

**QA.A Sample Copy of Software Quality Policy****Quality Policy**

We will strive towards delivering to our clients on-time, defect-free products and services that are cost-effective and will satisfy their requirements.

**IMPLEMENTATION**

1. All employees are required to understand who their clients are and what they expect in terms of products and services that meet their requirements and satisfy the organization's policy and business practices.
2. In addition, we will continuously review and improve our standards and processes to add value to our products and services for our clients.
3. We will strive to measure our progress through simple and practical means.

**STANDARD**

Our Quality Management Standard will be based on the principles embodied in ISO 9001 standards. We will become familiar with these principles, adopt and apply them in a practical manner to the work place.

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## **QA.B Basic Qualifications of the Software Quality Assurance Manager**

The SQA manager in a major corporation is affectionately known in the department as “Captain Quality”. While this designation may seem humorous, it is indicative of the enthusiasm and belief in quality that is needed to make the function successful. If the quality manager is not a believer in the function, it will be difficult to convince the rest of the department that quality is important.

The quality analysts are in the business of selling quality. The product is good, and no one is against it, but it must compete with the other concerns and principles of management. If management evaluates personnel on non-quality factors such as schedules and budgets, then quality will be a difficult product to sell.

The SQA manager should serve as the quality conscience of the department. It is this individual who should lobby for quality information services objectives and who recommends the means for achieving those quality objectives. It is a good position for a crusader. The wrong individual may waste resources just monitoring compliance to policies regardless of their merit and value to the information services department. The wrong person may also get involved in quality control and ignore the assurance function.

The individual appointed manager of the quality function should be:

- A spokesperson for quality in the information services department
- Enthusiastic about the function as a vehicle for achieving quality
- Self-motivated and aggressive
- Objective and open-minded about different approaches to information services methods and application design
- A good communicator, both written and oral
- Able to work well with and through people
- Willing to let others accept credit for his/her recommendations
- Experienced, knowledgeable and skilled in project management

## **QA.C Sample Copy of SQA Charter**

### **QA.C.1 Mission**

QA serves as the catalyst/facilitator on the one hand and the assessor/auditor on the other in accomplishing the responsibilities and objectives of the IT Quality Policy in the IT Division.

### **QA.C.2 Strategy**

Through participation and close communication with external and internal IT and user organizations, committees, management and staff, promote and ensure the use of best practices in Systems Engineering, Facilities Management and Management Services.

### **QA.C.3 Customer Base**

The QA customer base includes the following key areas:-

- Organizationwide - User Departments and Sections, Audit, Data Security and Wagering Systems User Group (WSUG).
- IT Division - IT Planning Group (ITPG), IT Standards Group (ITSG) and IT Departments and Sections.
- IT Projects - Project Steering Committees, Project and Systems Management Teams.

### **QA.C.4 Responsibility**

By working with its customers, and where resources permit, QA is responsible for:-

IT Projects

QA.C.4.1 Providing the expertise and assisting project managers in building effective Quality Plans on IT projects and monitoring adherence.

QA.C.4.2 Instituting, facilitating and/or directly conducting formal systems requirements review to ensure completeness, clarity and testability.

QA.C.4.3 Instituting, facilitating and/or directly conducting formal reviews at critical junctures of IT projects and tracking outstanding issues.

QA.C.4.4 Consulting with project managers on a regular basis to ensure their awareness of quality methods and techniques as they relate to their currently assigned projects.

QA.C.4.5 Conducting periodic post project reviews on installed systems, providing independent, objective measurement and reporting of benefits realisation.

#### System Test Coaching

QA.C.4.6 To provide coaching and assistance to end users on managing and conducting system tests.

#### Promotion and Training

QA.C.4.7 Preparing and conducting seminars/training sessions to its customers to promulgate IT quality awareness.

QA.C.4.8 Communicate quality-related news and information to IT staff.

QA.C.4.9 Evaluating IT activities regularly for the purpose of identifying areas where education is required and recommend appropriate educational or training needs to senior management.

