

**Coast Guard - AWO**  
**National Quality Steering**  
**Committee**

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# **National Towing Vessel Examination and Boarding Program**

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Quality Action Team Report

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## **INTRODUCTION**

The Coast Guard - American Waterways Operators National Quality Steering Committee chose to pursue the development of a national towing vessel examination program based on the successful implementation of such programs at the regional and local level by Coast Guard field units. A Quality Action Team (QAT) to develop a national program which would effectively tie the existing programs together and improve marine safety by ensuring a more consistent and better targeted approach to the enforcement of regulatory requirements was formed.

The Towing Vessel Examination Program Quality Action Team was chartered to develop guidelines for a national voluntary dockside examination and underway boarding program for towing vessels. Its task was to establish a more systematic, uniform approach to the Coast Guard's exercise of existing authority to ensure compliance with applicable regulatory requirement for towboats and tugboats. In so doing, the QAT was asked to consider linking the examination program with industry quality programs; to draw upon and preserve the essential features of the existing district level programs. In pursuing these aims the QAT first attempted to define the scope of the problem and analyze its root causes, its second step was to evaluate the existing district level programs to identify existing "best practices" and to evaluate the feasibility of such a program to effectively address the problem while remaining within known resource constraints.

The opportunities identified by the National Quality Steering Committee to be explored by the QAT included; (1) a method to recognize the quality initiatives that are being adopted by the towing industry; (2) a means to enable the Coast Guard to more effectively target its resources on those vessels least likely to comply with regulatory requirements; and (3) a system to reduce the frequency of random underway enforcement boardings which have a highly disruptive effect on a vessel's operating schedule.

## **SCOPE OF THE PROBLEM**

A Coast Guard - AWO National Quality Steering Committee chartered Quality Action Team examined towing vessel crew fatalities in 1996. That QAT proposed a four-part non-regulatory program encompassing prevention measures, collection and dissemination of lessons learned, improved investigation and data collection techniques, and regular assessment of towing industry performance over time using a fatality rate model.

Another Coast Guard - AWO National Quality Steering Committee chartered QAT examined tank barge transfer spills, in 1997, and determined that the majority of towing industry spills can be prevented through a focused effort by company management to address the causes of transfer spills and by instituting preventative measures appropriate to the company's operations. To that end, the report included an "Action Register for Operating Company Management", a checklist of more than 50 recommended actions to address the most frequently cited causes of tank barge transfer spills.

These efforts appear to effectively address fatalities and spills but do not address personnel injuries and vessel casualties; it is the National Towing Vessel Examination and Boarding Program QAT which has the opportunity to address these issues.

## **SOLUTIONS**

In keeping with the Coast Guard - AWO partnership goal of finding non-regulatory solutions and the desire of the Coast Guard - AWO National Quality Steering Committee for an examination and boarding program, this QAT proposes a two phased examination program. The first phase is a simple and straightforward voluntary dockside examination program; i.e., an operator invites the Coast Guard aboard its vessel to verify or assist in achieving compliance. This compliance examination is limited to existing regulatory requirements. The second phase is designed to address the request made to the QAT to consider a program which would recognize those

operators which have instituted quality initiatives. Briefly, in a Phase II program, a "third party certified" quality organization is authorized by the Coast Guard to conduct self examinations of its vessels. Under both Phase I and Phase II a vessel successfully passing an examination receives an assurance from the Coast Guard that it will not be subject to random unannounced underway boardings.

The long range goal is that eventually all vessels will participate under Phase II (or quality) programs. Under a quality program a company would consistently maintain a vessel in better condition and continually evaluate its procedures and practices to create a safer working environment thereby reducing the chance of a casualty. It is envisioned that a successful Phase II program will achieve safety benefits far exceeding those safety improvements capable under a Phase I program.

#### PHASE I EXAMINATION PROGRAM (based on the 5<sup>Th</sup> Coast Guard District model)

Applicability: This voluntary program will be available to all companies operating uninspected towing vessels regardless of size or geographic operating area.

Entrance criteria: U.S. operator, U.S. flag. .

Administration: Once a vessel successfully completes an examination conducted by Coast Guard personnel a program compliance decal, good for one year, may be affixed to the vessel.

Standardization: All Coast Guard verification examinations will be conducted using the same standardized form and procedures.

Disruptive effect of vessel schedules. Participation in the program is designed to reduce or eliminate disruption of a vessel's schedule, inasmuch as, the examination is scheduled and successfully participating vessels are not subject to random underway boardings.

## PHASE II EXAMINATION PROGRAM (based on the 8<sup>th</sup> Coast Guard District model)

Applicability: This voluntary program will be available to all companies operating U.S. flag uninspected towing vessels regardless of size or geographic operating area.

Entrance criteria: For a company to qualify for entry into this voluntary program they must demonstrate compliance, via third part verification, with the standards of the American Waterways Operators Responsible Carrier Program or an equivalent quality system such as ISM.

Application Process: The application must describe the company's organization and its commitment to safe and environmentally responsible operation. It should detail how the company will train its employees on their specific responsibilities.

Initial Verification: Once the entrance criteria is met, a representative sampling of company vessels will be examined by the Coast Guard to verify the effectiveness of its Phase II program. The number of vessels in the representative sampling and scheduling will be determined by the cognizant COTP in conjunction with the company representative.

Administration: Once a company successfully enters the program, they may affix a program compliance decal, good for five years, to all their vessels covered by their quality systems.

Oversight: Each participating company must submit to the cognizant Marine Safety Office an annual attestation that they are complying with all the tenets of their approved Phase II program. This annual attestation should be accompanied by evidence of having successfully completed all required third party audits and evidence that all required examinations have been conducted on those vessels to which stickers have been issued.

Standardization: All Coast Guard verification examinations will be conducted using the same standardized form and procedures.

Disenrollment: A company may voluntarily remove themselves from this program at any time by simply notifying the Coast Guard and removing the compliance decals from their vessels. The Coast Guard reserves the right to disenroll any company that fails to maintain its quality system. All decals, used and unused, must be accounted for and returned to the sponsoring Marine Safety Office.

Disruptive effect of vessel schedules. Participation in the program is designed to reduce or eliminate disruption of a vessel's schedule, inasmuch as, participating vessels are not subject to random underway boardings.

## **BOARDING PROGRAM**

Enforcement: Towing vessels will be subject to unscheduled regulatory compliance boardings based on Coast Guard resource restrictions and risk based management procedures. Deficiencies noted during these boardings will result in civil penalties. Boarding officers would follow the following protocol:

Vessels with compliance decals: Towing vessels with current towing vessel examination program decals will not be subjected to Coast Guard boardings unless they are involved in a pollution incident, a marine casualty or when information becomes available to the Coast Guard which indicates a boarding is necessary in the interest of safety, environmental protection, or the enforcement of laws and treaties. These decals will be recognized in all Marine Safety Office zones regardless of whether the cognizant Marine Safety Office has instituted a Towing Vessel Examination program.

Vessels without compliance decals: Towing vessels not in the program will be targeted for regulatory compliance boardings as Coast Guard resources permit.

## MEASUREMENT

The QAT also considered a program to measure the effectiveness of an examination program. A method 'Measuring the Success of a Voluntary Government Program' was prepared (attached as Appendix C), which recommends three measurement schemes; a scheme to measure activity, a scheme to measure national impact, and a scheme to measure regional impact. Each of these schemes required it's own spreadsheets and the development and maintenance of standalone databases. The Coast Guard headquarters Compliance and Analysis Division (G-MOA-2) evaluated the measurement proposal at the QAT's request and recommended against its implementation. The primary rational offered was that MSIS is the Coast Guard's primary information analysis source and the Coast Guard should avoid/minimize hand-keying information into an outside data systems that duplicate information already captured in MSIS.

The QAT agrees that requiring the Coast Guard to support an additional database is to be avoided, but that measurement beyond that capable with MSIS data is desirable. Therefore, it supports the regional measurement effort, discussed in the attached report, currently in place at Marine Safety Office St. Louis. This effort involves the selection of two control groups, one of 20 participating Phase I line vessels and another of 20 non-participating line vessels, 20 participating Phase I fleet vessels and five participating Phase II companies. Once these vessels and companies are selected, their casualty and pollution records for the past three years will be reviewed in order to determine the number and types of pollution and casualties that these vessels have experienced. Data captured during the following three years will be used to evaluate the impact participation in the National Towing Vessel Examination Program has on casualty and spill rates.

## **CONCLUSION**

This QAT analyzed available Coast Guard data and statistical evidence in an effort to define the scope of the problem to be addressed by a National Towing Vessel Examination Program. For the period from 1993-1996, available data indicated that 38% of the events, which contributed to the casualty rate, were from Loss of Control, 21% were from Groundings and 15% were from Allisions. Further evaluation of these statistics indicates that a majority of vessel casualties are a result of mechanical failure or human factors. The solution to the problem, as defined, would be to address these critical areas. They could be addressed by identifying and focusing on companies that do not have a quality program in place, or by supporting a two-phase program. A review of the Phase I part of the Vessel Examination Program, which is based on current regulatory requirements, indicates that as a stand alone program, it could have relatively minimal impact on vessel casualties.

