



NASA'S
QUALITY
AND
EXCELLENCE
AWARD
1992

(NASA-TN-107535) GEORGE M. LOW TROPHY N92-25559
NASA'S QUALITY AND EXCELLENCE AWARD, 1992.
APPLICATION GUIDELINES: LARGE BUSINESS
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APPLICATION GUIDELINES

LARGE BUSINESS

TROPHY TEXT

This trophy is awarded
in memory of
George M. Low,
who greatly contributed
to the early
development of NASA
Space Programs
during his 27 years of
Government Service.

The medallion,
which is embedded
in the shape of an
Apollo Command Module,
has alloyed in it
a portion of an
artifact flown to
the moon and back on
Apollo 11 -
the first manned lunar
landing mission
July 16-24, 1969.

PREFACE

The George M. Low Trophy is the premier quality and productivity award in the aerospace industry. It recognizes outstanding achievements that go far beyond meeting minimum or contract standards - it acknowledges excellence in all areas.

However, the George M. Low Trophy program offers applicants much more than the opportunity to receive a prestigious award. It offers a roadmap for self-evaluation that will identify both strengths and weaknesses in an organization's management attitudes and processes. Previous applicants report the effort of applying is well-rewarded.

For NASA, the aerospace community, and the Nation to maintain our position as leaders in space and technology, continuous improvement must be an integral part of our organizational culture. Completing the George M. Low Trophy application process is an important step toward competitiveness and ability to respond to customer needs.

George A. Rodney
Associate Administrator,
Office of Safety and Mission Quality

MESSAGE FROM THE ADMINISTRATOR

Aim for excellence and reward those who persevere. These are the tenets for the NASA George M. Low Trophy award process. In 1990, the NASA Excellence Award for Quality and Productivity was renamed for Mr. George M. Low, a former NASA Deputy Administrator whose contributions to our Nation's space program exemplify a quality philosophy that was far ahead of its time.

The current NASA approach to quality management reflects and builds on the precepts conceived by this distinguished scientist and educator over 30 years ago. With the George M. Low Trophy, we continue his vision of excellence by recognizing those organizations that demonstrate a singular commitment to quality.

This award acknowledges the pivotal role of our contractors, subcontractors, and suppliers in meeting the exacting demands of the Nation's space program. Through the rigorous award process, we communicate to the organizations the Agency's equally demanding criteria for quality and productivity. These NASA requirements help to maintain the technology leadership and world-class performance of the American aerospace industry. The George M. Low Trophy is awarded to the companies, both large and small, whose programs meet or exceed these expectations.

The foresight that George Low exhibited so consistently is a part of our heritage at NASA that we are proud to honor. The measurable world-class quality and productivity of our industry partners clearly show the value of translating foresight and technological skill into excellence. We want to encourage all eligible businesses, large and small, to participate in the George M. Low Trophy award process.

Richard H. Truly
Administrator

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I. INTRODUCTION

The George M. Low Trophy is awarded to current NASA contractors, subcontractors, and suppliers in the aerospace industry who have demonstrated sustained excellence and outstanding achievements in quality and productivity for three or more years. The objectives of this award are to:

- increase public awareness of the importance of quality and productivity to the Nation's aerospace program and industry in general;
- encourage domestic business to continue efforts to enhance quality, increase productivity, and thereby strengthen competitiveness;
- provide the means for sharing the successful methods and techniques used by the applicants with other American enterprises.

The award may be given to as many applicants as demonstrate the level of excellence required over the period of time specified.

The award program is managed by the NASA Quality and Productivity Improvement Programs Division and is jointly administered by NASA and the American Society for Quality Control.

The purpose of having separate criteria for small business is to acknowledge the difference in documentation and availability of resources between large and small business. However, the best organizations, irrespective of size, will already have processes that address all of the major criteria areas described in this Guideline document. The degree of complexity and sophistication of these processes will vary with the size and requirements of the organization.

Prospective and active participants are encouraged to contact either the NASA or ASQC program office to obtain process or criteria clarification.

II. CANDIDATE ELIGIBILITY

The candidate is defined as the facility/organization having the NASA contract/subcontract and must meet all of the following criteria:

A. GENERAL (Large Business)

All NASA contractors, subcontractors, and suppliers are eligible irrespective of size or the nature of their product/service, with these limitations:

- The applying organization must be within the United States.
- Aggregate sales to NASA or prime contractor for 1989, 1990, 1991 should exceed \$1,000,000 with at least \$250,000 of sales in each of the three years. Applicants may also qualify if they meet all other criteria and have at least 50% of their total sales with NASA.
- There should be a minimum of 50 full-time employees (or 100,000 employee hours) engaged in NASA work.
- Applicants are considered as the facility/organization with the NASA contract or subcontracts, rather than the entire corporation.
- The applying organization should function as a self-sustaining profit center with a majority of the resources at one location.
- Small divisions of large corporations are presumed to receive corporate support and/or resources and thereby qualify as large businesses. These divisions will be deemed eligible if they exceed \$250,000 in sales and 25 employees each of the three years and they must address the large business criteria.

