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**GCMA REPORT #R-401-B (Series)**  
**DATE: JANUARY 8, 2007**

**FINALLY ANSWERED:  
HOW BUREAUCRACY WRECKED  
THE USCG MERCHANT MARINER  
LICENSING AND DOCUMENTATION  
COMPUTER SYSTEM**

*[The National Association of Maritime Educators (NAME), in a FOIA request of March 26, 1998, cited dramatic differences between statements in a 1996 Coast Guard press release and those in the License Reengineering Team Report in regard to the computer system used to track licenses at the Regional Exam Centers and the National Maritime Center. We were concerned about the discrepancy between the glowing news release on/about March 1996 and the License Reengineering Team Report in March 1998 that indicated that the computer system had cratered in a brief two-year period. We believe that what happened and why it happened are matters that affect all licensed and documented mariners and the quality and cost of services they receive.*

*Our request for information was both extensive and technical. The Freedom of Information Act generally allows us access to documents, but does not require the creation of new documents. However, thanks to the promise of support from a generous benefactor, NAME was prepared to analyze the reams of documents we requested. However, after half a dozen requests including one to U.S. Representative Billy Tauzin, the Coast Guard agreed that it would be to the benefit of all concerned to give us a simple, straightforward explanation of what happened. Editorial note: All underlining, bold face type, and footnotes were added to the report by NAME.]*

Dear Captain Block:

In accordance with our May 14, 1999 phone conversation, I am forwarding you the attached synopsis of the development of the Merchant Mariner Licensing and Documentation System. As we discussed, this is in lieu of providing copies of the thousands of pages of surviving records that I have been able to find. I hope this meets your needs. I have tried to present as accurate a picture as the records provide. There is no question that these records are incomplete, largely because they are not required to be kept and the office has been subjected to a major move from Washington to Arlington during which many records were undoubtedly discarded.

I would be happy to discuss the enclosure with you after you have had a chance to read it. I can be reached at the above

phone or address. Sincerely, s/William St.J. Chubb, Chief, Marine Personnel Branch. *[NAME Editorial Note: Readers may route specific questions through NAME.]*

**Evolution of the Merchant Mariner  
Licensing and Documentation System:  
An Overview**

This document is intended to provide an overview of the history of the Merchant Mariner Licensing and Documentation System. It is based on the files of the National Maritime Center. Several thousand pages of contemporaneous records were reviewed in the process of developing it. These records are often incomplete because the time required for their retention has long since passed. This history is not intended to summarize the myriad of technical issues and discussions that have taken place since the beginning of the development of the prototype system in 1990. It is intended to provide a chronology of events and some understanding of the how the system has evolved.

The reader is invited to note that we are looking back across nearly 10 years of history that involves a technology that was, and is, developing faster than virtually any before it. It was a learning experience in a field that was virtually entirely new to its participants: the development of information technology software. We look back with the benefit of hindsight. There is no doubt that the Coast Guard made mistakes during this effort and learned important lessons in the process.

The roots of MMLD can probably be traced to a report prepared for the Coast Guard by Coopers and Lybrand in about 1989. That report identified shortcomings in the Coast Guard's ability to provide quick, consistent service to its merchant mariner customers. As a result, efforts were begun in 1990 to develop a prototype system that would allow the Coast Guard's Regional Examination Centers (REC) electronic access to the nearly 1.8 million merchant seamen's records. Initially this system was called the Seamen Documentation and Licensing System (SDLS). It was later renamed the Merchant Mariner Licensing and Documentation System (MMLD).

At the time this prototype effort was begun, an independent effort was underway to develop a system for Coast Guard Headquarters to store and retrieve information regarding documented seamen and shipping articles. This system was called the Merchant Mariner Documentation System, or MMDOC. Because this system was centrally located and involved more limited functionality than was required to support activities at the RECs, its development was more rapid. Development of MMDOC was overseen by the Merchant Vessel Personnel Branch (G-MVP) of the Office of Marine Safety, Security, and Environmental Protection (G-M). Development was accomplished by G-MVP's contractor, Tamsco. Design was begun in January 1990, and the system was ready for data entry of mariner's sea service records by June of 1990. The system was developed using the Sybase database software. As we will see, this system later was joined with the MMLD system and lost its independent identity.

The development of the MMLD prototype was begun in May of 1990 with the letting of a contract to the Systems Resource Corporation (SRC). SRC had teamed with ARINC Research Corporation. This project was managed under the auspices of the Marine Information Management Division (G-MIM) of the Coast Guard's Office of Marine Safety, Security, and Environmental Protection (G-M). The Coast Guard's Research and Development Center (R&D Center) in

Groton, CT administered the contract. The initial schedule for the prototype system called for its deployment for field testing in July 1991.

A Project Development Team was established in April 1990 to work with the R&D Center and its contractor. The team's objectives were to assist with the design and testing, coordinate field unit involvement, and ensure coordination with the MMDOC effort. The team was comprised of representatives from G-MIM, three RECs (New Orleans, Puget Sound, and Charleston, SC), and the G-MVP of G-M.