It is for this reason that Phase II of the VEP should be emphasized. The long-range goal of the Program should be that all vessels, eventually, participate under a phase II program. Under a required quality system (RCP, ISM), a company would consistently maintain a vessel in better condition and continually evaluate its procedures and practices, particularly in the areas of human factors and mechanical systems, to create a safer working environment. It is envisioned that successful Phase II program would achieve safety benefits and a reduction in casualties exceeding those achievable through a stand alone Phase I program.

Data was gathered and reviewed to determine what effect participation in a National Towing Vessel Examination Program would have on Coast Guard resources. A number of units in USCG Districts 5 and 8 were queried on the resources requirements of the programs they sponsored. Information



received indicated that an average examination in a Phase I program expended 4 ½ personnel hours. The typical MSO devoted \$15,500 and 360 personnel hours to examine 63 towing vessels annually. There was evidence to indicate that Coast Guard resource expenditures associated with initiating a Phase II program exceeded those of conducting a Phase I examination, primarily due to the number of hours devoted to assisting companies in establishing programs. Based on the above information, the QAT concluded that this further supported the need for emphasis on the Phase II part of the program. The increase in resources noted for the Phase II implementation could be minimized by applying selected procedures from the Coast Guard Streamlined Inspection Program, which has the Company taking a more active role in the implementation process. Once Phase II is implemented, the Coast Guard would revert to a less resource intensive oversight role, allowing them to focus more resources on non-participating operators.

The National Towing Vessel Examination program can make important contributions to marine safety and environmental protection through encouraging a partnership and team effort between the Coast Guard and industry. Resource commitments would be more, initially, than those required as the program continues. Emphasis on Phase II would minimize resource expenditures over the long haul, with companies taking more responsibility for the Program once they are certified.

The QAT recognizes that existing programs are straining resources to the breaking point. Implementation of this national program will assist the Coast Guard in targeting where resources are most needed. This program should not be implemented if the Coast Guard is not able to commit the required resources. A national standard for implementation is required to validate this voluntary program. Validation will encourage participation.

## RECOMMENDATIONS

It is recommend that if the National Quality Steering Committee endorses the idea of a voluntary examination program for towing vessels that it recommend for implementation the program outlined here, and presented in greater detail in the draft Navigation and Vessel Inspection Circular attached as Appendix B.

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CAPT G.D. Powers  
U. S. Coast Guard

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Mr. Herb Walling  
Moran Services Corporation

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Date

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Date

Appendix A: Quality Action Team Charter

Appendix B: Draft NVIC: Standards for a National Towing Vessel Examination Program Examination Program for Uninspected Towing Vessels

Appendix C: Measuring the Success of a Voluntary Government Program

# QUALITY ACTION TEAM CHARTER

to develop a

## NATIONAL TOWING VESSEL EXAMINATION AND BOARDING PROGRAM

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### PURPOSE

This charter provides procedures, authority, and guidance for a Quality Action Team (QAT) to develop a national voluntary dockside examination and underway boarding program for towing vessels. The Coast Guard-AWO National Quality Steering Committee (QSC) chose to pursue the development of a national towing vessel examination program based in part on the successful implementation of such programs at the regional or local level by Coast Guard field units. The QSC believes that a national "umbrella" program which effectively ties together the existing district-level programs and provides a uniform set of core guidelines for expansion of the voluntary dockside/underway boarding program nationwide has the potential to improve marine safety by ensuring a more consistent and better targeted approach to the enforcement of regulatory requirements for towing vessels. Such a program also offers a means of recognizing responsible operators who voluntarily adopt safety or quality management programs which exceed the requirements of current law and regulation, an objective consistent with the Coast Guard-AWO Safety Partnership's emphasis on non-regulatory approaches to improving marine safety and environmental protection.

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### ASSIGNED PROJECT

The Towing Vessel Examination Program QAT is chartered by the Coast Guard-AWO National Quality Steering Committee to develop guidelines for a national voluntary dockside examination and underway boarding program for towing vessels to establish a more systematic, uniform approach to the Coast Guard's exercise of its existing authority to ensure compliance with applicable regulatory requirements for towboats and tugboats. In conducting this work, the QAT should:

- Identify the national objectives which a towing vessel examination and boarding program should seek to achieve;
- Develop a set of consistent "core guidelines" which all district-level boarding programs should incorporate;
- Develop a means to ensure district-to-district reciprocity for towing vessels operating in more than one Coast Guard district; and,

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- Consider the linkage between a national Coast Guard examination program for towing vessels and voluntary industry safety/quality initiatives such as the AWO Responsible Carrier Program.

In conducting this work, the National QSC expects that the QAT will draw upon the experiences and preserve the essential features of the district-level programs which have been implemented successfully to date. The QAT should also be cognizant of the resource constraints on Coast Guard field units and consider how the objectives of a national examination and boarding program for towing vessels can best be achieved within those financial and human resource limitations.

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## STRUCTURE

The Towing Vessel Examination Program QAT will consist of the following individuals. QAT leaders are designated below. Other necessary team roles and responsibilities will be determined by team members in the course of their work.

### Quality Action Team:

Team Leaders: CDR Jeff Powers, U.S. Coast Guard  
Herb Walling, Moran Services Corporation

Team Members: Jon Beech, River Parishes Co., Inc.  
CDR Larry Bowling, First Coast Guard District  
CDR John Holmes, Eighth Coast Guard District  
Don Midgett, Fifth Coast Guard District  
Jeff Parker, Allied Towing Corp.  
Tommy Seals, Brown Water Towing Co.  
Dixon Shaver, Shaver Transportation Co.  
Jay Talbert, Inland Marine Service

Team Facilitator: TBD

Guidance Team: Coast Guard-AWO National QSC

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## QAT METHODOLOGY AND DELIVERABLES

Recognizing that there are many different Total Quality Management (TQM) process improvement models in use within the Coast Guard and the marine transportation industry, no particular methodology for the QAT's work is prescribed. The Towing Vessel Examination Program QAT may employ any process with which it is most comfortable to identify the objectives of a national examination and boarding program for towing vessels and develop the outlines of such a program for nationwide application. At a minimum, the process should

include the following steps (derived from the July 1995 "Report of the Coast Guard-AWO Quality Action Team"):

- Define the scope of the problem or process improvement needed (i.e., determine the baseline), using statistical data, case studies, etc., as available;
- Analyze the data and identify root causes of the problem/opportunity for improvement as applicable;
- Identify solutions to the problem or improvements to the process based on analysis of available data and evidence;
- Identify the measure(s) by which the success of proposed process improvements will be evaluated and check the validity of proposed improvements by measuring initial results;
- Refine proposed process improvements as necessary; and,
- Develop an implementation plan for submittal to the National QSC.

The Towing Vessel Examination Program QAT should develop an implementation plan which lays out clearly and in as much detail as necessary how and by whom the proposed quality improvements should be effected. To facilitate subsequent National QSC review, the implementation plan should identify the parties the QAT views as having primary responsibility for implementing the proposed process improvements and recommend a means by which to communicate the recommended improvements to this target audience.

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## RESOURCES AND TIMETABLE

Members of the Towing Vessel Examination Program QAT were selected for their knowledge of the towing industry and the Coast Guard regulatory enforcement process and/or their experience with the development of towing vessel examination and boarding programs at the Coast Guard District or Marine Safety Office level. The QAT is expected to draw on its talents to access resources, conduct necessary research, and analyze all relevant information available to it. The QAT may wish to seek assistance from other individuals in the barge and towing industry or the Coast Guard if such assistance would enhance the team's examination.

A review of the voluntary dockside examination and underway boarding programs for towing vessels instituted in the First, Fifth, and Eighth Coast Guard Districts, and feedback from Coast Guard and industry participants in these programs, may assist the QAT in conducting its work. The Guidance Team will assist the QAT as necessary in obtaining and coordinating support from both AWO and the Coast Guard.

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The QAT should begin work in the spring of 1997. An interim report should be prepared in advance of the August 1997 National QSC meeting. The interim report should consist of a brief written synopsis and accompanying oral presentation by the team's leaders of the major emphasis of the work completed to date, any particularly challenging or notable findings or events, and an assessment of whether the proposed target for completion of the QAT's work can be met. A final written report, including the QAT's recommended implementation plan, should be completed at least one month in advance of the December 1997 National QSC meeting.

The QAT may meet as often as necessary to complete its task. Meetings should be held in locations which spread time and financial obligations equitably among the participants.

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#### AUTHORITY TO ACT

We authorize the QAT to gather all necessary information from all available sources within our organizations to complete this task. All Coast Guard and AWO personnel shall render appropriate assistance to support the QAT and enable it to fulfill the requirements set forth in this charter.