III. SELECTION PROCESS

MILESTONE SCHEDULE

October, 1991

Award application guidelines available.

December 2, 1991

Candidate submits nomination letter to American Society for Quality Control (ASQC) with brief statement of eligibility compliance.

January 2, 1992

Evaluation Committee completes review of candidate. This includes review by field installation(s) and prime contractor(s) if candidate is subcontractor. Candidate notified of Committee's decision.

March 2, 1992

Successful applicant submits application report (35-page maximum) to ASQC.

May 1, 1992

Evaluation Committee reviews application report to select finalists based on whether candidates' organizational commitment and accomplishments meet the award standards.

June-August, 1992

On-site visits to finalists' organizations.

August, 1992

Evaluation Committee meets to review results of on-site validation visits and prepare findings for review by the NASA Total Quality Management (TQM) Steering Committee.

October, 1992

Selection of annual award recipient(s) made by NASA Administrator based on recommendations of the TQM Steering Committee.

November, 1992

Finalists recognized at reception at Ninth Annual NASA/Contractors Conference. NASA Administrator announces award recipient(s).

November-December, 1992

Presentation of award by NASA Administrator in special ceremony held at recipients' location.

PROCESS PARTICIPANTS

A. *Evaluation Committee Membership*

Headquarters Representatives
Field Center Representatives
American Society for Quality Control Representatives
Government/Industry/Academic Advisors

B. *Validation Team Membership*

Selected members of the Evaluation Committee and other
selected representatives

C. *NASA TQM Steering Committee Membership*

Administrator (Chairperson)
Deputy Administrator
Associate Deputy Administrator
Assistant Deputy Administrator
Associate Administrator for Safety and Mission Quality
Assistant Administrator for Procurement
Comptroller
Assistant Administrator for Commercial Programs
Assistant Administrator for Headquarters Operations
General Counsel
Director of Small and Disadvantaged Business Utilization
Associate Administrator for Public Affairs
Assistant Administrator for Equal Opportunity Programs
Associate Administrator for Exploration
Inspector General
Associate Administrator for External Relations
Associate Administrator for Human Resources and Education
Associate Administrator for Space Science and Applications
Associate Administrator for Aeronautics, Exploration,
and Technology
Associate Administrator for Space Flight
Associate Administrator for Space Operations
Associate Administrator for Management
Director, Ames Research Center
Director, Goddard Space Flight Center
Director, Johnson Space Center
Director, Kennedy Space Center
Director, Langley Research Center
Director, Lewis Research Center
Director, Marshall Space Flight Center
Director, Stennis Space Center
Director, NASA Quality and Productivity Improvement
Programs Division (Executive Secretary)

IV. NOMINATION LETTER

Purpose

To determine if a candidate is qualified to continue in the evaluation process. Only candidates that meet or exceed the high standards of this award and satisfy the requirements of customer satisfaction in all areas of performance, schedule, and cost will be asked to submit an Application Report.

General Instructions

Each candidate is required to submit appropriate information to permit verification by the Evaluation Committee. Written comments should be concise, specific, and address the attributes and philosophies that qualify the applicant for consideration. Forty (40) copies shall be submitted to ASQC.

Specifications

- Pages must be standard size (8-1/2 by 11 inch).
- Printing must be standard elite type or equivalent (maximum 700-words/page).
- Reasons for award consideration (4.0) shall not exceed three (3) pages [Basic information (1.0), and eligibility compliance data (2.0), do not have limitations].

Format

Nomination Letters shall contain the following sections:

1.0 Applicant basic information

1.1 Name and street address of nominee (facility location applying, multiple locations so state).

1.2 Name, title, telephone, and facsimile number of the highest ranking member of management at the facility.

1.3 Name, title, telephone, and facsimile number of the award program contact and alternate contact.

1.4 Product/service furnished on all NASA contracts and type of contract.

1.5 Applying as a: ___ Large Business (check one)
 ___ Small Business

2.0 Eligibility compliance

- 2.1 The number of full-time employees at the facility location, and number of these personnel engaged in NASA activities for 1989, 1990, and 1991.
- 2.2 List all NASA contract(s) and amounts billed per year (by number) for the last three years, subcontractors list prime contractor and purchase order numbers and amounts. Provide total by year and indicate what percent of total sales or billings this represents.
- 2.3 A summary of award fee ratings or other performance indicators where applicable for the last three years.