#### Standards

QA.C.4.10 Providing the management, administration and technical expertise in running the IT Standards Group (ITSG) including:-

- forming cross-functional teams in developing and improving on IT standards, procedures, guidelines and tools being used.
- Establishing and maintaining the IT Standards Library that houses all descriptions of IT standards, procedures, guidelines and tools in use.
- Researching the use of IT standards in other IT installations.

QA.C.4.11 Benchmarking IT practices to internationally recognized quality management standards such as ISO 9001 and SEI-CMM providing the basis for continuous process improvement.

QA.C.4.12 Establishing and managing the SQA Library which serves as the “Body of Knowledge” on Quality.

#### Metrics

QA.C.4.13 Researching, evaluating and implementing quality, productivity, process and other metrics that provide the necessary statistics for evaluating how well services are provided by IT and where improvement efforts may be directed.

#### Software Tools

QA.C.4.14 Researching, evaluating, implementing and monitoring the use of tools in development and testing of software.

#### IT Services

QA.C.4.15 Evaluating, recommending and monitoring improvements to IT services so that communication with our users will increase, and user requirements and IT service level commitments will be met. This includes facilitating the establishment of Focus Groups as required.

#### IT Quality Representation

QA.C.4.16 Representing the IT Division on all matters related to quality with internal (Audit, Security, etc.) as well as external (QAI, SEI, SPIN, SPICE, HKPC etc.) groups and organizations.

QA.C.4.17 Providing consulting support and advice to organizations or groups on matters related to IT quality management when appropriate approval is obtained from the organization.

#### Audit

QA.C.4.18 Establishing a quarterly audit program to verify compliance to approved and documented IT standards and procedures and determine the completeness and effectiveness of IT practices in providing quality products and services.

#### QA.C.5 Authorities

In addressing quality issues within the IT Division, SQA is authorized to:

- QA.C.5.1 Select, define and deploy SQA programs that will best address and achieve the objectives of the IT Quality Policy.
- QA.C.5.2 Report on specific quality issues to appropriate management bodies or committees eg ITPG, Project Steering Committees, etc.
- QA.C.5.3 As required, access freely and in a timely manner:
- plans, records, documents, books, correspondence, contracts, systems documentation.
  - results and status of quality control activities.
  - employees for discussions as required.
  - individuals or companies with whom the IT Division does business.
  - all physical property owned or controlled by the organization.

## QA.D Suggestions for implementing SQA Related Tasks

### QA.D.1 Task 1: Reward Quality

People do those actions for which they are rewarded. If your company wants quality to happen, it will reward the people who make it happen. Projects that produce defect-free software should be rewarded. Unfortunately, many information services managers now reward crisis management as opposed to quality management.

All rewards do not have to be monetary rewards. However, quality should be rewarded with raises and promotions. These are not the only rewards, though, that can be used to reward the production of quality work. One organization has a high-level manager in charge of non-monetary rewards.

Some of the non-monetary rewards that can be given for quality performance include:

- Special recognition, such as a trophy, picture on the departmental bulletin board, or special recognition at departmental meetings
- Time off with pay
- Attendance at conferences
- Choice of projects on which to work
- Special parking areas
- Preferred office location
- Extra office equipment/furniture/decorations

### QA.D.2 Task 2: Use Concepts from Related Disciplines

We can apply the effectiveness principles in the book *In Search of Excellence* to the information services quality group. The eight stated principles are customized for quality below:

QA.D.2.1 Establish a proactive group instead of a reactive group. The quality function must prevent poor quality from happening, rather than detect it after it has happened.

QA.D.2.2 Listen to the user – intently and regularly. The quality group serves both the information services department and

users of information. These users not only can define what quality is, but are the vehicles for making quality happen.