J. C. Card  
Rear Admiral, U.S. Coast Guard  
Assistant Commandant for Marine Safety  
and Environmental Protection

May 1, 1997  
Date



Thomas A. Allegretti  
President  
American Waterways Operators

May 20, 1997  
Date

NVIC

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO.

Subj: STANDARDS FOR A NATIONAL TOWING VESSEL EXAMINATION AND  
BOARDING PROGRAM

1. PURPOSE. This circular establishes guidelines for a cooperative Coast Guard/Industry national program that allows for the scheduled, dockside examination of uninspected towing vessels (UTVs) for compliance with applicable laws and regulations. Marine Safety Offices (MSO) may implement this National Towing Vessel Examination Program for UTVs if it is determined that the risks, costs and benefits in it's area of responsibility warrant such an initiative. This program is not mandatory, and is not required to be initiated by every MSO. If a UTV examination program is initiated it shall follow the guidance provided by this NVIC which is intended to create a nationally consistent program, deviation or modification is not permitted. Towing vessel companies that desire to participate in this program must contact a participating MSO. Deficiencies discovered during a voluntarily examination will not result in the assessment of a civil penalty; nor will the results of the examination be shared with boarding teams to avoid the potential for the use of this information in boarding/targeting decisions.
2. DIRECTIVES AFFECTED. None.
3. APPLICABILITY. All uninspected U. S. Flag towing vessels that are subject to 46 CFR subchapter C. Specifically, vessels that do not require a Coast Guard Certificate of Inspection and that are defined in 46 U.S. Code 2101 as commercial vessels that engage in or intend to engage in the service of pulling, pushing, or hauling along side.
4. BACKGROUND.
  - a) Historically, the Coast Guard has conducted unscheduled boardings on towing vessels to ensure that commercial operators complied with applicable U.S. laws and regulations. Penalties were frequently assessed for deficiencies identified. However,

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NON-STANDARD DISTRIBUTION:

APPENDIX B

Coast Guard forces are insufficient to conduct a thorough examination of a significantly high enough number of towing vessels to assure a high level of compliance or to sufficiently influence this industry's casualty and oil spill rate.

- b) In late 1993 in the wake of the Amtrak Sunset Limited derailment, the towing industry began a process of self-examination to improve its safety record. Out of this process came the American Waterways Operators (AWO) Responsible Carrier Program (RCP). The RCP serves as a template quality program that incorporates sound operating principals which can be transformed into proactive safety measures to provide a level of safe operations above and beyond what simple compliance with regulations would achieve.
- c) In September 1997, a Quality Action Team (QAT) consisting of Coast Guard and towing industry members was assembled to form the foundation of a national voluntary examination program. The QAT agreed that adoption of quality principals by the towing industry held the greatest potential for improvements in safety.

## 5. DISCUSSION:

- a) Historically, absent a regulatory mandate towing vessels seldom receive a detailed examination by the U.S. Coast Guard. Recently, some MSOs and Districts determined that the risk presented by towing vessels was significant enough to begin a program of examination. The National Towing Vessel Examination Program has been developed to provide a standard program for those Coast Guard units that choose to implement a UTV examination program. This program establishes a standard for the examination of a towing vessel's equipment, systems and quality practices. It is designed to reward companies that have demonstrated a commitment to quality and to provide an incentive for companies that currently do not have a certified quality program to develop one. The Towing Vessel Examination program also allows for more efficient use of Coast Guard and industry resources and less disruption of vessel schedules by providing for scheduled examinations, rather than unannounced boardings. Vessels that successfully demonstrate compliance via an examination will not be subject to unannounced boardings with the exception of those cases where cause exists; i.e., a casualty investigation or law enforcement action. As evidence of participation in the Towing Vessel Examination program and compliance with all requirements, vessels will be awarded a decal which when displayed is intended to signal Coast Guard teams to not board the vessel for the purpose of conducting an unscheduled compliance examination.
- b) There are two ways that industry can participate in Towing Vessel Examination program:

**Phase I**, in which the Coast Guard conducts an examination to determine if a vessel is in compliance.



**Phase II**, in which, in recognition of the existence of quality programs (certified by an independent third party), a responsible operator is authorized by a sponsoring MSO to conduct self-examinations of its towing vessels.

**Enclosure 1 provides a detailed explanation of each phase of the Towing Vessel Examination program and the application process.**

c) Whether a vessel is examined under Phase I or Phase II, the Coast Guard's goal is to enhance towing vessel safety. This will be accomplished primarily through scheduled examinations of vessels. Companies that do not participate in the Towing Vessel Examination program are still subject to Coast Guard boardings and may be targeted for subsequent boardings if deficiencies are found.

d) Company Benefits

1. Voluntary program; participation is at company's discretion.
2. Provides for the scheduling of examinations at times most compatible with operations.
3. Focuses on education and correction of deficiencies, not penalties.
4. Eliminates repeat or multiple boardings and minimizes examination time. Vessel personnel know when the examination will happen and can be prepared to quickly and efficiently assist the examiners.
5. Consistency; only one nationally recognized standard.
6. Provides a self examination option.

e) Coast Guard Benefits

1. Greater emphasis on prevention and quality systems.
2. More effective use of resources.
3. Better focus on high risk, non-participating, vessels. Phase II companies will conduct routine self-examinations on their vessels. The Coast Guard can use its resources to board those vessels that are not routinely examined.
4. Increased industry cooperation and compliance.
5. Provides a CG/Industry working relationship at "deck plate" level

f) Performance Indicators

1. The final task of the QAT is to develop a series of performance indicators to measure the effectiveness of the program. This item is still being examined. Industry and Coast Guard input is desired to determine the best means of measuring the success of Towing Vessel Examination program. Comments should be sent to Coast Guard Headquarters at Commandant (G-MOC-2).

6. PROCEDURES.

- a) Companies and operators that want to participate in this voluntary examination program must contact a participating MSO and request in writing to participate in either a Phase I or Phase II program. MSOs participating in this program act as sponsors for the companies they enroll and their point of contact in all matters relating to this program. This will include processing enrollment requests, following up to ensure deficiencies are corrected and conducting annual oversight.
- b) Vessels participating in Phase I will be examined by the Coast Guard using the National Towing Vessel Examination Program Form (enclosure (2)). Civil penalties will not be initiated for items that are found to be not in compliance during these voluntary examinations. A reasonable amount of time, as the COTP deems appropriate (suggested not to exceed 30 days) should be given to correct the deficient item(s). Once a Phase I examination is completed, a Phase I decal will be awarded (as ready visual evidence of compliance) for on the port side pilothouse window of the vessel. The decal is valid for one year
- c) The Phase II examination program is limited to those companies that have been accepted for participation by a sponsoring MSO. Only those companies that have been certified by a third party as meeting the standards of the American Waterways Operators (AWO) Responsible Carrier Program (RCP), the International Safety Management Code (ISM), or an equivalent quality system are eligible. Once the quality certification is completed and an application with requisite information (see enclosure (1)) has been submitted to the MSO an examination of a representative sampling of the companies fleet will be conducted by the sponsoring MSO using the National Towing Vessel Examination Program Form (enclosure 2). If this examination verifies a company's ability to ensure vessel compliance through self examination it will be authorized to participate as a Phase II company. Phase II companies will be issued enough Phase II decals to place one on every vessel in their fleet that passes a self examination. The decals are to be placed on the vessels as stated in paragraph 6.b. above and are valid for five years. During this five year period, the company must maintain its status as an RCP/ISM company as verified by third party audits as called for by the quality program they are enrolled in and the sponsoring MSO should conduct annual examinations of a sampling of the company's vessels.
- d) Phase II companies with offices or facilities located in more than one MSO area of responsibility need apply to only one participating MSO for authority to conduct Phase II examinations.
- e) Vessels that are not enrolled in either the Phase I or Phase II program are subject to boardings for compliance when it is practical or necessary for the MSO to conduct them. For consistency purposes, all examinations of Uninspected Towing Vessels for compliance with U.S. laws and regulations, both scheduled and unscheduled

should use the National Towing Vessel Examination Form (for the convenience of underway units all of the items listed on the National Towing Vessel Examinations Program Form have been reproduced on a single piece of paper, Form CG-4100T (Revised ?????)) Civil penalties or other appropriate action may be taken against these owner/operators when necessary. A decal will not be issued to a vessel that is not enrolled in either the Phase I or Phase II programs even when an examination reveals a vessel to be compliance. A vessel that is not participating in this program or is boarded for cause by a Coast Guard operational unit shall be examined using the 4100T form that is displayed in enclosure (4).