3.0 Nomination questionnaire

All questions must be answered. If a question is marked "N/A" (not applicable), the nominee must state why these activities do not relate to the operation.

Although there is not a specified level of "yes" responses, nominees may need to examine their readiness for participation in this framework.

4.0 Reason for award consideration

The nominee should summarize accomplishments and justification for being considered for the award. Instances of sustained excellence and outstanding achievements in quality and productivity should be cited using the evaluation criteria as a frame of reference for a minimum of three years prior to the date of submission (three-page maximum).

Notification of approval for applicant status

Although notification of approval for applicant status will not occur until January 2, 1992, nominees may wish to begin preparation of application reports before this date to gain the advantage of additional preparation time.

QUESTIONNAIRE

Yes No N/A

1. Do all applicable performance ratings exceed 80% for 1989-1991?
2. Is there a scheduling system or process that analyzes performance and verifies requirements?
3. Are actual costs at or below contract levels or standard costs?
4. Is there an active cost reduction/avoidance program?
5. Is the quality reporting system clear, concise, accurate, responsive, and timely?
6. Is a formal hardware, software, or service quality assurance program in place?
7. Is there a documented audit program for quality assurance?
8. Is a vendor rating system used where applicable along with a program to involve vendors as full members of the TQM team or to help them develop their own programs?
9. Is there an effective system for communicating on performance and quality issues on a regular and timely basis?
10. Is there a method for communicating lessons learned to all affected parts of the organization?
11. Are efforts to incorporate state-of-the-art software and automation tools significant?
12. Is there a facility/equipment modernization plan with significant achievements toward goals?
13. Is there a program in place to improve resource utilization and environmental initiatives?
14. Is employee effectiveness measured as a means to stimulate improvement?
15. Is the commitment of top management to the total quality approach documented and demonstrated?
16. Is there a system used for tracking and disseminating quality and productivity goals and performance?
17. Are there adequate methods for multi-directional internal communication with documented results?
18. Do training efforts include job and management skills, career counseling, and education reimbursement?
19. Are teams a significant and empowered segment of the quality and productivity improvement efforts?
20. Are recognition methods motivational with good variety and commensurate with performance?
21. Does the health program include a wellness focus and safety training along with a strong safety record?
22. Is there an active affirmative action program with documented progress toward goals?

V. APPLICATION REPORT

GENERAL INSTRUCTIONS

- A. Candidates that have been verified as eligible applicants by the Evaluation Committee will be permitted to submit an Application Report. Each candidate is required to submit sufficient information so that a complete and thorough evaluation can be made by the Evaluation Committee. The application should be concise and factual and should contain, as a minimum, descriptive information to allow judgment of the overall commitment and accomplishments for the previous three calendar years and, where applicable, projections for future years.

The information in the application report must follow the sequence of the criteria elements and subelements. Each section must be identified with the corresponding element number to which it applies. The use of hard data is required where applicable or specifically requested.

- B. Information requested herein must be furnished fully and completely in compliance with instructions. The information requested and the manner of submission are essential to permit prompt evaluation of applications on a fair and uniform basis.

If a criteria element does not apply, it must be addressed by indicating "not applicable" and reason(s) must be stated. However, evaluators may disallow this claim if it is determined that the element should be applicable. If evaluators concur that a criteria element is "not applicable," those points will be subtracted from the total available points. The final score will be expressed as a percentage of the total points awarded versus the total available points. Any uncertainties may be discussed with the NASA or ASQC program office.

- C. Forty (40) copies of the Application Report shall be submitted to the American Society for Quality Control. **The deadline for receipt is March 2, 1992.**
- D. A supplementary document entitled "Supplementary Requirements Document" will be provided to all organizations that self-nominate. Additional copies may be requested from ASQC.

This document provides advice on data presentation, enhancement of criteria requirements, and a perspective of what evaluators need to objectively and accurately appraise your qualifications.

SPECIFICATIONS

Report sheets must be on standard size (8.5 x 11 inch) paper, with standard elite type or equivalent (maximum 700 words/page). Sheets may be printed on both sides. Application Reports shall be limited to a maximum of 35 single-sided pages. Dividers, covers, tab separators, title pages, table of contents, and sections A, B, and E of the required format are not counted in the page limitation.