- QA.D.2.3 Emphasize meeting objectives, not using standardized design methodologies. Everything worth doing is not worth doing at the maximum cost. Once the business objectives have been stated in measurable terms, the project personnel should be free to innovate in accomplishing those objectives in the most cost-effective manner. Remember that objectives define quality.
- QA.D.2.4 People within the quality group are the most important quality resources. It is far better to have one good person who is an innovator and a self-starter than a large group of followers. People make quality happen. Getting the right people is essential.
- QA.D.2.5 Demonstrate the value of quality. The company's beliefs in quality must be demonstrable to the employees of the organization. Unless the staff believes in what is being done, they will only be concerned with meeting the "letter" of the standard as opposed to the intent.
- QA.D.2.6 Leverage strength. The quality group should do what they do best. There are many ways to achieve quality, but invariably the best way will be the way which the quality group can do best. Find out the strengths of the staff and build on those strengths.
- QA.D.2.7 Operate with a "lean" staff. When the quality group is slightly understaffed, it must concentrate on the high-payback activities. Excessive staff may result in an involvement in activities which do not offer a good return on investment.
- QA.D.2.8 Download responsibilities. Tasks should be performed at the lowest possible organizational level. The motivational aspects of downloading responsibility in the quality group will be reflected in increased enthusiasm of the quality staff for quality.

### QA.D.3 Task 3: Demonstrate the Value of Quality

The successful quality group can demonstrate both short-term and long-term payback from quality programs. Thus, the return-on-investment action is twofold. First, the quality function must put into place sufficient short-term programs to gain an immediate return on investment. Second,

the quality function must build for the long-term quality payback. The successful quality manager installs programs that put quality on a pay-as-you-go basis.

#### *VALUE-ADDED PROGRAM*

A value-added program must address both short- and long-range benefits. A two-step program to accomplish this objective is:

- Step 1 – Initiate programs to provide a short-term return on investment from quality programs
- Step 2 – Demonstrate long-term quality benefits.

#### *Step 1: Initiate Programs to provide a Short-term Return on Investment from Quality Programs*

Short-term benefits are normally easy to find in most information services groups. Burrill and Ellsworth, in the book *Quality Data Processing*, state that over 50 percent of information services costs are wasted, and thus provide a long base of both short- and long-term savings. The failure to follow quality practices results in pockets of inefficiency. The quality manager must mine these “pockets” to both demonstrate the value of doing it right the first time, and to show costs/benefits from quality activities.

The short-term payback that the quality function can offer the information services manager is defect detection and correction. The quality group must find previously undefined or unmeasured defects, propose a corrective measure, and then quantify the savings as a quality value-added benefit.

The three categories of defects that have proved most beneficial to quality groups attempting to quantify the value added are:

- a) Operational defects
- b) Testing defects
- c) Change control defects

#### Operational Defect Analysis

Many operational defects are recorded. The most common recorded defect is the abnormal termination. Rarely are these accumulated by type and frequency. Until the magnitude of the problem is known, appropriate action will rarely be taken.

Abnormal termination are normally recorded on job accounting logs. In an IBM environment it is the SMF log. Using these logs, the quality group can quantify abnormal termination by type and frequency. Many groups do this on a monthly basis. On the job accounting system logs, these defects are identified by different record numbers, using a software package such as ABENDAID (a utility program developed for analyzing the SMF log). This analysis provides a listing by type and frequency of abnormal terminations. The type of abends exhibiting the largest frequency of occurrence should be identified and then solutions presented.

In many organizations, the two major causes of abends are space management and job control syntactical errors. Space management can usually be corrected by transferring the responsibility for space allocation to computer operations; and job control syntactical errors can be reduced by acquiring a package such as JCL FLOW to perform JCL syntactical analysis.

#### Testing Defects Analysis

Very few organizations perform good testing. It is a skill that is rarely taught, either in school or on the job. Studies by IBM show that application system defects occur in about the same type and frequency project after project. Therefore, if the quality group carefully monitors several projects they should be able to show defect patterns. These patterns of defects can also be obtained by carefully recording the type of problems that are occurring in production, and the type of repair maintenance requests that are being made by users.