- f) Vessels that are currently enrolled in a similar MSO or District initiated UTV examination may negotiate with the cognizant COTP for a scheme to transition to the Towing Vessel Examination program
- g) Vessels with a valid decal are not to be boarded again by Coast Guard personnel in the absence of cause; e.g., collision, allision, grounding, pollution investigation, intel, or drug/migrant interdiction. If deficiencies are found aboard a towing vessel with a decal during an unscheduled boarding, the COTP will inform the sponsoring MSO of the deficiencies and provide them with the MSIS case number. The sponsoring MSO will establish the deficiency correction time line. Both a Phase I and a Phase II vessel should be allowed no more than 30 days to correct the deficiencies or it will be removed from the examination program and the decal will be removed from the vessel. A Phase II company should address the deficiency to the satisfaction of the sponsoring MSO, and where warranted, adjust its quality program to address the deficiency and prevent future occurrences.
- h) In all cases where a discrepancy hazarded the vessel or its crew, the sponsoring MSO shall investigate the matter to determine the reason. If this investigation reveals a lack of commitment to safety by the vessel or company the vessel decal shall be removed from the vessel and returned to the sponsoring MSO.
- i) A company may disenroll from the Towing Vessel Examination program at anytime. This can be done by advising the sponsoring MSO in writing that they no longer want to participate. Involuntary disenrollment may occur if, in the opinion of the sponsoring MSO, a Phase I vessel is discovered to have habitual deficiencies, or if a vessel(s) of a Phase II company is discovered to have significant deficiencies. Involuntary disenrollment may also occur if a Phase II company fails to maintain third party certification of its quality program. If disenrolled all decals, used and unused, shall be returned to the sponsoring MSO.

## 7. COAST GUARD ACTION.

- a) Coast Guard examination of these vessels should only be conducted by *qualified individuals*. To alleviate industry concerns about inconsistent examination

practices, the examination team members should hold a qualification in, at a minimum, one of the areas of marine inspection or have a good working knowledge of marine inspections. An inspector conducting a UTV examination should have attended at least 5 UTV examinations with a qualified marine inspector prior to being considered a *qualified individual*.

- b) All UTV examinations should be conducted following the guidance in enclosure (2) and (3). At the end of the examination, a USCG Vessel Boarding Report (CG-5437) stating all deficiencies that can not be immediately resolved shall be issued to the vessel's operator. Once all deficiencies are rectified on a Phase I vessel, a Phase I decal will be issued to the vessel. For a Phase II company, once the sponsoring MSO is satisfied that the company has a quality program as outlined in this NVIC, the application has been approved and a representative number of vessels have been examined by Coast Guard inspectors, the company will be issued the appropriate number of Phase II decals for use in its self examination program. Companies participating in the Phase II program must examine their participating vessels annually and their quality program must be audited by an independent third party. Participating Phase II companies must submit evidence to the sponsoring MSO that all required third party audits have been conducted and annual vessel examinations have been conducted.
- c) A record of the examination and associated activities shall be entered into MSIS in the Marine Inspection (MI) data fields including MIAR, MIDR (for all deficiencies, even if corrected prior to departure), MIDF (if required), MINS (if inspection discovered unusual conditions or unique circumstances that other MSOs should know about). If a pattern of deficiencies or a unique item is discovered, an MSPB entry should be made that states the MSIS case number so other units may be informed. It is recommended that articles about frequently occurring deficiencies and unusual items discovered during an inspection be printed in the MSO and/or District newsletter in order to disseminate this information to non-Coast Guard entities.

- d) MSOs should take appropriate measures to educate companies that have not enrolled in the Towing Vessel Examination program to the advantages of participating. This can be done through newsletters or at industry meetings, or through any other means available.

Signature

- Encl: (1) Phase I and Phase II Program Summary
- (2) National Towing Vessel Examination Program Form
  - (3) Towing Vessel Safety Requirements
  - (4) Form CG-4100T Boarding Report



# **MEASURING THE SUCCESS OF A VOLUNTARY GOVERNMENT PROGRAM**

**CDR J. M. Holmes**

Map of the United States showing the locations of various MSO (Multiple System Operator) and Group entities. The map includes state boundaries and labels for various locations. A large, dark, irregular shape is overlaid on the map, covering the central and eastern United States, possibly indicating a specific region of interest or a data overlay.

Locations and entities labeled on the map:

- MSO Huntington
- MSO Pittsburgh
- Group Upper Mississippi
- DVMO
- MSO St. Louis
- MSO Paducah
- Group Lower Mississippi
- MSO Memphis
- MSO Port Arthur
- Houston
- Port Arthur
- Salveston
- Morgan City
- New Orleans
- Mobile
- MSO Morgan City
- MSO Louisville
- Group Ohio Valley
- Huntington
- Paducah
- Keokuk
- Pittsburgh
- Group Mobile
- AIC Mobile
- MSO Mobile
- CGC Sweetgum
- Air Station Houston
- MSO Houston/Galveston
- VTS Houston
- Corpus Christi

MSO Pittsburgh

**Jeokuk**

~~St~~ Louis

cah

Memphis

Memphis

~~MSO Margate City~~

it Artin

Morgan

Morgan

Group Mobile  
AIC Mobile  
MSO Mobile  
CGC Sweetgum

~~ATC Mobile~~

MSO Mobile

~~CGC Sweetgum~~

Corpus Christi

Group Corpus Christi

~~Air Station Corpus Christi~~

~~MSO Corpus Christi~~

Group Galveston  
MSU Galveston  
CGC Papaw

~~MSU Galveston~~

~~CGC Papaw~~

District Headquarters  
 Group New Orleans  
 ISC New Orleans  
 Air Station New Orleans  
 MSO New Orleans  
 GRETC  
 Harbor Defense Command 208

**District Headquarters**

**Group New Orleans**

ISC New Orleans

Air Station New Orleans

MSO New Orleans

GRFIC

Harbor Defense Command 208



# MEASURING THE SUCCESS OF A VOLUNTARY GOVERNMENT PROGRAM

## INTRODUCTION

In early 1996 the Coast Guard Marine Safety Office (MSO) in St. Louis assembled its senior management to identify vessel operations which posed the greatest risk to safety and the environment in the twelve-state area it covered. Two high-risk customer bases were identified. The first of these was the relatively new gaming vessel industry that had proliferated during the past 5 years. During this period the industry had grown from zero to twenty vessels in the MSO area, each of which carried from 1000 to 2500 passengers on regular river voyages. A conservative estimate indicated that at any one time over 25,000 passengers were on gaming vessels in the area of operations controlled by the MSO. The second high risk customer base identified was the towing industry, which transports millions of tons of cargo up and down the Mississippi, Missouri and Illinois Rivers each year, including over one billion barrels of petroleum products and 450 million barrels of chemicals.

This meeting resulted in the development of two programs. The first of these involved the aggressive utilization of the existing passenger vessel regulations to increase safety on gaming vessels. This program utilizes a four phased approach to enhancing safety that focuses on both vessel operators and community response agencies. It stresses awareness of problems, training of vessel personnel and local emergency response agencies, developing contingency plans for emergencies, and conducting comprehensive drills to test the training and preparation which had taken place. Although unique in its focus on government / industry cooperation, this program was fundamentally based on existing regulatory standards. The second program, The Cooperative Towing Vessel Examination Program (CTVEP) focuses on safety and environmental protection on towing vessels. The significant difference between this and the gaming vessel program was that it is voluntary, and has no regulatory requirement for compliance. A second significant difference was that it is developed jointly by Coast Guard and industry personnel.

Although this second program represents a true partnership between government and industry, it also represents new challenges for the Coast Guard. Unlike previous requirements mandated by law or regulation, this program was a new product that the industry can accept or reject as it sees fit. A number of questions became relevant as a result. They include:

a. What is the program's goal? How do we encourage people to use it? What are the benefits? What are the best ways to communicate these benefits? How many companies will adopt the program? How can we encourage program growth?

Perhaps the most relevant question regards the goal of the program, with the follow on being how can the program be measured to ensure this goal is achieved? Although

this sounds easy to accomplish, program measurement is not an easy task, particularly for government organizations which have until recently relied principally on "gut instinct" to determine if a program has met its goals. This focus has recently been changed by the Government Performance and Results Act (GPRA) that has mandated that government agencies measure programs to determine if tangible results have been achieved. The Coast Guard has responded to the GPRA mandate with a business plan which has set specific goals, two of which are directly related to the towing industry. These are:

**Goal MSS-3b: reduce fatality rates on uninspected towing vessels, and**  
**Goal MEP-1: reduce oil and chemical pollution from maritime sources.**

## **ORGANIZATIONAL OVERVIEW**

The Coast Guard is the primary federal agency with maritime authority for the United States. It is a complex organization of ships, aircraft, boats and shore stations. Decentralized, both administratively and operationally, Coast Guard personnel respond to tasks in several mission/program areas. A vessel may carry out roles in law enforcement, search and rescue, marine environmental protection, maintenance of aids to navigation, and ice breaking. An aircraft may search for and assist distressed vessels, evacuate injured people, conduct pollution detection and surveillance flights, report sightings in conjunction with law enforcement, and carries out the mission of the International Ice Patrol.

Further, under federal law (Title 14, U.S.C., codified), the Coast Guard is "At all times an armed force of the United States." And as such, is a military force-in-being, trained and ready to carry out the policies and objectives of the U.S. government. The Coast Guard maintains constant military capability and readiness. The Coast Guard's four main missions are Law Enforcement, Maritime Safety, Marine Environmental Protection and National Security.

