EFFECTIVENESS OF MAAP QSS: 
FROM ELEMENTS TO
PROCESS APPROACH (2000-2006)

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ABSTRACT
Quality Standard System (QSS) is a must for all maritime institutions as mandated by STCW '78 as amended, unlike in other industries where they have the option not to implement a Quality Standard System. The Maritime Academy of Asia and the Pacific (MAAP) as a maritime education and training institution, by law, is obliged to implement its own Quality Standard System and be certified by a certifying bodies such as DNV, AJA, SGS, and others. Consequently, MAAP has established its own Quality Management System (QMS) over the years, and now this paper shall endeavor to measure its success in terms of audit performance and at the same time becomes the benchmark or reference for other maritime schools. This paper aims to present how effective was the implementation of QSS or the Quality Management System (QMS) of the Maritime Academy of Asia and the Pacific as assessed by external certifying body such as Det Nore Veritas (DNV) and other external assessors for the last seven (7) years. With the study, the trend of the academy’s QMS weaknesses would be identified and what corrective and preventive measures have been done. By looking at past external assessment records we can analyze if there were improvements in the system and if there were perennial issues, the management shall be given recommendations in order to settle them. These milestones of MAAP findings and corresponding corrective actions shall also depict the historical accomplishments of the institution’s QMS.

Basic descriptive analysis of the audit results spanning two versions of ISO 9001 have been used to provide data that would support if there was an increase or decrease in findings. With basic statistics of frequency distribution and mean we could deduce if trend of external assessment was positive or otherwise. Hence, the study shall determine if the MAAP QSS has been found effective in providing quality maritime education and training to its students and to the ship manning industry as whole.

Keywords: Quality Standard System, Effective Quality Management System, Process Approach

1. INTRODUCTION
As regulated Regulation I/8 Quality Standards and in accordance with the provisions of Section A-I/8 in the STCW ’95 Code, all non-governmental agencies or entities under its authority shall have a Quality Standard System (QSS) to continuously monitor and ensure achievement of defined objectives, which includes qualification, and experience of instructors and assessors. Throughout the years, the international standard has evolved from having 20 elements (ISO 9001:1994) into five (5) main Clauses (ISO 9001:2000) and been used as standard for QSS. Furthermore, a new standard (PSB 100:2002) specifically designed for maritime education and training was also considered by the Academy.

This paper aims to present the performance of the organization’s QSS in meeting the challenges of compliance, sustenance and flexibility of progressive international standards as assessed by external QSS assessors. The significant trends, non-conformities, responsive corrective/ preventive actions, and improvement actions shall be discussed as well to serve as benchmarks for other concerned parties and factual information for the school’s stakeholders.

Moreover, the study shall describe the fruition and adverse effect of implementing a QSS to the academy’s students, trainees, and sponsors, the nation and the maritime manning industry. To zoom into the effectiveness of MAAP QSS, the key areas of measurements shall be system performance, process performance, product, and customer satisfaction in accordance with ISO and CHED standards.
1.1. Theoretical and Conceptual Framework

1.1.1. Theoretical Framework

The theoretical framework of the paper is primarily based on the STCW’s Regulation I/8 stating that QSS is vital to assure interested parties that the quality of education, training and assessment conforms to the convention by carrying out QSS periodical independent assessment. Through the results of an independent evaluation of an organization’s QSS we can also gauge if the system established was effective or not. Hence, using this framework is credible to present the data to support the effectiveness of MAAP QSS. QSS as an independent variable is intervened by an Independent Evaluation of QSS to ensure quality education, training, and assessment of seafarers. Independent evaluation shall be conducted at intervals of not more than five years. This is to verify internal management control, monitoring measures, follow-up actions, documentation and dissemination of results, and timely actions are taken to correct deficiencies are effective ensuring achievement of set objectives.

1.1.2. Conceptual Framework

The conceptual framework of this paper revolves on the PDCA cycle or the Process Approach implemented in MAAP in reference with international standards (ISO 9001:2000 and PSB 2002:100) and national regulating authority (CHED- PSG CMO no. 13 s. 2005) that implementation and assessment of maritime schools’ QSS and requires actions to eliminate detected deviations.

Basically, MAAP QSS is independent variable affecting the External Audit Results as the dependent variables, and MAAP outputs and Corrective and Preventive Actions are the intervening variables that affect the dependent variable.

The Plan stage means the establishment of QSS Documentation. Secondly, Do is the implementation of processes and service production. An independent assessment by external auditors is the Check wherein
MAAP QSS effectiveness can be measured. Thus, data in this area is main item for analysis and study. The last stage of Act shows how the academy’s QSS resolve findings.