The benefits of providing numerical data wherever possible cannot be emphasized too strongly. This allows an objective analysis and assures an equitable evaluation of all applicants. Quantifiable information should be presented in charts, graphs, or matrices to enhance perspective and depict trends.

Format

Reports shall contain the following sections in the order shown:

A. Introduction

- 1.0 Name and street address of applicant (facility location applying, multiple locations so state).
- 2.0 Name, title, telephone, and facsimile number of highest ranking member of management at the facility.
- 3.0 Name, title, telephone, and facsimile number of award report contact and alternate contact.
- 4.0 Number of full-time on-site employees and the percentage engaged in NASA business. An organization chart should be provided depicting organizational structure.
- 5.0 A listing of all NASA contract(s) (by number) for the last three years with the dollars billed per year on each. Vendors should list prime contractor and purchase order numbers and amounts. Include the applicable NASA center, name and phone number of technical monitor, and type of contract (e.g., Firm Fixed Price, Cost Plus Award Fee, etc.).
- 6.0 Applying as a: Large business (check one)
 Small business

- B. Applicant Products/Services supporting NASA contracts with an overview of all of the work performed, both NASA and commercial.**

C. Reporting of Accomplishments

1.0 Performance Achievements

2.0 Process Achievements

D. Summary of why the applicant deserves the award (include quantitative as well as qualitative data, as appropriate, to describe perceived strengths and highlight exceptional achievements). This summary is optional but will be included in page count.

E. A list of acronyms and definitions shall be provided.

SUMMARY OF EVALUATION CRITERIA

FOR GEORGE M. LOW TROPHY: NASA'S QUALITY AND EXCELLENCE AWARD

Evaluation Criteria Elements	Total Points
1.0 PERFORMANCE ACHIEVEMENTS	600
1.1 Customer Satisfaction	
1.1.1 Contract Performance	120
1.1.2 Schedule	50
1.1.3 Cost	50
1.2 Quality	
1.2.1 Quality Assurance (hardware/software/service)	120
1.2.2 Vendor quality assurance and involvement	50
1.2.3 External communication	40
1.2.4 Problem prevention and resolution	40
1.3 Productivity	
1.3.1 Software utilization	40
1.3.2 Process improvement and equipment modernization	30
1.3.3 Resources conservation	30
1.3.4 Effective use of human resources	30
2.0 PROCESS ACHIEVEMENTS	400
2.1 Commitment and Communication	
2.1.1 Top management commitment/involvement	100
2.1.2 Goals, planning, and measurement	80
2.1.3 Internal communication	40
2.2 Human Resource Activities	
2.2.1 Training	50
2.2.2 Work force involvement	50
2.2.3 Awards and recognition	40
2.2.4 Health and safety	40
TOTAL POINTS	1000

EVALUATION CRITERIA ELEMENT BREAKDOWN

Note: Data and information for this three year performance window (1989, 1990, 1991) is required in all criteria areas.

1.0 PERFORMANCE ACHIEVEMENTS

1.1 Customer Satisfaction—emphasis in this element is on measurable and verifiable satisfaction of NASA and/or prime contractor requirements for overall organizational performance.

1.1.1 Contract Performance

1.1.1.1 Provide evidence of how performance requirements are generated and communicated throughout the organization.

1.1.1.2 Provide objective data demonstrating the level of performance in essentially all areas of activity. Award fees, or other criteria should demonstrate degree of customer satisfaction.

1.1.1.3 Document continuous improvement with objective data.

1.1.1.4 Provide evidence of initiatives to improve value of products and services.

1.1.1.5 Identify the processes used to determine customer needs and their measures of satisfaction.

1.1.2 Schedule

1.1.2.1 Provide sufficient data to demonstrate the degree to which schedule requirements are met over the three year window.

1.1.2.2 Describe how schedule requirements are evaluated, documented, and disseminated. Enumerate activities planned to ensure meeting requirements.

1.1.2.3 Describe how the scheduling system analyzes past and anticipated schedule performance over the life of the contract.

1.1.2.4 Provide examples to demonstrate exceptional responsiveness to rescheduling, workarounds, and reprioritized work activities.

1.1.3 Cost

- 1.1.3.1 Document that actual costs are at or below the estimated contract cost, taking customer-initiated changes into account.
- 1.1.3.2 Demonstrate an ability to accurately and consistently forecast costs.
- 1.1.3.3 Describe the system which ensures that the customer is advised of pending cost changes or cost risks in a timely manner.
- 1.1.3.4 Document savings from cost reduction/avoidance programs.