The Coast Guard organization is comprised of its Headquarters in Washington, DC, Area Commands in Alameda, CA and Portsmouth, VA, and 10 district offices. These include offices in Boston, MA, Portsmouth, VA, Miami, FL, New Orleans, LA, Cleveland, OH, Alameda, CA, Seattle, WA, Honolulu, HI and Juneau, AK. These offices control 24 air stations, 44 search and rescue groups, and 66 marine safety units, which in turn control the operations of over 1500 small boats, 232 large cutters, and 243 aircraft.

The Eighth Coast Guard District, headquartered in New Orleans, is the largest district in the Coast Guard. It covers all or part of 26 states throughout the heartland of America. It stretches from St. Marks, FL, to the United States - - Mexico border at Brownsville, TX, and from the Gulf of Mexico to the Canadian border. The district includes 1,200 miles of coastline and 10,300 miles of inland navigable waterways. In a typical year, the men and women of the Eighth Coast Guard District prosecute more than 6,300 search and rescue cases - - saving 770 lives, assisting

7,900 mariners and saving \$37.5 million in property. The district maintains 24,000 aids-to-navigation, responds to more than 4,200 marine environmental pollution incidents and conducts more than 1,500 law-enforcement boardings.

Marine Safety Office (MSO) St. Louis has the largest geographic area of responsibility (AOR) of any Marine Safety Unit in the Coast Guard. It includes all or parts of twelve states and over 2,000 miles of navigable waterway. This includes the entire Missouri River, the Upper Mississippi River from mile from Cairo, IL north to its headwaters in northern Minnesota, and the Illinois River from its confluence north to Chicago, IL.

## **PROGRAM DEVELOPMENT**

towing vessels have historically experienced a fatality rate that is approximately double that of vessels which are subject to mandatory annual inspection. As "uninspected vessels", towing vessels are subject to random boardings and cursory "examinations" by the Coast Guard, but are not subject to regular annual "inspections" like passenger vessels and cargo vessels. The difference between an "examination" and an "inspection" is that an inspection is a detailed review of the vessels equipment and systems which is mandated by law, and an examination is a cursory spot check of equipment and systems, far less detailed and randomly conducted. This creates a dilemma in that based on current regulatory requirements, towing vessels seldom if ever receive a detailed review of their equipment and systems, and absent a regulatory mandate to conduct regular inspections, these vessels often become a low priority behind the myriad of required missions. In addition, the absence of regular inspections sometimes leads towing vessel companies to the development of a somewhat loose safety culture. In many cases the absence of regular inspections also caused a distrust of the Coast Guard due to the fact that the random boarding atmosphere is perceived as an adversarial situation, where the company feels that it is being singled out for the purpose of taking enforcement action. The result is a schism between the Coast Guard and one of its primary customer groups - the towing industry. This is a particularly difficult situation since it is occurring at a time when the towing industry's growth has rebounded and is slated to increase at a rate of 5% per year through the year 2000.

The challenge was to create a program that could overcome these difficulties. It had to be designed so that it:

- (1) Was supported by both the Coast Guard and the marine industry,
- (2) Effected change to the existing safety culture,
- (3) Was non-threatening in nature,
- (4) Supported the goals in the Coast Guard Business Plan, i.e., increased safety by reducing the number of marine casualties and oil pollution incidents.

In addition resource restrictions dictated that this program should be resource neutral, i.e., no additional resources could be expended in its implementation.

A group of Coast Guard and industry personnel were then brought together to design the program. The goals listed above were agreed upon and program objectives were established. These included:

#### Coast Guard Objectives

- (1) Greater emphasis on prevention and quality systems
- (2) More effective use of resources
- (3) Better risk management; i.e. focus on high-risk vessels
- (4) Increased Coast Guard / industry cooperation

#### Industry Objectives

- (1) Voluntary Program
- (2) Focus on correction of deficiencies vice assessment of penalties
- (3) Elimination of repeat examinations for vessels in compliance
- (4) Consistent examinations, regardless of the conducting unit

The program is written in straightforward non-government language and adopted a markedly non-government focus. It is voluntary and consists of two phases. Phase I requires an examination that can be requested by a company to ensure that their vessel or vessels are in compliance with federal regulations. The focus of the examination is a cooperative effort to improve safety. Penalties are not assessed for deficiencies noted, the vessel is either required to correct them prior to operation (for the most serious deficiencies) or given a period of time to make repairs. Examinations are conducted in accordance with a standard check off list that is the same for each vessel. When a vessel successfully completes a Phase I examination it is issued a decal which exempts it from random boardings for a period of one year unless it is involved in a casualty of pollution incident.

Phase II of this program is for those companies that make a commitment to quality. Phase II allows companies with quality systems to undergo an audit of their processes. If the audit results indicate that the company's vessels meet all regulatory requirements, the company will be allowed to issue decals to their own vessels. These decals are similar to, but a different color than, those issued to vessels enrolled in Phase I of the program. Decals are dated and color-coded so that it is apparent whether a vessel has a current decal, and at what phase the decal had been issued.

The program was initially developed to apply to those vessels on the Upper Mississippi, Missouri, and Illinois Rivers. During development several other Coast Guard Marine Safety Offices indicated a desire to participate. Recognizing that more global participation would encourage one of the key objectives of the program, i.e., the need for consistent examinations, the program was briefed to the Commander of the Eighth Coast Guard District in New Orleans. His acceptance expanded application from the Western River system to include the Gulf Coast, ensuring that towing vessel

examinations would be consistent throughout this area and that vessels with decals would be exempt from boarding throughout a large geographic area.

### **IMPLEMENTING THE PROGRAM**

Once it was ensured that the program would receive a more global application, the core Coast Guard and Industry group set about to market the program. Briefings were given at numerous regional forums including the Western Rivers Industry Day in Louisville, The Regional American Waterways Conference in St. Louis, and the Illinois River Carriers Association Meeting in Chicago. Every opportunity to publicize the program was used, developing a pamphlet and including program information in numerous newsletters and professional publications. Information was also made available when Coast Guard personnel conducted random boardings of non-program vessels, and in meetings with companies on other issues. Once the program was initiated a great deal of information was spread via word of mouth, which made it essential to ensure that customer focus was emphasized and resolution of complaints was conducted expeditiously. As a result of these marketing efforts the initial hesitation of participating in a "voluntary" government program was overcome and the program has grown markedly.

The program has proved extremely useful for other purposes as well. When a recent change to the regulations allowed vessels to request exemptions from the requirement to carry certain equipment, the towing vessel program was used to ensure that vessels requesting exemptions were in compliance with all other regulations. In order to receive an exemption a vessel had to first obtain a CTVEP decal. In other cases vessels with minor infractions were provided the opportunity to participate in the program in lieu of receiving a ticket for the infraction. This has not only allowed the program to overcome the "self selection" problem associated with program evaluation, but it has also allowed the program to include high-risk vessels, i.e., those who would normally not participate.

### **PROGRAM MEASUREMENT**

In terms of subjective measurement, the program has been quite successful. Both the Coast Guard and the industry resoundingly support the program. Feedback indicates that it has provided a non-threatening means to enhance safety on towing vessels, and that through cooperation of field level personnel (both Coast Guard and industry), the safety culture is being subtly changed. In addition, use of the program, as a means to ensure that vessels obtaining exemptions meet minimum standards, and requiring compliance in lieu of a fine or penalty, has been an extremely effective tool. This approach has been instrumental in enhancing the safety of vessels that would not normally participate in a voluntary program. These subjective measurements have provided such positive feedback that on 15 July 1997 a National Quality Action Team was chartered to expand the program throughout the Coast Guard. This team met on

30 September 1997 in Washington, DC and agreed that the program developed in St. Louis would be used as a template for national implementation.

The nationalization of the program makes it essential that a more comprehensive and objective means of measurement be developed. This has been discussed in great detail in meetings of the St. Louis staff. These meetings focused on the goals of the program and the manner in which these goals could be measured. It was determined earlier that the two goals applicable to towing vessels were:

**Goal MSS-3b: reduce the number of fatalities on towing vessels**

**Goal MEP-1: reduce oil and chemical pollution from marine sources**

In order to assess whether these goals are being met a program had to be developed that measures these goals, and provides other information relevant to an analysis. Such issues as natural selection and methods of comparison need to be taken into consideration. As such, three measurement schemes have been developed, each with a different emphasis. They include:

- a. **A scheme to measure activity and provide feedback:** This data collection effort is designed to compile data on individual boardings for program improvement and customer feedback. It will also provide an indication of the number of vessels participating in the program, including the number of line boats (large boats on long voyages) and fleet boats (smaller boats which operate in specific areas) in order to determine the level of program participation and growth.
- b. **A scheme to measure national impact:** This data collection effort is designed to measure the number and types of pollution cases and marine accidents which occur on towing and fleeting vessels in order to provide a comparison of the rate which incidents occur on vessels that participate in the program to those that do not. This is designed to be a long term national measurement scheme which will assist the organization in determining program effectiveness.
- c. **A scheme to measure regional impact:** This data collection effort is designed to determine the effectiveness of the program and to accelerate the evaluation period. This spreadsheet will identify three years of casualty and pollution data (1994-1996) from a control group of 20 line boats, 20 fleet boats and 5 companies to determine pollution and casualty rates. It will be used to compare data from these vessels and companies after three years participation in the program. After three years the pollution and casualty data from 1994-1996 will be compared with the data 1998-2000 for the control group of vessels and companies.