The quality function can then use these defect patterns to propose more effective testing measures. The variance between what is being detected before improving the testing process, and what is detected afterwards, can be captured and presented as quality value added. The value of this defect reduction should be recorded as a cost associated with not detecting the problem during test (e.g., repair maintenance costs, system rerun costs, correction costs in user areas, etc.)

#### Change Control Defects Analysis

Change to applications is a time-consuming systems activity. The process of identifying and correcting defects through maintenance provides an opportunity for great improvement. The key method for improvement will be the utilization of the maintenance release method. The release method groups changes for implementation to be installed on predetermined dates – normally no more frequently than quarterly. Grouping changes in such a manner could result in huge cost savings.

These cost savings can be stated in terms of either increased number of changes installed within a given period of time (and the associated gain in opportunity) or the quality group can quantify the reduced effort required to install a change and then show these savings as quality value added.

In addition, costs/benefits can be obtained in the change control area from:

- More distinct and specific specification for the change
- Better prioritization of changes so that the more important changes are installed first
- Improvement of the systems maintenance process
- Better matching of the people skills needed to install a change to the individual assigned to make the change

### *Step 2: Demonstrate Long-term Quality Benefits*

The real benefits from quality practices are derived from improving the information processes. These benefits are associated with defect prevention as opposed to detection of defects which provide short-term returns.

Police detect violations of rules. Consultants show organizations how to prevent defects from occurring. Ask yourself who receives the greatest financial rewards, and who receives the greatest recognition from society – the policeman or the consultant?

Defect prevention means stopping the defects from occurring during the execution of a process. The easiest method to achieve defect-free products is to develop a process which avoids making defects. To accomplish this goal, the quality group must identify the cause of defects, and then encourage changes to the processes so that defects no longer occur. For example, if programs are abnormally terminating because of space limitations, that problem could be eliminated if there were appropriate processes to measure the amount of available space and make adjustments before space limits were reached.

#### QA.D.4 Task 4: Raise Information System Quality to an Organization-wide Program

It has been predicted that during the 1990s approximately 90 percent of all information processing will occur outside the information services function. The rapidly growing use of microcomputers and local area networks (LANs) is indicative that processing is being moved from a centralized function to being distributed throughout the organization.

The information quality group that remains inward oriented will not survive. That same fate will occur to those information functions that fail to actively work with lead user processing representatives. In both cases, another corporate function will assume the needed responsibilities.

Centralized information services has produced large, well-controlled computer systems. These have been built using elaborate system design methodologies. The premise behind these concepts has been the consolidation of functions with the strong need for control over processing. Those same constraints do not apply to client-server processing.

#### QA.D.5 Task 5: Market Quality

Marketing is needed to create a continual awareness of the need for quality. It is not reasonable to assume that people will want quality or programs that are designed to produce defect-free products and services. It is necessary to persuade them through marketing efforts that the quality programs are programs they need today, and will need tomorrow.

Marketing is designed to help customers satisfy their needs. To do this, it is important to understand the changing needs of your customer. For the quality manager, all parties involved in information systems are customers.

The quality manager must determine the business needs, and then position quality to support achieving those needs. These quality programs must change as customer needs change. This will require three fact-gathering efforts to identify these changing needs:

- Conduct quality surveys among involved parties. These surveys should inquire about satisfaction with existing information services, and request insight into needed services.
- Visit your customers – The quality manager should walk around and visit both information services personnel and information services customer personnel. The visits should be to both management and clerical personnel to gain the same type of insight that was sought through the surveys.
- Develop a network among quality people in other corporations. Through this network find out what type of programs work and what types do not work, and attempt to duplicate the successes from other corporations' quality programs.

The principles of marketing are well established. They follow these steps:

- Establish a need
- Create/offer a product to satisfy that need
- Identify customer objections to that product
- Overcome objections
- Close the sale

The failure of many quality groups is directly attributable to the first step. No need for quality has been established. Quality offers a product/program to make quality happen, but without a need nobody wants the product.

Needs can exist for two reasons:

- An unsatisfied desire
- The person with the product creates the need for that product

Quality groups in an environment for which there is a desire for quality are fortunate. They can skip this action. In the majority of companies in which quality is merely a buzz word, quality must create that quality need.