1.2 Quality—emphasis in this element is on qualitative, quantitative, and substantiated accomplishments in both the design and delivery of quality products and services with an emphasis on continual improvement.

1.2.1 **Quality Assurance (hardware/software/service)**—all organizations and the various functions within them can have more than one type of deliverable to both internal and external customers. Accordingly, quality elements that relate to hardware, software, and service are relevant to most applicants. Section 1.2.1.1, Quality Assurance - General, must be responded to by all applicants, sections 1.2.1.2, 1.2.1.3, and 1.2.1.4 should be reviewed closely for application and addressed as appropriate.

1.2.1.1 Quality Assurance—General

- Outline the structure of the QA activities with responsibilities and staffing.
- Describe the methods used to ensure accountability at every level in the organization.
- Document the existence of quality assurance plans, policies, and procedures and feedback methods.
- Show how quality costs are tracked and presented to management and how performance, production, inspection and test considerations are “designed in” through quality function deployment.
- Provide evidence of benchmarking against internal and external standards in all areas.
- Document frequency and breadth of audit program and results and responsibility for performance.
- Document extent of a configuration control system used to monitor product changes, software releases, or task descriptions.
- Describe and demonstrate the quality measurement system for monitoring, tracking, and trending of all relevant variables and attributes that provide an overview of product and service quality.

- Provide evidence of process quality control activity as well as critical process inspections to establish high quality and the use of statistical process control techniques to assist in the improvement process.
- Illustrate how the concept of continuous improvement is incorporated in the goals, procedures, and philosophy of the organization.

1.2.1.2 Quality Assurance—Hardware

- Document how design, planning, and development yield correct form, fit, and function with a minimum of significant engineering changes/errors during assembly and integration.
- Describe the process to prevent errors rather than detect errors; provide evidence of continuous improvement.
- Provide data to show that nonconformances have minor cost and schedule impact. Trends demonstrate a reduction in the number of discrepancies, scrap, rework, and Material Review Board actions.

1.2.1.3 Quality Assurance—Software

- Show how software life cycle phases and associated products are determined and incorporated in future task schedules.
- Illustrate how performance trends for software management and development processes are measured, controlled, and used. Demonstrate process improvement results.
- Provide evidence that software products (code, documentation, procedures) are controlled through the effective use of change control processes, libraries, procedures, and security measures.
- Document that tailored software test programs (automated, regression, and independent verification and validation test) are used.

1.2.1.4 Quality Assurance—Service

- Show how nonconformance avoidance is achieved through the systematic application of sound preventive doctrines.
- Demonstrate a documented and operational technical system to collect data and monitor the process to assess and correct conditions that could degrade the quality of service.
- Provide data indicating inspectable services involved with manufacturing, processing, or maintenance show nonconformance improvement.
- Document that services are formally tracked by management to ensure thorough, accurate, and timely completion. Demonstrate use of trend data to improve services/process activities.

- Demonstrate that procedural type tasks/operations are well documented in approved, updated procedures or checklists.

1.2.2 Vendor quality assurance and involvement—vendors include suppliers of goods or services and subcontractors that provide personnel that work either independently or as part of an integrated work force with applicant. Document active involvement of vendors in TQM programs.

1.2.2.1 Provide trend data on quality, schedule, and cost of received products/services that support continuous improvement.

1.2.2.2 Document a vendor rating and/or certification system that identifies optimum sources for procured products/services and provides feedback to correct deficiencies with recognition programs to acknowledge and/or reward outstanding vendors.

1.2.2.3 Provide examples and summary data for a functional audit/survey system with scheduled visits combined with effective problem analysis and corrective action.

1.2.2.4 Document the process for sharing information with vendors on a regular basis that illustrates involvement of tools, techniques, products, and services to enhance vendors operation. Applicant should provide the percentage of contract funding supporting vendor activities and the number of vendors that have been offered sharing opportunities and how many of these have received information.

1.2.2.5 Document that vendor/subcontractor personnel are commensurately involved in teaming activities, including but not limited to: training opportunities, awards/recognition, goal setting and measurement processes.

1.2.3 External communication—describe and demonstrate the communication process for addressing quality and performance issues with the customer and provide examples of effectiveness. Provide data that documents:

1.2.3.1 Responsiveness to inquiry.

1.2.3.2 Openness and objectivity.

1.2.3.3 Clear, concise, and factual information is exchanged - frequently and accurately.

1.2.3.4 Methods used to ensure accuracy and timeliness of information.

1.2.4 Problem prevention and resolution

1.2.4.1 Describe the system used for problem resolution and provide example(s) of how a major problem would be identified, resolved, and communicated to the customer and evaluate the extent to which this activity involves management at appropriate levels in the applicant's and customer's organizations.