Since the framework Figure 2 is a cycle, the concept of which is continual improvement wherein MAAP QSS is abiding with. Whereas, the External Audits results is a valid measure to determine the level of QSS effectiveness as reinforced by actions and quality of the institutions’ output. Factual analysis of assessment results is substantial to answers/result of the paper.

1.2. Objectives

The study is to find out how effective MAAP QSS has been in accordance with several versions international standards in terms of audit findings with objective evidences through presentation of improvement measures and significant outputs done in the span of seven years.

1.3. Specific Objectives

The study aims to evaluate the level of MAAP QSS effectiveness in compliance to international and national standards from year 2000 to 2006. It also seeks to determine if MAAP QSS improved the institutions operations and produced excellent products and services. The specific objectives are as follows:

2. To identify and determine Improvements in the implementation MAAP QSS in seven years.
3. To determine significant and beneficial outputs brought about by MAAP QSS to the institution.

1.4. Significance of the Study

The completion of the study shall validate STCW ’95 requirement for a QSS in the Maritime Education and Training sector as experienced by MAAP. The study shall contribute to the knowledge on the benefits of having a QSS for an academic institution and the resultant effects. As an institution, we shall recognize the involvement of people in the system as one of quality management principles. It is also a realization of what the QSS has done in delivery of the courses and the Academy’s operations. With this output, the management and staff shall be encouraged to continually support the implementation and continual improvement of our QSS and reap the fruits of its reward.

Moreover, the study shall further reinforce the confidence level of the Academy’s stakeholders since we shall promote that our school have high regard to quality and excellence. For other schools, the paper may set a benchmark and a paradigm to follow, learn, and further innovate so that the degree of maritime of education and training in the Philippines might be improved and developed.

1.5. Scope and Delimitation

This study covers the assessment results of MAAP QSS by the external auditors in accordance to international and national standards. It is focused on the compliance to the elements and clauses required in two versions of ISO standards for seven years (2000-2006).

The paper is delimit to the problems stated above. The respondents were the personnel of MAAP. The data coming from audit reports shall be complete enough to measure the academy’s factual performance. The paper shall also include all the quality outputs of the academy as evidence of the effectiveness of the institution’s QSS.

1.6. Definition of Terms (ISO 9000:2005 and DNV)

Quality Standard System (QSS) – A set of interrelated or interacting elements to establish policy and objectives, to achieve those objectives and to direct and control an organization with regard to quality. In MAAP QSS is called Quality Management System (QMS)

Elements – This refers to the 20-element structure of the ISO 9001:1994 standards

Process Approach - The structure that is patterned on the Plan-Do-Check-Act or PCA improvement cycle
Major Nonconformity – The absence of, or total breakdown of a management element specified in the standard or any non-conformity where the effect is judged to be detrimental to the integrity of the product or service

Minor Nonconformity – A single system failure or lapse in conformance with the requirements relating to the standard

Observations - findings moving towards nonconformity, health/safety requirements, if allowed recommendations, comment on positive aspects, opportunities for improvement, preventive actions

2. Review of Related Literature

“The word “effectiveness” is used in several places in ISO 9001:2000. In the Introduction, Clause 0.2 refers to “effectiveness” as noted above. While the standard often uses the words “effective” and “effectiveness”, there are two subclauses containing requirements where having a common understanding of “effectiveness” is especially important: Subclause 6.2.2 requires an organization to evaluate the effectiveness of actions taken to ensure the necessary competence of workers affecting product quality. Subclause 8.5.1, Continual Improvement, requires an organization to continually improve the effectiveness of its QMS.”

Effectiveness can be defined as a measure that demonstrates that a process yields, or is capable of yielding, positive results. (ISO 9000:2000), Quality management systems—Fundamentals and vocabulary, defines “effectiveness” in 3.2.14 as the “extent to which planned activities are realized and planned results achieved”. Thus, the meaning of the requirement in Subclause 6.2.2 becomes clear: organizations must evaluate how well planned hiring, training and other processes close the gaps in employee competency needs for those workers who affect product quality.

Tying roots from Regulation I/8 and provisions of section A-I/8 of the STCW Code served as the primary literature of this paper. “1.1 Each Party shall insure that… all training, … activities carried out by a non-governmental agencies or entities under its authority are continuously monitored through a quality standard system …”. This excerpt from the code clearly says that maritime institutions like MAAP must have a QSS.

In the Final Report of EU Mission to the Philippines on November 2000 stated, “The STCW ’95 Quality Standards System (QSS) of the Philippine Administration is reasonably well organized in view of the fact that many Government Agencies are involved.” As MAAP was already have been certified by Commission on Higher Education (CHED) accredited Certifying Body such as DNV, we can say that is also true in our institution. In the same report, though MAAP has just operated in only one year, EU Mission stated, ”MAAP is probably one of the best-equipped schools in the world.”