Do not be misled by a management that says they want quality. This expression of a need does not mean a true need. A manager that says he/she wants quality may mean he or she wants someone to enforce the policies and procedures, as opposed to adopting and implementing the 16 quality principles as stated in the Certified Quality Assurance (CQA) program.

It is important to note that a need is always personal. Forget business objectives and mission, concentrate on the satisfaction of personal needs. Your manager's needs may be to get promoted, to get more recognition, and so forth. Be sure you have identified the personal needs of the key players in the information services environment. Then relate the importance of quality information services in satisfying that personal need.

Some of the marketing techniques that can be used include:

- Quality group newsletters
- Quality group columns in departmental newsletters

- Errors alerts – indicating uncovered problems and how to overcome those problems
- Zero-defect days – days in which quality performance is recognized
- Quality fairs – special programs in which products are introduced and demonstrated to appropriate user of those products, for example, new tools
- Noontime lunches (sometimes called noon-time matinees) – reserving special tables at which qualified personnel will be available at lunchtime to discuss quality programs, tools, standards, and other information important to information services personnel
- Special programs – invite information services people to present new methods or discuss tools or other quality programs
- Quality councils – one of the best methods is to involve your management in a council to help you make quality happen.

#### QA.D.6 Task 6: Use Quality Practices

Effective quality practices are needed by the quality group. The following four practices are recommended as typical of those that should be followed by the quality professional:

- Making quality tradeoffs – optimizing multiple objectives by ranking importance
- Defining the probability of success – using risk analysis as a management tool
- Manipulating the contributors to quality – changing producer methods to meet customer's goals
- Express quality quantitatively – measuring quality is essential to quality improvement

## **QA.E Brief Discussion of Areas where SQA Tasks and Activities may be planned for a project**

### **QA.E.1 Management**

Analysis of the managerial structure that influences and controls the quality of the software is an SQA activity. The existence of an appropriate organizational structure should be verified. It should be confirmed that the individuals defined in that structure have defined tasks and responsibilities. The organization, task and responsibilities will have been defined in the software organization or project organization chart.

### **QA.E.2 Documentation**

The documentation plan that has been defined in the software project plan should be analyzed. Any departures from the documentation plan defined in these standards should be scrutinized and discussed with project management.

### **QA.E.3 Standards, practices, conventions and metrics**

Adherence to all standards, practices and conventions should be monitored. Deviations and non-conformance should be noted and brought to the attention of project management. SQA personnel may assist project management with the correct interpretation of standards, practices and conventions.

A 'metric' is a quantitative measure of the degree to which a system, component, or process possesses a given attribute. Metrics are essential for effective management. Metrics need to be simple to understand and apply to be useful.

Metrics for measuring quality, particularly reliability, and maintainability, should be specified. These metrics should be meaningful to users, and reflect their requirements. Additional metrics may be defined by the project. Values of complexity metrics may be defined in the design standards to limit design complexity, for example. Metrics may be defined in the software project plan to guide decision-making (e.g. if a software component exhibits more than three failures in integration testing then it will be re-inspected).

Metrics should relate to project objectives, so that they can be used for controlling it. All objectives should have metrics attached to them, otherwise undue weight can be given to those for which metrics have been defined. A project that counts the number of lines of code written,

but not the failure rate, is likely to concentrate on producing a large volume of code, and not reliability, for example.

#### QA.E.4 Reviews and audits

These standards call for reviews of the project deliverables. It also calls for the review and audit of the code during production. Many kinds of reviews are possible (e.g. technical, inspection and walkthrough). It should be verified that the review mechanisms are appropriate for the type of project. SQA personnel should participate in the review process.

#### QA.E.5 Testing activities

Unit, integration, system and acceptance testing of executable software is essential to assure its quality. Test plans, test designs, test case, test procedures and test reports are some of the required deliverables. These should be reviewed by SQA personnel. They should monitor the testing activities carried out by the development team, including test execution. Additionally, other tests may be proposed to be carried out by SQA personnel.