1.2.4.2 Describe and demonstrate the problem resolution process and how it documents solutions and lessons learned with attention to: preventing recurrence, possible side effects from solution, and other tasks affected.

1.2.4.3 Provide evidence that through the applicant's ingenuity, effective solutions to problems were developed and implemented.

1.2.4.4 Demonstrate applicant initiatives in problem prevention versus resolution.

1.3 Productivity—the focus in this section is on demonstrated quantifiable increases in output per unit of invested resource.

1.3.1 Software utilization—describe the effective and innovative use of techniques to enhance information handling appropriate to the degree of sophistication required. Applications may include but will not be limited to the following areas: (indicate number of systems/users)

- computer-aided-design
- computer-aided-manufacturing
- computer-aided-engineering
- automation
- artificial intelligence
- integrated systems
- automated testing and calibration
- BAR coding
- inspection

1.3.2 Process improvement and equipment modernization—applicant demonstrates commitment to process improvement by:

1.3.2.1 Providing data on expended capital to improve facilities/equipment with resultant quality or productivity increases.

1.3.2.2 Documenting all recommendations and responses to justifications for spending NASA funds to achieve quality or productivity improvements.

- Applicant should provide evidence of long-range planning and performance against this plan.

1.3.3 Resource conservation—describe the strategy to optimize use of all expendable or reusable physical resources which the applicant has the ability to control or to affect usage. This should be documented with quantifiable usage trends indexed to fluctuating levels of staffing, production, or other activity influencing usage, and should compare favorably to an established plan with targeted levels of usage. Areas addressed include but are not limited to:

1.3.3.1 Energy use reduction (fossil fuels, electricity, etc.).

1.3.3.2 Environmental improvement initiatives and impact (differentiate between mandated and self-initiated improvements).

1.3.3.3 Improved utilization of resources (heat, water, etc.).

1.3.3.4 How employee initiatives are encouraged (car pooling, recycling, etc.).

1.3.4 Effective use of human resources

1.3.4.1 Demonstrate an effective and economic use of human resources by assigning qualified personnel with appropriate skill levels and skill mixes to perform tasks. This should be documented with amount of cross-training performed and through costs avoided by not using over-qualified personnel.

1.3.4.2 Describe how effective levels of staffing are determined based on work content of required tasks via either work measurement or non-traditional techniques. Labor costs versus budget or standard should be trended.

2.0 PROCESS ACHIEVEMENTS

2.1 Commitment and Communication—the emphasis in this section is on demonstrated leadership in establishing a quality culture. The necessary process changes to empower employees at all levels and eliminate organizational barriers to continuous improvement must be documented.

2.1.1 Top management commitment to and involvement in continuous improvement—documented evidence of top management commitment, review, and involvement.

- 2.1.1.1 Demonstrate that a long-term commitment has been stated and is in practice. Show how the commitment is communicated and its effectiveness is monitored.
- 2.1.1.2 Provide evidence of management leadership in TQM implementation in quality leadership, and employee empowerment. Document percent of top management time spent on implementing TQM.
- 2.1.1.3 Document commitment through allocation of capital to quality and productivity initiatives.
- 2.1.1.4 Document commitment through allocation and utilization of human resources to TQM.
- 2.1.1.5 Demonstrate innovative approaches to quality programs.
- 2.1.1.6 Demonstrate focus on ethical practices throughout the organization.
- 2.1.1.7 Provide examples of corporate citizenship and community involvement.
- 2.1.2 Goals, planning, and measurement—use of meaningful goals, plans, schedules, performance measures, management reviews, and feedback mechanisms; institutionalized throughout the organization to support a mature program.
 - 2.1.2.1 Describe how program goals and objectives are established and disseminated including communication, training, teaming, and recognition.
 - 2.1.2.2 Describe short and long-range plans for TQM implementation. Describe the long-range plan for continuous improvement beyond the immediate fiscal year including goals, objectives, and milestones.
 - 2.1.2.3 Demonstrate actual versus planned progress trended from 1989-1991.
 - 2.1.2.4 Describe how performance measurements are developed and fed back to employees/departments.
 - 2.1.2.5 Indicate to what extent TQM goals are related to employee performance appraisal process.
- 2.1.3 Internal communication—demonstrated policy of open communication, vertically and horizontally, top-down and bottom-up, to build understanding, commitment, and common direction.