Quality colors everything that WMU does. The whole University community is aware that as a product of multinational co-operation, WMU must be able to deliver what their clients and donors want, and to demonstrate that they are doing so efficiently and effectively. Laubstein (2005), the World Maritime University (WMU) president said “the key to success of the global expansion and diversification of WMU activities is effective quality control.” The quality assurance system in WMU placed the students firmly at its center, with all systems growing from and referring back to the academic staff. An internal loop of assurance processes was supplemented by two external loops, with constant feedback to the students, the Management Committee, Academic Council and the Board of Governors. To manage the quality assurance processes, an interlocking set of three committees was put in place. The Curriculum and Assessment Committee, the Boards of Examiners, and the Quality Assurance Committee provide a continuous means of quality management.

In KLAVENEws article issue 2/07, the Klaveness Management, decided to invest time and considerable funds into a new computerized QMS and at the same time make a proper revision of the contents to make it more user-friendly, dynamic and based on risk management. They have planned with the specification, carried out workshops, data gathering, development and beta tested on vessel Brevik last November 3, 2007. A summary of documents was required and hopefully be implemented on January 1, 2008. QSS is also related to management or top management since most clauses in the ISO and PSB specifically identified it. As defined by Daft (1997), management is the attainment of organizational goals in an effective and efficient manner though planning, organizing, leading, and controlling organizational resources. According to Dale (1978), Management or managers are commonly classified to top, middle, or first-line. Top management are the policy makers, middle managers are the one who leads a diverse group or
department who may work under other middle managers, and front-line managers are the ones who directly supervise the rank-and-file. MAAP QSS simply will not work well if this group of people is not competent and doesn’t support it. Moreover, leadership as one Quality Management Principle is important to determine success of a QMS and eventually the organization.

In his article, "The Quality Revolution in Education," John Jay Bonstingl outlines the TQM principles he believes are most salient to education reform. He calls them the "Four Pillars of Total Quality Management." Principle #1: Synergistic Relationships - an organization must focus, first and foremost, on its suppliers and customers. Principle #2: Continuous Improvement and Self Evaluation - total dedication to continuous improvement, personally and collectively. Principle #3: A System of Ongoing Process - the recognition of the organization as a system and the work done within the organization must be seen as an ongoing process. Principle #4: Leadership - the success of TQM is the responsibility of top management. According to the practical evidences, the TQM principles help the schools in following clauses:

(a). Redefine the role, purpose and responsibilities of schools.
(b). Improve schools as a "way of life."
(c). Plan comprehensive leadership training for educators at all levels.
(d). Create staff development that addresses the attitudes and beliefs of school staff.
(e). Use research and practice-based information to guide both policy and practice.
(f). Design comprehensive child-development initiatives that cut across a variety of agencies and institutions.

In the final analysis, improving QMS effectiveness has to mean continually changing the processes of your organization so as to increase customer satisfaction by integrating continual improvement approaches into all aspects of your activities. “Like all systems, it either improves or becomes less effective. It does not remain static for long.” (Source: Maintaining the Benefits and Continual Improvement, ISO web site page [www.iso.ch/iso/en/iso9000-14000/iso9000/selection_use/maintaining.html].) In the best systems, it will not be possible to separate improvement of QMS effectiveness from improvement of business performance.

3. Methodology
3.1 Research Design
The paper is a combination of Qualitative and Quantitative Research because it shall described the quality of the Academy’s QSS historically in seven years and analyzed data relative performance in two (2) sets of standards. Evaluation research was applied as well as systematic acquisition and assessment of information to provide useful feedback on program, needs, activities and others.

The data shall be treated with descriptive statistics using Univariate analysis, which involves the examination across cases of one variable at a time. The paper would like to describe the ranking, frequency distribution, and central tendency of the audit results as applicable and necessary for the paper. This statistics shall be used to determine the trend of non-conformities/compliance, the highest number non-conformities, and the average performance against the standards. With this treatment the study shall gauge the improvement or deterioration of MAAP QSS.

3.2. Population of the Study
The sample population comprised of Academy personnel involving all departments and divisions that have established and implemented MAAP QSS. It is but relevant that the respondent is the institution since it was objectively assessed by external certifying body as one client.

3.3 Data Gathering Tools
The instruments used in gathering the data are the audit reports from DNV and PSB Auditors. These documents were considered external because it originated from the Certifying Bodies. They were generated through Certification Audits and annual surveillance audits and validated during closing meetings with top management.

3.4 Data Gathering Procedures
The external auditors primarily gathered the data through establishing an audit program. It is followed by confirmation of audit schedules during opening meetings. Conducts of audits were done through: (1) interview, (2) document inspection and (3) observation were done. This was followed by report writing and closing meeting. Then a formal written Audit Reports were forwarded to us. From there we have to collate the audit reports, which were maintained. Number of findings and their categories were tabulated. Applied simple frequency distribution and averaging was done to depict the trend of the audits. Generally, research
activities involved data analysis of the external audit findings, which are controlled and monitored by the proponent himself. Therefore, interfacing shall also be minimized and in accordance to school research policy and procedures.