#### QA.E.6 Problem reporting and corrective action

The problem handling procedure described in these Standards is designed to report and track problems from identification until solution. SQA personnel should monitor the execution of the procedures and examine trends in problem occurrence.

#### QA.E.7 Tools, techniques and methods

These Standards call for tools, techniques and methods for software production to be defined at the project level. It is an SQA activity to check that appropriate tools, techniques and methods are selected and to monitor their correct application.

SQA personnel may decide that additional tools, techniques and methods are required to support their monitoring activity.

#### QA.E.8 Code and media control

These Standards require that the procedures for the methods and facilities used to maintain, store, secure and document controlled versions of the identified software, be defined. SQA personnel should check that appropriate procedures have been defined in the software configuration management plan and carried out.

#### QA.E.9 Supplier control

Software items acquired from external suppliers must always be checked against the standards for the project.

QA.E.10 Records collection, maintenance and retention

These standards define a set of documents that must be produced in any project. Additional documents, for example minutes of meetings and review records, may also be produced. SQA personnel should check that appropriate methods and facilities are used to assemble, safeguard, and maintain all this documentation for at least the life of the project.

QA.E.11 Training

SQA personnel should check that development staff are properly trained for their tasks and identify any training that is necessary.

QA.E.12 Risk management

All projects must identify the factors that are critical to their success and control these factors. This is called 'risk management'. Project management must always analyze the risks that affect the project. Their findings are documented in the software project plan. SQA personnel should monitor the risk management activity, and advise project management on the methods and procedures to identify, assess, monitor, and control areas of risk.

**QA.F Documentation Template for the Quality Plan for a project**

- QA.F.1 Purpose of the plan
- QA.F.2 Reference documents
- QA.F.3 Management  
*Describe how the implementation of the project plan will be verified.*
- QA.F.4 Documentation  
*Describe how the conformance of the documentation to these standards, and any project conventions, will be verified.*
- QA.F.5 Standards, practices, conventions and metrics  
*Identify the standards, practices and conventions to be applied.  
State how compliance will be monitored.  
List the metrics to be applied and the approach to data collection.*
- QA.F.6 Review and audits  
*Describe how the conduct of technical reviews, inspections, walkthroughs and audits will be monitored*
- QA.F.7 Test  
*Describe how the testing activities will be monitored*
- QA.F.8 Problem reporting and corrective action  
*Describe how adherence to problem reporting procedures will be monitored, and how the adequacy of the response of the project will be checked.*
- QA.F.9 Tools, techniques and methods  
*Identify the tools, techniques and methods used.*
- QA.F.10 Code control  
*Describe how adherence to the procedures for storing configuration items (CIs) in software libraries will be monitored.*
- QA.F.11 Media control  
*Describe how adherence to the procedures for storing media containing configuration items (CIs) will be monitored.*
- QA.F.12 Supplier Control  
*Describe how adherence to the supplier control procedures will be monitored.*
- QA.F.13 Records collection, maintenance and retention

*Describe how the retention of all records, such as reports and configuration status accounts, will be monitored.*

QA.F.14 Training

*Describe how the level of training of all development staff will be checked.*

QA.F.15 Risk Management

*State how the risk management process described in the project plan will be monitored.*

QA.F.16 Outline of the rest of the project

*Updated for each and every phase in the SLC.*

**QA.G Quality Assurance Group Role Worksheet**

ROLE ELEMENT	QUALITY ASSURANCE TASK	RATING					COMMENTS
		Very Important	Important	Neither Important nor Unimportant	Unimportant	Very Unimportant	
REVIEW APPLICATION	<p style="text-align: center;"><b>GOALS</b></p> <ol style="list-style-type: none"> <li>1. Determine if project goals are realistic</li> <li>2. Determine if project goals are achievable</li> <li>3. Determine if project goals are compatible with MIS Dept. Goals</li> <li>4. Determine if project goals are compatible with organization goals</li> <li>5. Determine if project goals are compatible with other systems</li> <li>6. Determine if system design will achieve project goals</li> <li>7. Controls ensure compliance with the intent of management</li> </ol> <p style="text-align: center;"><b>METHODS</b></p> <ol style="list-style-type: none"> <li>8. Determine if program design will meet system specifications</li> <li>9. Determine if testing plan is adequate</li> <li>10. Determine if conversion plan is adequate</li> </ol>						

