy of all completed Corrective Actions is given to the corporate ISO Coordinator who maintains the corporate records.

8.5.2.8 Corrective Action Review

All the Corrective Actions are reviewed for effectiveness and this review is recorded on Nonconformance/Corrective Action (Form 12). These results are reported at MRC meetings. The Plant Manager/MRC ensures that all the follow-up actions are completed within the time limits, including any documentation change.

8.5.3 Preventive Action

This procedure consists of the following elements required for taking action to eliminate potential causes of nonconformities and to prevent occurrence of those potential nonconformities. The VPM/ISO MR and/or Plant Manager ensures that these preventive actions are appropriate to the effects of the potential nonconformities that effect the performance of the organization and effectiveness of the QM:

1. Sources of Preventive Action
2. Determination of potential Preventive Action
3. Potential Cause Analysis
4. Preventive Action determination/implementation
5. Preventive Action effectiveness
6. Records of preventive action results
7. Review of preventive action

8.5.3.1Sources of Preventive Action

The following are sources for Preventive Actions

- Reoccurring customer complaints
- Quality trends
- Management review meetings
- Internal / External Audit results
- Reduction in sales
- Loss of existing customers
- Employee turnover

8.5.3.2 Determination of potential Preventive Action

Any employee of the Organization who identifies a potential non-conformity may request a Preventive Action by filling out the appropriate section of the Preventive Action (Form 14), and forwarding it to the ISO Coordinator. A tracking number is assigned and given to the VPM/ISO MR who issues the Preventive Action to the appropriate personnel for further investigation.

8.5.3.3 Potential cause analysis

The assigned person is responsible for investigating and determining all potential root causes and documenting the most probable potential root cause on the Preventive Action (Form 14).

8.5.3.4 Preventive Action determination/implementation

The assigned person is responsible for determining /implementing the appropriate Preventive Action and documents this determination on the Preventive Action (Form 14) and upon completion, forwards the form to the VPM/ISO MR.

8.5.3.5 Preventive Action effectiveness

The Plant Manager/MRC member verifies the effectiveness of the preventive action implementation as many as two times. If after these two verifications the implementation is effective, the Preventive Action is closed. The Plant Manager/MRC member may determine the first verification is effective with no further verification required. If any of the verifications prove ineffective, the Plant Manager/MRC member reissues the preventive action.

8.5.3.7 Records of Preventive Action results

The Plant Manager/MRC member ensures that the results of the Preventive Action are recorded on the Preventive Action (Form 14). A copy of all completed Preventive Actions is sent to the corporate ISO Coordinator who maintains the corporate records.

8.5.3.8 Review of Preventive action

All the Preventive Actions are reviewed for their effectiveness and this review is recorded on the Preventive Action (Form 14). These results are reported at MRC meetings. The Plant Manager/MRC ensures that all the follow-up actions are completed within the time limits, including any documentation change.

RECORDS

Form # 12 Each Plant Manager and the ISO Coordinator retain the Nonconformance/Corrective Action (Form 12), for a minimum period of one year.

Form # 14 Each Plant Manager and the ISO Coordinator retain the Preventive Action (Form 14) for a minimum period of one year.

Form # 15 The ISO Coordinator retains the Customer Survey (Form 15) for a minimum of one year.

Form # 17 The ISO Coordinator retains the Internal Quality Audit Questionnaire (Form 17) for a minimum of one year.

Form # 18 The ISO Coordinator retains the Internal Quality Audit Observation Form (Form 18) for a minimum of one year.

Form # 32 The ISO Coordinator retains the Internal Audit Schedule (Form 32) for a minimum of one year.

Form # 33 The ISO Coordinator retains the Quality Objective Results (Form 33) indefinitely.

Form # 34 The ISO Coordinator retains the Audit Notification (Form 34) for a minimum of one year.