4. Results and Discussion
4.1 MAAP QSS History
On October 13-14 1999, the Maritime Academy of Asia and the Pacific has embarked on its quest of becoming the leading center of excellence in maritime education and training by inviting Det Norske Veritas (DNV) to conduct a Document Review and initial visit. Mr. Peter D. Dombey was the Lead Auditor assisted by Mr. Darby G. Francisco as Auditor under training conducted the initial visit with ISO 9001:1994 as primary Audit Criteria. There were two separate scopes, one was certification for provision of Maritime Education and the other one was Maritime Training.

In spite of four (4) General Observations on the Quality Manuals Document Review, thirty-seven (37) non-compliance detailed Document Review matrix, and six (6) visit notes and observations, DNV awarded MAAP a Certification (Initial) Audit of the Management System set on the third week of December 1999. The audit date was subject to satisfactory resolution of the findings.

The actual Certification Audit commenced on the 9th–11th of February 2000 with 1 Major Nonconformity, eleven (11) Minor Nonconformity, and six (6) observations as a result. It was not an easy road for it took almost three months to close all findings.

May 23, 2000 earmarked the historical birth of quality certification for the Academy with the issuance of a Quality System Certificate with certificate number QSC-4613 to the Academy. Thus, confirming MAAP QSS effective compliance to ISO 9001:1994 standards. Antonio C. Leosala, DNV Country Manager, also awarded a certification to DNV’s Rules for Maritime Academies to the institution with Certificate Number 026 on June 22, 2000.

The Training Center took another year to be certified with certificate number RSEA-QSC-1204 on March 8th, 2001 conforming to the same standard.

4.2 Audit Results
4.2.1. DNV Audit Results from 2000-2002 (ISO 9001:1994)

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Legend: Ma – Major Nonconformity, Mi – Minor Nonconformity, Ob - Observations

Table 1: Summary of DNV Findings per Element of ISO 9001:1994 in three (3) years
In the span of three (3) years there was only one (1) Major Non-conformity, element 4.4 Design Control of the standard, that was recorded in the certification audit and zero (0) Major with remain two years. With a constant twenty (20) elements per year that is a ratio of 1:60 or an average 1.67% of failure rate. On the other hand, that means an average of 98.33% success rate of MAAP QSS.

For Minor Nonconformities, there were a total of eighteen (18) findings or equivalent to fourteen (14) deviations per element from a total of sixty (60) elements for three years. That is an average of 23.33% failure rate or an average of 76.67% success rate of MAAP QSS.

Observations as potential nonconformities totaled of about twenty-five (25) findings or fourteen (14) observations per element that means an average success rate 76.67% as well.

Overall there was a general average of 83.89% success rate of MAAP QSS based on the external reports per elements of the 1994 version of ISO 9001.

4.2.2. DNV Audit Results from 2003-2006 (ISO 9001:2000)

Change is constant and even ISO has improved its 9001 standards with version 2000, which was fully implemented last year 2003. Though the elements have been reduced into five (5) major clauses, the twenty (20) elements still exist within the improved ISO 9001:2000 known as the Process Approach of Management System and emphasized Continual Improvement. Audits from 2003 also started the recording of noteworthy efforts as part of the assessment reports.

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Legend: Ma – Major Nonconformity, Mi – Minor Nonconformity, Ob – Observations, and N – Noteworthy
Note: Clause and Sub-Clauses without finding were not reflected on Table 2

Table 2: Summary of DNV Findings per Element of ISO 9001:2000 in four (4) years

To have a better comparison lets take the first three (3) years of the MAAP QSS effectiveness under the new international standard. There were five (5) Major Clauses of as constant criteria. For three and even four years, there were zero Major Non-conformities recorded by the external auditors. That means under the new standard MAAP QSS has been found effective recorded of 100% in terms of Major Compliance.
As to the Minor Nonconformities there was only one (1) minor lapse in sub-clause 7.5.1 Control of Production & Service Provision out of 23 sub-clauses. That is a ratio of 1:69 sub-clauses with an average of 1.45% failure rate or 98.55% success rate of MAAP QSS (QMS) in three years. In four years that is equivalent to 1:92 or 98.91% success rate.

Most of the findings were observations since the implementation of the 2000 version of ISO 9001 standard. For three years there were sixteen (16) observations or fourteen (14) observations per sub-clause found out of 69 sub-clauses. This gave us an average of 20.29% of potential nonconformities or 79.71% success rate in three years. However, four years we have a ratio of 20:92 or 21.74% failure rate and 78.26% success rate.