Each of these data collection efforts are discussed below in more detail.

a. **Activity spreadsheet:** Spreadsheets 1 and 2 in Appendix I are designed to serve as the basis for program improvement and feedback. The objective of this data collection effort is to compile information concerning the vessels boarded, their status,

and the number and type of deficiencies identified during examinations. It will also be used to establish a baseline concerning how many examinations are conducted and how many decals are issued. Spreadsheet 1 identifies the vessel name, company name, vessel type and the deficiencies identified during each boarding. The data entered into spreadsheet 1 can be compiled in another spreadsheet to determine the number of Phase I (vessel based) and Phase II (company based) initial, annual and follow up exams conducted and the number of decals issued. Spreadsheet 2 provides an example of the sheet that can be used to compile the data from sheet 1. The information in spreadsheets 1 and 2 will provide feedback to both marine industry and Coast Guard program managers concerning common deficiencies. They can also be used to focus examinations on those areas which are most often deficient and provide information needed to evaluate companies and determine program growth. This data gathering effort is an essential means to measure program activity and to establish baseline data. The information on spreadsheet 1 will be provided from vessel boarding reports which have been revised to ensure that the appropriate data is collected. Appendix I provides the spreadsheets and a description of their components.

**b. National measurement spreadsheet:** Since national goals involve the reduction of towing vessel fatalities and pollution incidents, it is imperative that this information be captured. Spreadsheet 3 (Appendix II) is designed to record information on pollution and marine casualties and fatalities for towing vessels. The spreadsheet allows information to be broken down for participating and non-participating vessels, and further broken down between Phase I and Phase II vessels. Included in this data is the type of pollution spill, its cause (equipment failure or human error), and the number of gallons spilled. For casualties it is broken down into personnel and equipment casualties, and further broken down as to cause (human error or equipment failure). Once entered the data can be compiled in to a separate spreadsheet which will compile data on the incidents and fatalities which occur, and can be used to identify national trends on casualties and pollution incidents. Spreadsheet 4 provides an example of a spreadsheet that can be used for this purpose. Using the data on these spreadsheets, along with data available from the Coast Guard vessel documentation database (comprehensive data on vessel types and activities) the number of towing vessels in operation, the number who participate in the program, and the number the of casualties and pollution incidents which occur on each type of vessel can be identified. This will allow us to determine the casualty and pollution rates for both participating and non-participating towing vessels. In addition, given the industry employment data available from the American Waterways Operator (AWO) and the percentage of participating vessels the fatality rates per 100,000 crew members can be determined to compare the fatality rates for participating and non-participating vessels.

The data in spreadsheet 3 will make it possible to determine the number of pollution incidents and the quantities of oil and chemicals spilled. Although this data will assist in the overall Coast Guard Data gathering efforts, it will be impossible to compare participating and non-participating towing vessels with respect to the number of million gallons shipped. This is because the figure for oil and chemicals shipped is a national

figure with no relevance to particular types of vessels. The data will however allow us to determine the rate of pollution incidents for participating and non-participating vessels based on the information concerning the total number of towing vessels provided by the Coast Guard Marine Safety Information System (MSIS) data base.

With respect to the fatality indicators, the calculations are straight forward and the necessary data is available in this database, the Coast Guard MSIS database, and the AWO database. A sample calculation is listed below:

**Measure: Towing Vessel Fatalities per 100,000 Crew Members (Current rate 35)**

	<b>CTVEP vsIs</b>		<b>Non-CTVEP vsIs</b>
<b>Number of vessels (AWO)</b>	<b>4000</b>	<b>1000</b>	<b>3000</b>
<b>Number of crew members (AWO)</b>	<b>40,000</b>	<b>10,000</b>	<b>30,000</b>
<b>Number of fatalities (USCG)</b>	<b>15</b>	<b>2</b>	<b>13</b>
<b>Fatalities per 100K</b>	<b>37.5</b>	<b>20</b>	<b>43.2</b>

With respect to pollution incidents the data is not broken down in a manner that encourages comparison. The Coast Guard uses data provided from the Army Corps of Engineers to determine the number of million gallons shipped each year. This denominator can not be accurately broken down into vessel types. It is possible to determine if an overall reduction in gallons spilled has occurred, but there is no means available to determine relative rates for types of vessels. As such it will not be possible to determine if the towing vessel program has made an impact in this area. In addition, the self selection process is a factor that must be overcome if this analysis is to be relevant. This can be mitigated if the national program encourages participation of all types of vessels and encourages units to require participation for those vessels requesting exemptions, or who have been subject to a pollution incident. Despite the system's shortcomings in determining the amount spilled per vessel type the spreadsheet will still provide an invaluable tool for determining if overall Coast Guard goals have been met and if the CTVEP has assisted the organization in meeting these goals.

There is presently no means available to gather some of the data needed to conduct a long term analysis of the towing vessel program's effectiveness in reducing pollution incidents, casualties and fatalities. In order to facilitate this collection a means must be developed to identify and capture the information needed. An incident coversheet has been developed for this purpose. It would be easy to either adopt a coversheet nationally or incorporate the towing vessel data into the Coast Guard Marine Safety Information System data entry program.

**c. Regional measurement spreadsheet:** In order to better determine the program's effect on safety, a regional data measurement scheme was developed. This involves the selection of a control group of 20 participating Phase I line vessels, 20 participating



phase I fleet vessels and 5 participating Phase II companies. Once these vessels and companies are selected, their casualty and pollution records for the past 3 years will be reviewed in order to determine the number and types of pollution and casualties that these vessels have experienced. This data is available from the Coast Guard Marine Safety Information System. This data can then be captured on spreadsheet 5, shown in Appendix III. Once this initial data search is completed and the data recorded, data for the following three years can be captured using the spreadsheet developed in Appendix II. The control group in this case has been kept to a minimum due to the time it will take to conduct a search of past pollution and casualty records. The existing system makes it necessary to physically review each casualty file in order to determine the necessary information. As stated earlier, this problem will be corrected through the use of the spreadsheet developed for the national measurement program.

In order to ensure that the sampling of vessels is representative of the towing community, and to overcome the problem of self selection, (the problem where only "good" companies participate, effectively skewing the data for the control group) a representative sampling of vessels have been included in the control group who are participating as a requirement for an exemption, or as a result of an spill or accident.

A second problem that has to be overcome is the problem of differing vessel use from year to year. Since the industry is dynamic, and the demand varies, a means to normalize the data had to be developed which provides an indication of the amount of use of the vessel and amount of traffic on the waterway. A data point that provides an indication of this was found to be the U.S. Army Corps of Engineers data on tonnage shipped through St. Louis. This data provides an excellent indication of overall vessel use and traffic on the upper Mississippi River. By normalizing casualty and oil spill data based on tonnage, one can get an excellent indication of the real effect of the program. An example of the overall casualty and pollution trends, normalized for tonnage is provided below as an example:

<b>YEAR</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>
<b>CASUALTIES</b>	257	212	279	331	283
<b>POLLUTION</b>	123	126	139	144	116
<b>TOTAL INCIDENTS</b>	<b>380</b>	<b>338</b>	<b>418</b>	<b>475</b>	<b>399</b>
<b>TONNAGE (t)</b>	70.8	61	66.6	72.3	76
<b>BASELINE (t) 1992</b>	70.8	70.8	70.8	70.8	70.8
<b>"t" FACTOR</b>	<b>1.00</b>	<b>1.16</b>	<b>1.06</b>	<b>0.98</b>	<b>0.93</b>

#### **NORMALIZED**

<b>INCIDENT RATE</b>	<b>380.00</b>	<b>392.30</b>	<b>444.36</b>	<b>465.15</b>	<b>371.70</b>
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In this case the normalized rate is a function of total incidents per million tons shipped using 1992 as the baseline year. This is particularly appropriate since 1992 was an extremely busy year for shipping. In 1993 significant flooding occurred closing the

waterways for a period of time. Traffic built slightly in 1994 and 1995 and was busy again in 1996.

This data analysis scheme will provide an indication of the effectiveness of the program. Although it is impossible to control all the factors involved in causing a marine casualty or pollution incident, the utilization of a local control group will ensure that as many factors as possible are in control. Analysis of the local control group will ensure that program application was consistent, examinations were conducted in a similar manner, and subjective decisions are minimized.