- 2.1.3.1 Describe how communication policy is documented and disseminated among employees.
- 2.1.3.2 Document the communication methods employed and the frequency, number of employees, and skill levels reached by the various methods.
- 2.1.3.3 Show how effectiveness of communication is determined and describe what approaches have or might be used to remedy ineffective techniques.
- 2.1.3.4 Provide results of employee “climate” or “attitude” surveys, etc., that indicate how the work environment is perceived and response plans to issues.

2.2 Human Resource Activities—the focus here is on the quantitative evaluation of the programs and activities that are necessary to recognize the value of people to an organization.

- 2.2.1 Training—degree of participation in initial, advanced, and refresher training and education that would lead to increasing potential of employees for greater work responsibilities and personal growth.
 - 2.2.1.1 Describe the techniques for assessing training needs and how frequently this assessment is re-examined.
 - 2.2.1.2 Indicate how the effectiveness of training plans as well as specific courses are measured and how results are used to modify the curricula.
 - 2.2.1.3 Describe the company philosophy on training and any impediments to training program implementation.
 - 2.2.1.4 Provide data on the number and types of courses, participation, contact hours, costs, etc., for these areas:
 - Job skills
 - Management/supervisory skills
 - Group process, problem identification and solution
 - Improvement techniques (flow charting, SPC, etc.)
 - Employee orientation
 - Career counseling/personal development
 - Education reimbursement
 - 2.2.1.5 Describe the approach to training insofar as internal versus external resources, accomplishments in training trainers, etc.

2.2.2 Work force involvement—participation of individuals or groups (i.e., teams, circles, etc.) in building dedication, pride, and teamwork through submitting innovative ideas; verifiable cost reduction/avoidance activities; and improving the quality and productivity of systems, processes, methods, and products/services. List any activities relating to “Work Force 2000”.

2.2.2.1 Describe the evolution of the organization's approach to utilizing the talents of people via teaming and any obstacles or restrictions to full implementation of the program.

2.2.2.2 Describe the diversity and structure of teaming activities, e.g., permanent, ad hoc or tiger teams, vertically and/or horizontally oriented, natural work groups, vendor and customer involvement. Indicate the degree of empowerment and reporting structure for each type.

2.2.2.3 Provide data on the number and types of teams, number and percentage of work force participating, job category (salaried, hourly, professional, technical, supervisors, managers, etc.), frequency of meetings, hours spent in meetings, number and type of projects initiated and completed, tangible and intangible benefits accrued, etc.

2.2.2.4 Provide data on employee suggestion programs such as the number of contributors, mean time to closure, tangible or intangible benefits, etc.

2.2.2.5 Describe and provide data on the activities in utilizing minorities, women, and handicapped persons in the work force including:

- Hiring and employment trends versus community levels
- Promotion trends versus non-minority
- Training provided versus non-minority
- Teaming involvement versus non-minority
- Career counseling provided

2.2.3 Awards and recognition—evidence of techniques and their success in making innovation and improvements rewarding, e.g., gainsharing, bonuses, awarding merchandise, and/or other methods.

2.2.3.1 State the objectives of the award/reward process in the corporate culture including any restrictions to implementation.

- 2.2.3.2 Show the breakdown of recognition by work groups, teams, departments, supervisory, professional, technical, etc., and the percent of work force for each.
- 2.2.3.3 Describe specific recognition of quality/productivity improvements and achievements.
- 2.2.3.4 Describe the total recognition system including type of award, value, basis for recognition, frequency, etc.
- 2.2.3.5 Describe how recognition is developed to be commensurate with contribution and how the effectiveness and motivation are monitored.

2.2.4 Health and safety

- 2.2.4.1 Describe the health, wellness, and safety programs and the qualifications of the personnel administering the program.
- 2.2.4.2 Document frequency rates, severity rates, lost time injuries, and equipment loss/damage with trend data.
- 2.2.4.3 Describe the type and frequency of safety training that is provided to personnel and how lessons learned are incorporated in the training.
- 2.2.4.4 Provide data to show that safety audits/surveys are periodically performed, and effective corrective actions are implemented in a timely manner to correct deficiencies.
- 2.2.4.5 Describe any unusual or persistent safety problems.
- 2.2.4.6 Describe the system that ensures accountability for safety through all levels of the organization.

SCORING GUIDELINES

Each criteria element is scored based on these guidelines. The determining percentage is then applied to the available points.