As a general average of MAAP QSS (QMS) effectiveness, we have 92.75% success rate from 2003-2005 and 92.39% from 2003-2006.

Moreover, 15 out of 40 findings are positive or strengths of the institutions with are equivalent to 37.5% of the total findings.

4.2.3. DNV Audit Results Trends

MAAP QSS has weathered one (1) Certification in year 2000 and two (2) re-certification audits in year 2003 and 2006 respectively from DNV generally and Annual Periodic Audit. Indeed the figures shown above would speak for itself of how MAAP QSS performed from the perspective of an independent evaluator as required by STCW. To look further on the significant trend of audits below is the chart of the external audits for seven years.

![DNV Findings for the Past Seven Years](image)

Figure 3: DNV Findings per Category 2000-2006

Zero (0) Major Nonconformity has been maintained for the last six years except for the Initial Certification Audit. Having an average rate of 0.14 meaning complete compliance to the elements and major clauses. For the first three years a mean of 0.03 was garnered while a mean of zero for the last four years.

For the Minor Nonconformity an average rate of 2.71 for seven years with a significant decline from 11 deviations into a consistent zero (0) deviations from the last three years. The reduction rates from base of 11 were 45.45% in 2001, 90.9% in 2002 & 2003, and 100% in 2004 to 2006.

The observations were a consistent area wherein the average finding for seven years was 7.57 findings. The average of eight if rounded only signifies that there will always be room for improvement in any organization.

The noteworthy findings only appeared in the 2000 version of audit reports, which the organization receives and average hit of two (2) in four years of audits.

Generally, the trends of audits were positive as evident in the downward pattern on number of findings both Major and Minor Nonconformities as determinants of an effective QSS.

4.2.4. European Maritime Safety Agency (EMSA) Audit Results
The institution in its seventh year of quality practice was visited by the European Maritime Safety Agency and conducted an evaluation of MAAP QSS to confirm compliance of other countries to STCW Regulation I/10. Dr. Jamie Veiga, the Lead Assessor for the Mission to the Philippines, assisted by Dr. Michel Percier conducted the evaluation on March 13, 2006.

Though there was no formal report presented to MAAP, Dr. Veiga stated during the closing meeting that “the implementation of MAAP'S Quality System was very impressive for there were no major deviations or problems found during the course of the assessment”.

4.2.5. Productivity Standard Boards (PSB) Audit Results

Realizing that the ISO 9001:2000 primarily is focused on management in manufacturing companies, MAAP applied for the certification to a Quality Maritime Education and Training (QMET) Standard to zoom in to the nature of our organization. Hence, a Certification Audit commenced last September 20-21, 2006 with Mr. Subir Mukerji as Lead Assessor assisted by Mr. Yeo Sen Tong of TÜV SÜV PSB Certification.

The result of the assessment was indeed a validation of our effective MAAP QSS as follows:

- 0 – CAT 1 (or Major Nonconformity)
- 0 – CAT 2 (or Minor Nonconformity)
- 4 – Observations
- 8 – Positive

This time the strengths of the MAAP QSS outweighs its weaknesses, which is transcends to the whole nation for MAAP as the pioneer and frontrunner to comply with the standards of PSB 100:2002 – QMET with certificate registration number QMET-2006-004 given on the 20th day of December 2006.

4.3. MAAP QSS AUDIT CONCERNS AND ISSUES

4.3.1. Major Nonconformity from ISO 9001:1994

The main deviation found in the initial certification of MAAP concerns the design and development of educational programs specifically for BSMT and BSMarE Courses.

4.3.2. Minor Nonconformities from ISO 9001:1994

By principle, the 1994 version is document what you do and do what you document, thus most minor lapses found were in the control of documentation and its implementation in the following primary elements 4.9 Process Control, 4.6 Purchasing, 4.18 Training, 4.2 Quality System, 4.10 Inspection and Testing, 4.16 Control of Quality Records, 4.4 Design Control, 4.5 Document and Data Control, and 4.3 Contract Review as shown in Table 1.

4.3.3. Minor Nonconformities from ISO 9001:2000

There was only one (1) entry in version of standard on year 2003, which concerns 7.5.1 Control of Production and Service Provision specifically for the lapse in complying to requirements of the training process – re: Course Manuals as reflected in Table 2.

4.3.4. Observations from ISO 9001:1994

Similar to minor findings, almost all observation were geared in the process documentation and implementation. The elements that need improvement in highest frequency order were 4.9 Process Control, 4.6 Purchasing, 4.18 Training, 4.2 Quality System, 4.10 Inspection and Testing, 4.14 Corrective and Preventive Action, 4.16 Control of Quality Records, 4.17 Internal Quality Audits, 4.1 Management Responsibility, and 4.13 Control of nonconforming product as shown Table 1.