Since 1998 will be the first full year of program implementation in our area of operations, the current schedule calls for the regional and feedback data analysis schemes to be in place on 1 January 1998. Forms have been developed to ensure that all the pertinent information will be gathered during each vessel examination or casualty or pollution investigation. With respect to research of the control group, the analysis of the previous 5 year pollution and casualty statistics should be completed early in the year. Data for 1997 will not be included in this analysis since it was a transition year in which the companies spent only part of the year in the program.

## **SUMMARY**

It is essential that we take the time and effort to gauge the success of programs such as the CTVEP. Subjective feedback and even surveys are often misleading, and can be subject to a great deal of interpretation. Objective methods of evaluation, such as those discussed, are less interpretive, and can provide valuable feedback not only on the overall effectiveness of the program, but on ways the program can be improved. It must also be noted that in a dynamic system such as the marine safety system, even the most objective means of measurement may not provide true indications of the programs value. This is because factors other than the CTVEP have an effect on program measures. For example, the casualty rate may drop due to a season of unusually high water (leading to fewer groundings), or may increase due to a season of unusually low water (causing additional groundings). Factors such as weather, river maintenance, labor shortages and freight rates effect company operations despite any intervention or program developed by the Coast Guard. This does not make it any less valuable to measure the program, it simply makes it necessary to include an analysis of those other factors which we do not control in order to assist us in getting a more accurate indication of the value of the program.

## APPENDIX I

### COOPERATIVE TOWING VESSEL EXAMINATION PROGRAM CATEGORY AND CODE KEY FOR THE ACTIVITY SPREADSHEET

#### DISCUSSION:

The following information is provided as a guide to interpret the data on Activity Measurement Spreadsheets (spreadsheets 1 and 2) for the Cooperative Towing Vessel Examination Program. Each category listed on the spreadsheet is assigned a series of codes, which correspond with the Towing Vessel Boarding Form and are listed to help identify the deficiencies in the type and order they appear on the check off sheet.

#### SPREADSHEET 1 CATEGORY AND CODE:

##### EXAMINATION DETAILS

**Vessel Name:** This is the vessel that has been boarded.

**Official Number:** This is the Coast Guard identifying number for the vessel.

**Company Name:** The name of the company that operates or owns the vessel.

**Date of Exam:** The date that the vessel was boarded.

**Exam Type:** Initial, Annual, Follow-up, or Random (for non-participants)

**Vessel Type:** LPI = Line Participant Phase I  
LP II = Line Participant, Phase II  
FPI = Fleet Participant, Phase I  
FPII = Fleet Participant, Phase II  
FNP = Fleet Non-participant  
LNP = Line Non-participant

**Examining Unit:** The MSIS code for the unit conducting the boarding and issuing the decal (this should also be the sponsoring MSO).

St. Louis = SLMMS

St. Paul = STPD

Quad Cities = DAVD

**Decal Number:** The decal number issued to the particular vessel.

## **DEFICIENCY INFORMATION**

### **A. Required Markings & Documents**

1. Official Number
2. Original Marine Document.
3. Name and Hailing Port Clearly displayed.
4. Valid radio station license.
5. Vessel Log of required tests and inspections.
6. Operators license.
7. Restricted radio operator's license.
8. Certificate of Financial Responsibility.

### **B. Lifesaving Equipment**

1. Serviceable CG approved PFD's for each person aboard.
  - a) CG approval numbers.
  - b) Readily accessible.
  - c) Work vests CG approved.
  - d) Work vests stowed separately from life preservers.
  - e) Retro reflective material.
2. Ring bouy.
  - a) Throwable lifesaving equipment immediately available.
  - b) EPIRB

### **C. Navigation Safety**

1. Navigations Publications
  - a) Marine Charts of the area to be transited
  - b) Coast Guard Light List
  - c) Coast Guard Local Notice to Mariners
  - d) US Coast Pilot
  - e) Tide Tables
  - f) USCG Nav Rules.
2. Navigation Equipment
  - a) Marine radar.
  - b) Searchlight.
  - c) VHF-FM radio.
  - d) Magnetic Compass or swing meter.
  - e) Echo depth sounding device.
  - f) Electronic positioning fixing device.
3. Navigation Lights
  - a) Navigation Side Lights fitted with black screens (>20M/65.5')
  - b) Towing: Two amber towing lights at stern
4. Efficient whistle and fog bell (>39.4')

#### **D. MARPOL**

1. Marpol Placard
  - a) Compliance with disposal of plastics, papers, rags, glass, metals, etc.

#### **E. MSD(marine sanitation device)**

1. Certified MSD installed
  - a) MSD overboard discharge valve installed and closed.
  - b) Adequate sewage pump out arrangements.
  - c) MSD properly labeled.

#### **F. Fire Fighting Equipment**

1. Required extinguishers CG or UL approved.
  - a) Required extinguishers in serviceable condition.
  - b) Metallic or mylar name plate attached.
  - c) Minimum number portable extinguishers.
  - d) Additional B-II's for each 1000 hp.
  - e) One B-III or fixed fire extinguishing system in engine room(>300 G.T.)

#### **G. Pollution Prevention**

1. Discharge warning placard.
  - a) oil drained into bilges.
2. Fixed or portable means to discharge oily bilge slops.
3. Is fuel oil discharge containment adequate for oil transfer.
4. Oily waste slop retention system and disposal.
  - a) Bilge slop system adequate.
  - b) Oil transfer hose.
5. PIC
6. Oil Transfer Procedures

#### **H. Miscellaneous**

1. Operator aware of marine casualty reporting requirements.
2. Company participates in drug testing program.

#### **I: General Housekeeping.**

1. Living spaces.
2. Galley cleanliness and refrigeration.
3. Main deck stanchions and chains.
4. Fuel tank vents are covered with flame screens.
5. Machinery spaces.
  - a) Guards in place around all moving machinery.
  - b) Piping in Good condition(no leaks).
  - c) No Hazards.
6. Electrical systems.
  - a) No jury rigged wiring.
  - b) Guards and globes cover exposed lights in work areas.

c) Electrical boxes are in satisfactory condition, switches are covered.

7. Steering System.

8. **Decal Issued:** Indicate if a decal was issued as a result of this examination (Y or N).

## **SPREADSHEET 2 CATEGORY AND CODE:**

### **FIRST SECTION: VESSEL TYPE - LINE BOATS**

**Examination Data:** This section includes data on the number and types of examinations conducted and the number of decals issued for Phase I and Phase II line boats. It includes the number of initial, annual, follow-up and random boardings along with the number of decals issued as a result of these boardings.

**Deficiency Data:** This section compiles data on the number and types of deficiencies identified during the boardings. It is broken down into the nine categories listed on spreadsheet 1, which include: markings and documents, lifesaving equipment, navigation safety, MARPOL, marine sanitation, fire fighting, pollution prevention, miscellaneous and general housekeeping.

### **SECOND SECTION: VESSEL TYPE - FLEET BOATS**

**Examination Data:** This section includes data on the number and types of examinations conducted and the number of decals issued for Phase I and Phase II fleet boats. It includes the number of initial, annual, follow-up and random boardings along with the number of decals issued as a result of these boardings.

**Deficiency Data:** This section compiles data on the number and types of deficiencies identified during the boardings. It is broken down into the nine categories listed on spreadsheet 1, which include: markings and documents, lifesaving equipment, navigation safety, MARPOL, marine sanitation, fire fighting, pollution prevention, miscellaneous and general housekeeping.

### **THIRD SECTION: NON-PARTICIPANTS**

**Examination Data:** This section includes data on the number of examinations conducted on non-participating line and fleet boats.

**Deficiency Data:** This section compiles data on the number and types of deficiencies identified during the boardings. It is broken down into the nine categories listed on spreadsheet 1, which include: markings and documents, lifesaving equipment, navigation safety, MARPOL, marine sanitation, fire fighting, pollution prevention, miscellaneous and general housekeeping.

		ACTIVITY SPREADSHEET				
EXAMINATION DETAILS						
VESSEL NAME	OFFICIAL NUMBER	COMPANY	DATE OF EXAM	EXAM TYPE	VSL TYPE	EXAMINING UNIT



		ACTIVITY SPREADSHEET			
		DEFICIENCY INFORMATION (TYPE & NUMBER BY CATEGORY)			
DECAL		MARKINGS	LIFESAVING	NAVIGATION	MARPOL
NUMBER		& DOCS	EQUIPMENT	SAFETY	MARINE
					SANITATION
					FIRE
					POLLUTION
					PREVENTION

			ACTIVITY SPREADSHEET		
MISCELLANEOUS	GENERAL	DECAL			
	HOUSEKEEPING	ISSUED			

				ACTIVITY SPREADSHEET							
VESEL TYPE	LINE BOATS			FLEETBOATS				NON-PARTICIPANTS			
	PHASE I	PHASE II	TOTAL	PHASE I	PHASE II	TOTAL	LINE	FLEET	TOTAL		
EXAMINATION DATA											
INITIAL											
ANNUAL											
FOLLOW-UP											
RANDOM											
DECALS ISSUED											
TOTAL EXAMINATIONS											
DEFICIENCY DATA											
MARKINGS & DOCUMENTS											
LIFESAVING EQUIPMENT											
NAVIGATION SAFETY											
MARPOL											
MARINE SANITATION											
FIRE FIGHTING											
POLLUTION PREVENTION											
MISCELLANEOUS											
GENERAL HOUSEKEEPING											
TOTAL DEFICIENCIES											

## APPENDIX II

### COOPERATIVE TOWING VESSEL EXAMINATION PROGRAM CATEGORY AND CODE KEY FOR THE NATIONAL MEASUREMENT SPREADSHEET

#### DISCUSSION:

The following information is provided as a guide to interpret the data on the National Measurement Spreadsheets (spreadsheets 3 and 4) for the Cooperative Towing Vessel Examination Program. This spreadsheet is designed to collect information on pollution incidents, casualty incidents and fatalities on towing vessels in order to compare the rate on these vessels with that of non-participating vessels. Each category listed on the spreadsheet is assigned a series of codes, which correspond with a Marine Incident Coversheet.