Percentage	Description	How Long in Place	Deployment	Performance	Resources	Planning
91-100	Excellent	3+ years	91-100%	Sustained high performance with constant improvement	Resources dedicated to activities are commensurate with need and effective	All activities are incorporated in master plan to meet specific needs with provisions for feedback and modification
81-90	Very Good	3 years	81-90%	Starts moderately and improves to high performance	Most resources are adequate but some are excessive, inadequate, or ineffective	Most activities are included as part of overall plan with some exceptions. Feedback and program modification provisions are not completely implemented
71-80	Good	2-3 years	61-80%	Gradual continual improvement	Most resources are adequate but many are excessive, inadequate, or ineffective	Most activities are incorporated in overall plan but many activities have no coordinator
61-70	Average	2 years	41-60%	Starts low to moderate and improves slightly	Many areas have adequate resources but some are neglected entirely or poorly utilized	Individual plans govern most activities but lack coordination. Feedback provisions are incomplete
51-60	Fair	1-2 years	21-40%	Starts low and improves to moderate	Resources are allocated sparingly without proper regard for need or appropriateness	Planning is sporadic although targeted for completion. No provisions for feedback or modification
< 50	Poor	< 1 year	0-20%	Starts and stays low	Most programs and activities are poorly supported	Planning efforts are barely initiated

VI. SITE VISITS

FINALISTS SELECTION

Based on the results of the Application Report review by the Evaluation Committee, applicants who have demonstrated excellent performance in quality and productivity will be selected for recognition as finalists in the award process and receive a site visit.

FINALISTS ON-SITE VALIDATION

An on-site validation agenda will be provided to the finalist not later than 10 working days prior to the Validation Team's visit. The agenda will include a scheduled sequence of activities, an estimate of time required for the on-site validation, the names of the members and leaders of the Validation Team, and the requests for information in specific criteria areas if required.

The number of team members and the time required for validation will vary depending on the number and complexity of items being reviewed. The visit will be at least two days.

The data gathered by the Validation Team will be reviewed by the entire Evaluation Committee. No material can be forwarded for consideration after the validation visit is completed. The Evaluation Committee will prepare and present a Findings Report to the NASA TQM Steering Committee.

VII. AWARD RECIPIENT SELECTION

There is no limit to the number of finalists that can be selected as award recipients. Selection of the annual award recipient(s) will be made by the Administrator on the recommendation of the NASA TQM Steering Committee based on their review of the Findings Report from the Evaluation Committee. All finalists selected as award recipients will be announced during the Annual NASA/ Contractors Conference. (All decisions of the Administrator are final. Award recipients will be eligible to apply for another award four years after receiving the award.)

VIII. DEBRIEFINGS

All applicants or finalists will have an opportunity to receive a debriefing to identify strengths and areas for improvement. The debriefing will be scheduled as soon as practicable within the time constraints of the award process. Debriefings may be either face-to-face at NASA Headquarters or via teleconference as the applicant or finalist desires.

IX. RECOGNITION

AWARD RECIPIENTS

Recognition

The receipt of the prestigious George M. Low Trophy carries with it the recognition by NASA that the award recipient has demonstrated sustained excellence and outstanding achievements in quality and productivity in the aerospace industry. The award signifies that recipient(s) not only meet contract requirements, but go further: they provide products/services at such a high quality level that they set new levels of customer expectation.

Awards

Each recipient will receive a trophy with the date and name of the organization. In addition, the recipient will receive a quality and productivity award flag and lapel pins for each employee at the facility. Presentation of the trophy will be made by the NASA Administrator in a special ceremony held at the recipient(s)' location. The company representative receiving the award should be the highest ranking member of management at the recipient's facility. The achievements of the award recipient(s) and their outstanding systems and methods will be publicized through:

- A publication entitled **Highlights of Excellence**
- An article featured in the American Society for Quality Control's (ASQC) monthly journal, **Quality Progress**
- Participation in ASQC and NASA conferences
- Press releases
- A "George M. Low Trophy" videotape
- Participation in The Quality Forum
- A symposium hosted by the Award Recipient(s)

Promotion

During the year following the award announcement, each recipient will be asked to sign a Memorandum of Understanding (MOU) that will detail the obligation of award recipients in promoting the George M. Low Trophy award program.

AWARD FINALISTS

Recognition

Applicants that reach the level of award finalists are recognized by NASA as companies that have demonstrated work force achievements in quality and productivity.

Awards

All finalists will receive a plaque engraved with the finalist's name and the year of award. This plaque will be presented to the finalist's highest ranking officer by the NASA Administrator at a special ceremony held at the NASA/Contractors Conference. In addition, ASQC will recognize finalists at its Annual Quality Congress.

A special poster is designed commemorating each year's finalists with individual and large scale copies distributed to each finalist organization.

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