4.3.5. Observations from ISO 9001:2000

In this new version, observation’s frequency shifted to new top three requirements which were 6.3 Infrastructure, 8.2.3 Monitoring & Measurement of Processes, 8.5.2 Corrective Action followed by 4.2.3 Control of Documents, 7.3 Design and Development, 7.5.1 Control of Production and Service Provision, 8.2.1 Customer Satisfaction, 8.2.4 Monitoring & Measurement of Product, 4.1 General Requirements, 5.4.1 Quality Objectives, 6.2 Human
The assessment reveals that Design Control of course programs were the major weakness of the institutions QSS (QMS) during the first three years of its operations.

Purchasing, Training, Quality System, and Inspection and Testing aspects were the minor concerns in the 1994 version of ISO while Control of Production & Service Provision in the training courses is one minor concern in the 2000 version.

The observations showed that focus area were different that means items on the 1994 version of the ISO 9001 were corrected or minimized with advent of the new version. The number one element Process Control was replaced by sub-clause Infrastructure, number two element Purchasing was replaced by Monitoring & Measurement of Processes, and number three element Training was replaced by Corrective Action.

5. **MAAP QSS CORRECTIVE/PREVENTIVE/IMPROVEMENT ACTIONS**

MAAP QSS is ardent to continual improvement process, thus, corrective and preventive actions have been implemented to prevent recurrence of problems and eliminate root causes of major findings, minor findings and even observations. Punitive measures that were promulgated by the institution were as follows:

5.1 **Creation of Instructional Development Task Force/Office**

The task force was formed to document all subjects to be offered per course program into manuals containing Subject Framework, Outline and Timetable, Syllabus, Instructor’s Guide, and Assessment and Evaluation. This has closed the major non-conformity found during the DNV Certification Audit establishing the process for Subject Manual design, development, and validation. Today, the task force was made into an Academic Division as the Instructional Development Office who caters to the same purpose.

5.2. **Key Processes Documentation and Computerization**

On Purchasing the Material Management Division has come up with various corrective and improvement Action such as development of MMD Manual as working instruction and guidelines to purchasing aspects such as canvassing, accreditation and evaluation of suppliers, and others. The process of requisition and purchased order has been computerized.

On Training the Human Resource Division (HRD) has documented HRD Manual, Job Description and Qualification and Competency Manuals, increased manpower development and training, established of Training Needs analysis, Training Plans, Training Evaluation, and computerized of some HRD processes.

On Inspection and Testing, Product and Service Provision, and Contract Review the different departments and divisions basically also have documented and implemented their procedures and forms, enhanced their structures and criteria such as Board of Admission Manual, Creation of an Assessment Office, Ishihara criteria was included in enrollment procedure, establishment and enhance of Contract Review Procedure, revision of ASTC procedures.

On Infrastructure the top management has acquired a computer-based maintenance system, established safety guidelines, and reconstructed laboratories as appropriate.

5.3. **Establishment of Quality Assurance Department**

On Quality System the top management has taken measures to ensure compliance to ISO 9001 standards through the creation of an independent Quality Unit called Quality Assurance Division coming out from the Administration Department as Quality Assurance Department (QAD), and Manpower development – increase of QAD staff and training.

5.4. **Fortification of Control of Quality Records and Document and Data Control**

QAD has established the respective procedures to guide Document Custodian per department. With the addition of a Document Controller now the Assistant Quality Assurance Representative for QAD prompted to the conduct of regular Document Inspections and regular meetings of Document Custodians with the Document Controller.

5.5. **Course Monitoring and Review**
On Monitoring and Measurement of Processes/Product the institution has implemented Annual Course Monitoring, Course Review within five years with inputs from students and industry, revised procedures, added manpower, controlled marking sheets for ASTC and now in ACAD in accordance with the STCW, and conducted subject/course evaluation per semester/six delivery.

5.6. Implementation of Continual Improvement Processes
On Internal Quality Audit, Corrective and Preventive Action, and Control of Nonconforming Product the QAD made the corrective measures implemented were technical training on (ISO 9001; Audit, PSB 100:2002), In-house training of Internal Quality Auditors, formulation and continual improvement of QMS Form, In-house training and conducted Root Cause Analysis, conducted bi-annual Internal Quality Audit, and bi-annual conduct of Management Review.

5.7. Intensified Customer Focus
On Customer Satisfaction the institution has devised Suggestion Box, Quarterly Sponsors Meeting, QMET Survey, Sponsors Satisfaction Survey, Student and Staff Forums, Quality Improvement Teams to enhance meet customer requirements. Quality Objectives of each department has formulated its respective Quality Plans and the QAD with the President reviews these plans including Annual Quality Plans and Medium/Long Term Plans.