A 3-phase approach was decided upon. The first phase was to provide a technology assessment, a system level design, and a software design. The second phase was directed towards detail design. The final phase was to provide a working prototype. The contractor began by analyzing the Coast Guard's existing system, the functionality required by the RECs, and various alternatives for developing and integrating the MMLD system. The result was a Technology Architecture Document, which identified constraints, outlined alternatives, and made recommendations. This early document (September 1990) recognized that the Coast Guard's BTOS operating environment imposed severe limitations on the alternatives available for development of the system. As part of the constraints, the document identified the need for a special interface to be developed for the MMLD system to be able to share data with the MMDOC system. The message, to the lay reader of these records, was that the development of the MMLD system was being discovered to be more complicated than originally envisioned. Based on the contractor's recommendations, the Coast Guard decided that MMLD would be a distributed database using Progress RDMS on both the client and server. The central database would be housed on a Sequent server located at the Coast Guard's Operations Systems Center (OSC).

The development of the MMLD application, and perhaps more importantly, the connectivity of the system, continued into 1993. Severe and unforeseen problems were encountered with integrating the MMDOC data and with communications between the evaluation field units (New Orleans and Seattle) and the server at headquarters. Times to connect to the database were typically measured in double-digit minutes. Extensive upgrades to both hardware and software were required. With each problem solved, another was encountered. The records reflect as a lesson learned that the self-interest of the many manufacturers and contractors involved makes resolution of problems in integrated systems very difficult.

In May of 1993, testing of the prototype system was completed and preparations, long underway, were finalized for fielding it to the two evaluation ports. A week of training was held at each of the evaluation ports during July of 1993. Coincident with fielding the application for evaluation, the Sequent server, on which the data resided, was moved to the OSC. By July 20, 1993, the prototype system was up and running at both New Orleans and Puget Sound. The surviving records from that period make it clear that these RECs had not really been prepared for the cultural change that this automation brought. It was viewed as extra work, with little benefit to them. There were no plans for them to change their existing processes. They intended to use MMLD in parallel with them. The record suggests that while focussing on the tide of technical difficulties associated with development of the system, greater attention should have been paid to the users' (RECs) specific needs.

Following the installation of the prototype, personnel from

G-MVP remained at the RECs to assist the users with the new system and to help resolve the many policy issues that automation raised. The prototype continued in use by Puget Sound and New Orleans throughout 1993. As familiarity with the system grew, there was more acceptance of it by users despite functional shortcomings and continued problems with communications. Final acceptance testing of the MMLD system was conducted in January of 1994 and, following various fixes identified during the testing, the system was accepted. Puget Sound and New Orleans continued to use it.

A snapshot at this point in time reveals MMLD as a struggling prototype being employed by two of seventeen RECs. It suffered from slow communications and functionality that only partly met the RECs needs. While it was able to use some of the MMDOC system's data, the connections were problematic to both systems and the two could not be said to be integrated. MMLD's implementation as a prototype was nearly two years later than initially planned and, as a result, the relationship between the contractor and the Coast Guard was strained. The surviving records, though not specific, suggest that these problems and the delay were the result of many factors, including: Coast Guard inexperience with managing a large software development project; frequent changes in, and additions to, requirements; contractor performance; and, limitations imposed by the Coast Guard's operating system. Lessons were learned, but routine transfers of Coast Guard personnel reduced the benefits (that) could be derived from them.

In the fall of 1993, Dynamic Resources, Inc. (DRI) replaced Tamsco as G-MVP's contractor who provided support with merchant mariner records and managed the MMDOC system. In the fall of 1994, DRI was asked to take over the maintenance and enhancement of the prototype MMLD system. The R&D Center's involvement and that of its contractor had ended. The system was to be managed by G-MVP and DRI. Nothing was found in the records that speaks specifically to this transition from the G-MIM/R&D/SRC team. Work was begun in October 1994 by DRI, under contract to G-MVP, to substantially enhance the functionality and performance of the existing prototype and to fully integrate MMLD with MMDOC. The prototype, as it existed, was not fielded to the remaining RECs, but documentation of that decision doesn't appear in the surviving records we could find.

DRI began this work in 1994 with the head start afforded it by virtue of its involvement with the MMDOC system since 1993. Its initial tasks were to assess what had been developed and determine the most effective method for meeting both Coast Guard Headquarters' and the RECs' needs. As part of the process, they were to integrate the MMLD and MMDOC systems into a single database.

In December of 1994, FEDSIM (the Information Management arm of the General Services Administration) completed a Coast Guard requested study of the prototype. It was critical of many aspects of the prototype's development and documentation and it augmented the lessons learned from the prototype development as a helpful tool to improving the quality of subsequent efforts. It may have contributed to the decision by the Coast Guard not to field the prototype to the remaining RECs, but the record does not confirm this.