#### SPREADSHEET 3 CATEGORY AND CODE:

##### VESSEL DATA

**Vessel Name:** This is the vessel that has been boarded.

**Official Number:** This is the Coast Guard identifying number for the vessel.

**Vessel Type:** LPI = Line Participant Phase I  
LPII = Line Participant, Phase II  
FPI = Fleet Participant, Phase I  
FPII = Fleet Participant, Phase II  
FNP = Fleet Non-participant  
LNP = Line Non-participant

**Decal Number:** The decal number issued to the particular vessel.

**Examining Unit:** The MSIS code for the unit conducting the boarding and issuing the decal (this should also be the sponsoring MSO).

St. Louis = SLMMS

St. Paul = STPD

Quad Cities = DAVD

##### INCIDENT DATA

**Date:** This is the date of the incident in the format "day-month-year", i.e. 15-Sep-97

**Incident Type:** This is the type of incident; "P" for pollution and "MC" for Marine Casualty

## **POLLUTION DATA**

**Type:** This is the type of pollution; "O" for oil and "C" for chemical

**Cause:** This is the cause of the pollution; "E" for equipment failure and "H" for human error

**# Gallons:** This is the estimated number of gallons spilled, in ranges as follows:

- 0
- <10
- 10-25
- 26-50
- 51-75
- 76-100
- 101-1000
- 1001-10000
- >10000

## **CASUALTY DATA**

**Type:** This is the type of casualty; "P" for a personnel casualty and "E" for an equipment failure

**Cause:** This is the cause of the casualty; "E" for equipment failure and "H" for human error.

**Damage:** This is the dollar amount of damage, in ranges as follows:

- 0
- 1-25K
- 26-50K
- 51-75K
- 76-100K
- 101-500K
- >500K

**Fatalities:** This is the actual number of fatalities.

## **SPREADSHEET 4 CATEGORY AND CODE:**

### **FIRST SECTION: PARTICIPANTS - LINE BOATS**

**Pollution Data:** This section compiles data on oil and chemical spills for Phase I and Phase II line boats. It compiles a running total of pollution spills by type (oil or chemical), and by cause (equipment failure or human factors). It also includes a running total of the number of gallons spilled. It is designed to augment the individual spill data in the Marine Safety Information System.

**Marine Casualty Data:** This section compiles data on marine casualty incidents for Phase I and Phase II line boats. It compiles casualties by type (Personnel or Equipment) and by cause (Equipment Failure or Human Factors). It also compiles the number of fatalities which occur as a result of a casualty.

### **SECOND SECTION: PARTICIPANTS - FLEET BOATS**

**Pollution Data:** This section compiles data on oil and chemical spills for Phase I and Phase II fleet boats. It compiles pollution spills by type (oil or chemical), and by cause (equipment failure or human factors). It also includes a total of the number of gallons spilled. It is designed to augment the individual spill data in the Marine Safety Information System.

**Marine Casualty Data:** This section compiles data on marine casualty incidents for Phase I and Phase II fleet boats. It compiles casualties by type (Personnel or Equipment) and by cause (Equipment Failure or Human Factors). It also compiles the number of fatalities which occur as a result of a casualty.

### **THIRD SECTION: NON-PARTICIPANTS - LINE BOATS**

**Pollution Data:** This section compiles data on oil and chemical spills for line boats which are not participating in the program. It compiles spills by type (oil or chemical), and by cause (equipment failure or human factors). It also includes a running total of the number of gallons spilled. It is designed to augment the individual spill data in the Marine Safety Information System.

**Marine Casualty Data:** This section compiles data on marine casualty incidents for line boats which are not participating in the program. It compiles casualties by type (Personnel or Equipment) and by cause (Equipment Failure or Human Factors). It also compiles the number of fatalities which occur as a result of a casualty.

### **FOURTH SECTION: NON-PARTICIPANTS - FLEET BOATS**

**Pollution Data:** This section compiles data on oil and chemical spills for fleet boats which are not participating in the program. It compiles spills by type (oil or chemical),

and by cause (equipment failure or human factors). It also includes a running total of the number of gallons spilled. It is designed to augment the individual spill data in the Marine Safety Information System.

**Marine Casualty Data:** This section compiles data on marine casualty incidents for fleet boats which are not participating in the program. It compiles casualties by type (Personnel or Equipment) and by cause (Equipment Failure or Human Factors), It also compiles the number of fatalities which occur as a result of a casualty.

NATIONAL MEASUREMENT SPREADSHEET					
VESSEL DATA				UNIT DATA	INCIDENT DATA
NAME	NUMBER	TYPE	DECAL	UNIT	DATE TYPE



NATIONAL MEASUREMENT SPREADSHEET									
POLLUTION DATA				CASUALTY DATA					
TYPE	CAUSE	GALLONS		TYPE	CAUSE	DAMAGE	FATALITIES		

[illegible]

		FLEET BOAT PARTICIPANTS (CONT)			
		PHASE I VESSELS		PHASE II VESSELS	
MARINE CASUALTY TYPE	PERSONNEL	EQUIPMENT	PERSONNEL	EQUIPMENT	
CAUSE					
EQUIPMENT FAILURE					
HUMAN FACTORS					
ESTIMATED DAMAGE					
FATALITIES					
		LINE BOAT NON PARTICIPANTS			
POLLUTION TYPE	OIL	CHEMICAL			
CAUSE					
EQUIPMENT FAILURE					
HUMAN FACTORS					
GALLONS SPILLED					
MARINE CASUALTY TYPE	PERSONNEL	EQUIPMENT			
CAUSE					
EQUIPMENT FAILURE					
HUMAN FACTORS					
ESTIMATED DAMAGE					
FATALITIES					

		FLEET BOAT NON-PARTICIPANTS			
POLLUTION TYPE	OIL	CHEMICAL			
CAUSE					
EQUIPMENT FAILURE					
HUMAN FACTORS					
MARINE CASUALTY TYPE	PERSONNEL	EQUIPMENT			
CAUSE					
EQUIPMENT FAILURE					
HUMAN FACTORS					
ESTIMATED DAMAGE					
FATALITIES					

## **APPENDIX III**

### **COOPERATIVE TOWING VESSEL EXAMINATION PROGRAM CATEGORY AND CODE KEY FOR THE REGIONAL MEASUREMENT SPREADSHEET**

#### **Discussion:**

The following information is provided as a guide to interpret the Regional Measurement Spreadsheet (spreadsheet 5) for the Cooperative Towing Vessel Examination Program. This spreadsheet is designed to collect pollution and casualty information on a control group of vessels and companies in order to compare incident data from the three year period prior to participating in the Cooperative Towing Vessel Examination Program (1994-1996) with the data for the three years period following participation in the program (1998-2000). The spreadsheet includes data on line boats, fleet boats and companies. Data for 1994-1996 will be developed from a record search. Data for the years 1998-2000 will be extracted from the National Measurement Spreadsheet shown in appendix II. The spreadsheet is divided into three sections; line boat data, fleet boat data, and company data. The format of the data is the same in each section. This format is listed below.

#### **SPREADSHEET 5 CATEGORY AND CODE:**

##### **VESSEL INFORMATION**

**Vessel Name:** This is the name of the vessel.

**Official Number:** This is the official Coast Guard number for the vessel.

##### **SPILL DATA 1994-1996**

**Oil:** This is the total number of oil spills which occurred during this time period.

**Chemical:** This is the total number of chemical spills which occurred during this time period.

##### **SPILL DATA 1998-2000**

**Oil:** This is the total number of oil spills which occurred during this time period.

**Chemical:** This is the total number of chemical spills which occurred during this time period.

## **CASUALTY DATA 1994-1996**

**Personnel:** This is the total number of personnel casualties which occurred during this time period.

**Equipment:** This is the total number of equipment failure related casualties which occurred during this time period.

## **CASUALTY DATA 1998-2000**

**Personnel:** This is the total number of personnel casualties which occurred during this time period.

**Equipment:** This is the total number of equipment failure related casualties which occurred during this time period.