6. MAAP Outputs
With the well-established Quality Standard System (QSS) or Quality Management System (QMS) and the top management’s advocacy and commitment on quality education and training, the institution has significantly grown over seven years not only in decline in audit findings but with concrete and praiseworthy products and accomplishments.

6.1. Government Recognized Maritime Education and Training Programs
The institution’s course programs have been accredited officially permitted by Commission on Higher Education (CHED) since the first year of operation. The following programs are as follows:

a. Bachelor of Science in Marine Transportation (Recognition No. 015 series of 2003)
b. Bachelor of Science in Marine Engineering (Recognition No. 016 series of 2003)

AMOSUP Seamen’s Training Center has increased the number trainees and courses of about fourteen (14) of Maritime Training Council (MTC) accredited the courses and even developed eight (8) in-house training courses as follows:

a. Training Courses - MTC Accredited
   1 Basic Safety Course (BST w/ PSSR), 2 Ratings Forming Part of Navigational Watch (NWKC), 3 Ratings Forming Part of Engineering Watch (EWKC), 4 Radar Navigation Radar Plotting and Use of ARPA - Radar Navigation at Operational Level (RNRPA), 5 Radar Simulator Course (RSC), 6 Radar, ARPA, Bridge Teamwork and Search and Rescue (RABSTAR), 7 Ship’s Restricted Radio Telephone Operators Course (GOC for GMDSS), 8 Operational Use of Electronic Chart Display and Information Course (ECDIS), Ship Simulator and Bridge Teamwork (SSBT), 10 Engine Room Simulator (ERS), 11 Medical Elementary First Aid (MEFA), 12 General Tanker Familiarization (GTF), 13 Shore Based Fire Fighting (SBFF), b.14 Advanced Training in Fire Fighting (ATFF)

b. In-House Training Courses
   1 Chef’s Course (CC), 2 Fire Fighting and Prevention (FF), 3 Free-Fall Lifeboat Familiarization (FFLB), 4 Free-Fall Lifeboat Coxswain (FFLC), 5 Bridge Equipment Familiarization and Watch Keeping Course (BEFWKC), 6 Engine Room Equipment Familiarization and Watch Keeping Course (EREFWKC), 7 Gas Welding (GW), 8 Electric Welding (EW)

6.2. Designed, Developed, and Piloted Innovative Course Programs in the Philippines
Moreover, the institution as driven by its Quality Policy of customer requirements satisfaction, has been granted authority and permission by CHED as pioneers in the Philippines to pilot two (2) new course programs such as:

a. Bachelor of Science in Marine Transportation and Engineering (Permit No. 089)
b. Bridging Program (CHED Resolution No. 384-2006 effective June 14, 2006)
b.1 Bachelor of Science in Marine Engineering to BSMarE
b.2 Bachelor of Science in Electrical Engineering to BSMarE

6.3. Active and Responsive Research and Extension Service
MAAP Research Program has received regional and national recognition by the Philippine Commission on Higher Education (CHED) with other 46 Higher Education Institutions (HEI) among 1,785 HEIs in the Philippines. A number of faculty, staff and student have paper presentation to national and international conferences and elected as steering committee members of various research association such as IMLA, ICERS, and GLOBAL MET. Hosted regional, national, and international research for a such as IMEC 16, AMETIAP, UC 2005, ICERS 8 and many more. Other the other hand, MAAP extension service program was focused on the environment care such as Artificial Reef, Coastal Clean up and tree planting, education and training on the local and national community such as English tutoring, Computer Literacy, Simulator Training, and Fire Fighting Training.

6.4. High Passing Rate of MAAP Graduates to PRC Exams
MAAP Graduates from 2003 up to 2006 have been consistent of performing well in the Professional Regulation Commissions (PRC) examinations. This is one indicator the quality of learning process that the students of MAAP have gained were effective and meaningful. The Figure 4 shown below reveals the quantitative data.

![Figure 4: MAAP Graduates PRC Examination Result (2003-2006)](image)

6.5. High Percentage of Student Sponsorship and Graduates Demand
The Department of Shipboard and Training directly handles the sponsorship that eventually determines the placement of MAAP students. From Class 2003 to 2006 the percentage went up to from 76.4 % up to 88.1 % with an average of 83.12%. As to date, Class 2010 in S.Y. 2006-2007 was all sponsored or 100% student sponsorship.

6.6. Certification under Two International Standards
The institution has been certified compliant with two internationally accepted standards such as ISO 9001:2000 for QMS by DNV and PSB 100:2002 for Quality Maritime Education and Training by TUV-SUD PSB. MAAP has been certified by DNV since 2000 while PSB granted the academy the certificate last 2006 as the pioneer in the Philippines.