**QA.G (cont'd ..)**

ROLE ELEMENT	QUALITY ASSURANCE TASK	RATING					COMMENTS
		Very Important	Important	Neither Important nor Unimportant	Unimportant	Very Unimportant	
	11.Determine if compliance with project justification standards 12.Determine if compliance with system standards 13.Determine compliance with programming standards 14.Determine compliance with control standards 15.Certifying systems prior to their attainment of production status 16.Reviewing the adequacy of security 17.Verify system is on time and within budget 18.Recommend specific controls 19.Determine compliance with documentation standards 20.Determine compliance with testing standards 21.Determine compliance with conversion standards  PERFORMANCE 22.Determine that the system is cost-effective						

**QA.G (cont'd ..)**

ROLE ELEMENT	QUALITY ASSURANCE TASK	RATING					COMMENTS
		Very Important	Important	Neither Important nor Unimportant	Unimportant	Very Unimportant	
PROVIDE TECHNICAL ADVICE	23. Determine that the system optimizes people and machines 24. Determine that the system optimizes hardware and software 25. Determine that the testing procedures are efficient 26. Determine that the conversion procedures are efficient 27. Measure hardware performance 28. Measure software performance  1. Advise on use of hardware 2. Advise on use of software 3. Advise on system design 4. Advise on program design 5. Advise on use of controls 6. Advise on test procedures 7. Advise on conversion procedures 8. Advise on MIS Department standards and guidelines						

## QA.G (cont'd ..)

ROLE ELEMENT	QUALITY ASSURANCE TASK	RATING					COMMENTS
		Very Important	Important	Neither Important nor Unimportant	Unimportant	Very Unimportant	
REVIEW AND BUILD A QUALITY ENVIRONMENT	9. Advise on user department standards and guidelines 10. Advise on organization standards and guidelines 11. Advise users on data processing capabilities 12. Advise executive management on data processing capabilities 13. Advise data processing management on data processing capabilities 14. Advise on intersystem interfaces  1. Review organization structure 2. Review job descriptions 3. Review system standards 4. Review programming standards 5. Review documentation standards 6. Review testing standards 7. Review conversion standards 8. Review budget and cost procedures 9. Review system change procedures 10. Review supervisory procedures						

## QA.G (cont'd ..)

ROLE ELEMENT	QUALITY ASSURANCE TASK	RATING					COMMENTS
		Very Important	Important	Neither Important nor Unimportant	Unimportant	Very Unimportant	
DEVELOP STANDARDS AND GUIDELINES	11. Review operating procedures 12. Review quality of technical work 13. Meet regularly with DP management to review problem 14. Train MIS personnel 15. Monitor project status  1. Develop and/or improve justification standards 2. Develop and/or improve system standards 3. Develop and/or improve documentation standards 4. Develop and/or improve programming standards 5. Develop and/or improve testing standards 6. Develop and/or improve conversion standards 7. Develop and/or improve hardware standards 8. Develop and/or improve software standards 9. Develop and/or improve purchased application standards 10. Develop and/or improve operating standards						

## QA.G (cont'd ..)

ROLE ELEMENT	QUALITY ASSURANCE TASK	RATING					COMMENTS
		Very Important	Important	Neither Important nor Unimportant	Unimportant	Very Unimportant	
ANALYZE MIS ERRORS	11. Develop and/or improve system development process standards 12. Develop and/or improve performance standards 1. On call to study all errors 2. Issue error alerts for common problems 3. Quantify errors and issue regular error reports 4. Develop recommendations / solutions for identified errors						