7. SUMMARY AND CONCLUSION
In reference with ISO 9001:2000 standards and specifically defined by PSB 100:2002 standards that the institution’s products are the course and students, then Maritime Education and Training success factor would be the quality of the course programs and its graduates performance as governed by QSS and evaluated by a external party. Hence, QSS from the theoretical framework leads to quality education, training and assessment as evidenced by the remarkable MAAP outputs and the conceptual framework illustrated that QSS is a continuous process of improvement where in corrective actions are essential in determining effectiveness and improvement of MAAP QSS as confirmed by the improvement in audit results and trends.

Therefore, MAAP QSS (QMS) has been found effective for seven years with the maintenance of zero (0) major non-conformity and downward trend of minor non-conformities and observations from three versions
of International Standards. Corrective and Preventive action were successfully implemented that led to the new innovations and improvement of MAAP QSS. Successive growth in the number of Courses offered, number of students and trainees, scholastic achievement, and sponsorship embodies the effects of an effective Quality Management System that were manifested inside and outside the boundaries of MAAP.

8. RECOMMENDATIONS
It is evident that MAAP QSS has been consistently attaining zero nonconformity; therefore the recommendation is to step up further to the next level in attaining the institution’s vision of becoming the leading institution of excellence and in maritime education and training.

8.1. Establishment of Electronic Quality Management System
The concept of paperless or Electronic Quality Management System should now be studied, developed and implemented. This is to cut short paper usage and cost, faster document distribution, better records control, professional growth, and collaboration. This project is timely because of MAAP site expansion. Eventually, EQMS shall mean cost cutting and increase productivity.

8.2. Strengthen MAAP Course Realization
Learning from the past that the auditors always looked into the design, development, validation, delivery, evaluation, and control of course programs, which is also our main product, the organization shall continue to improve course/subject manuals and the course program as a whole by:

a. Revitalize and maintain IDO manpower both in ACAD and ASTC so that the concentration and prioritization of Course/Subject manuals, instructional aids, and compendium development, validation, evaluation, review and revision would be more enhanced and reinforced. This also needed anticipating the number new courses that MAAP shall produce in the coming years. As of now we only have two Instructional Development Officer.

b. Program Heads be institutionalized in ACAD to act as course managers assisting the Dean in proper delegation of monitoring and evaluation of teaching and course programs in compliance with CHED CMO 13, s 2005 – PSG. Aligning of subjects’ concepts, exercises, practical examination, quizzes, exam, and laboratory work into the maritime concept and functions shall be the main purpose of the program heads.

c. Enhance the Faculty/Facilitator Development Program to build up detailed competency, salary scaling and manpower necessary to our teaching force that directly affects the quality of course delivery, teaching load, and morale of the faculty and facilitators. The enhancement shall also be instrumental in preparation of PACUCOA Accreditation levels.

d. Consolidation of IDO and Assessors office into one to maximize manpower and streamline learning objectives with written and practical examinations. The possible conversion of this office into an independent office brings new opportunities of shared resource for course, test, and subject development by ACAD, CEC, ASTC, or MSC as applicable.

8.3. MAAP to pursue PACUCOA Accreditation
Integration of PACUCOA requirements compliments the ISO generic quality system with a detailed quality check in nine (9) major areas of an educational institution. With this accreditation, Faculty and Instruction as major areas will definitely boost and check the teaching process resulting to quality learning process. In addition the accreditation shall make the institution metamorphosis into a well-rounded organization.

8.4. Reorganization of MAAP
Grouping of interrelated Departments shall enhance the coordination and control of processes and operations. This refers to joining of all departments supporting Academics into one and trimming down of an office that directly reports to the President. However, the reorganization shall be dependent on recommendation no. 2, which means the reorganization shall be based on the PACUCOA Accreditors’ recommendations.

8.5. MAAP to pursue application for COD/COE to CHED
With the accreditation coming from PACUCOA the academy can therefore be able to achieve to be one of the Center of Excellence institutions recognized officially by CHED for us to further develop and offer innovative courses. Having this status can give us more autonomy, authority, and competence to push more
enhancements on maritime education and training creating more job opportunities and economic growth in the end.

8.6. MAAP to apply for Philippine Quality Award (PQA)
Each hard work shall not be put into vain but should be rewarded and recognize in terms of quality and excellence. MAAP shall then after being COE should have tap on the back through edification of being awarded by the prestigious Philippine Quality Award. This adds not only a feather on the cap of QAD but to each every individual that contributed to the establishment and implementation of an effective MAAP QSS and eventually to the organization.

9. REFERENCES
http://www.wmu.se/Pages/PageTemplate_6.asp?SectionId=851, Access Date: 1/22/08
Records of CPAR Summary from 2000-2006
VADM EDUARDO MA R SANTOS AFP (Ret.), 2006, MAAP briefing presentation, slide no. 13