In mid-1995, the project suffered a serious disruption when, as a result of a major reorganization of the Coast Guard, the mariner records operation, including the DRI MMLD development team, was moved from the Headquarters building to the

contractor's site in Alexandria, Virginia. In addition, the Sun Microsystems server, on which MMDOC was housed, was also moved. While the move itself was accomplished with relative speed and ease, the location outside the Coast Guard's data network introduced communications problems that plagued the project throughout its life at DRI. Because a major part of the ongoing effort was to integrate the systems, DRI recommended, and the Coast Guard authorized, integrating the two systems onto the Sun server that housed MMDOC. Eventually, the plan was to move the system to OSC. The Sequent, running the prototype, continued to operate at OSC, accessed by Seattle and New Orleans. As a result of its analysis of the existing system and its understanding of the complexities of integrating MMLD and MMDOC, DRI recommended that the system be migrated to ORACLE for the central database (on the SUN), leaving PROGRESS as the local (REC) database. As a result of cost constraints, the Coast Guard decided to utilize Sybase as the central database. The distributed databases (RECs) would remain in PROGRESS. During this time, also as a result of cost constraints, the Coast Guard dropped maintenance contracts on the SUN server and its operating system, in anticipation of future migration to a better platform.

Development, integration, and testing continued through 1995. As with the prototype, many additions were made during the development. During the spring and summer of 1996, contract personnel visited each REC to install the system and to train users. Extensive documentation of the system was provided.

The deployment of the MMLD system to the Raceways was culmination of at least 6 years of effort by the Coast Guard. Understandably, G-M issued press release to announce what was viewed, with optimism, as the beginning of the Licensing and Documentation Program's introduction to the information technology age. While the system was not perfect, it had successfully (albeit a bit awkwardly, as a result of cost cutting) integrated the Headquarters (MMDOC) and REC (MMLD) applications. It was functionally robust enough to accomplish many (not all) REC tasks. The serious drawback of the system was its communications. Inputting and receiving data was very slow over the Coast Guard's network. There were frequent network outages. When the communications stumbled, the users' frustration rose.

Work began almost immediately on further needed enhancements to the system, fixes to bugs, and work-arounds for communications deficiencies. The next release of the software occurred in April of 1997.

Beginning in the spring of 1997, a series of "non-technical" events occurred that were to have substantial, long-term effects on MMLD. The first of these was a decision by the National Maritime Center to relinquish responsibility for operation and maintenance of MMLD back to G-M's Office of Information Resources Management (G-MRI), whose predecessor had begun the effort in 1990 with the prototype. While this decision was in line with the functional relationships established by the Marine Safety Program's reorganization, it acted to separate the MMLD developer from the user by inserting another level of administration. While this in itself may have not been damaging, the G-MIM staff had been changed and there remained no understanding of the system or its customers. Coincident with this decision, was the retirement of Ms. Justine Bunnell who had been the knowledgeable articulator of the users' needs since the beginning of the effort. There was no one with equal background to take her place. In addition, the system's primary

champion at the National Maritime Center retired in June of 1997. The next blow that 1997 had to deliver to MMLD was the re-compete of the contract under which the system was being developed and maintained. As luck would have it, the incumbent, DRI, did not prevail, and in October, with the end of the contract, virtually all in-depth experience with the system, both Coast Guard and contractor, was gone. Despite efforts to compensate, this left the MMLD program without personnel who had the benefit of the "hard knocks" of the previous years.

It is not insignificant that about this same time the Coast Guard Licensing Program became highly involved with the implementation of STCW. With of severely "right sized" staffing, this essential effort drew much attention away from MMLD just at a time when that attention was needed most.

Further complicating this situation was the fact that the SUN server, located at DRI and housing the integrated application and its data, was now unsupported by the manufacturer, and all professional opinions recommended that it not be moved for fear of losing irrevocably the system and its data.

Against this backdrop, with the Raceways now substantially dependent on the system, G-NM recommended that it was time to migrate the system to OSC. Since the SUN could not be physically moved and its operating system was obsolete, the migration required an extensive programming and integration effort. To minimize downtime for the RACEWAYS, it was decided that the Raceways functionality and data would be moved as soon as possible. The Headquarters functionality (MMDOC) would remain on the SUN, at DRI, until time and funding were available to migrate it and re-integrate it with the system at OSC. This decision necessitated that the database would be split in two and become two independent systems.

The move of the REC application and data to OSC was accomplished before the end of 1997. While the risks of moving the SUN were averted, many of MMLD's REC functions were lost. Headquarters continued to use the MMDOC application on the SUN. Sharing of data was no longer possible. Since the data was split, errors and redundancies began to accumulate that would require extensive clean-up when the systems were rejoined.

It was in this climate that the Licensing Re-engineering Team reported, critically, on previous MMLD efforts. From the chaotic and uncertain viewpoint of early 1998, it would have been unexpected to hear a glowing report of MMLD.

During the spring and summer of 1998, planning was begun to bring the MMLD and MMDOC systems together again. The two were to be brought together at OSC with the effort being accomplished by the OSC contractor, Fuentes Systems. Technology had advanced sufficiently to make it feasible to migrate the two applications to a WEB-based system accessible to the Raceways and Headquarters from the new Coast Guard standard workstation. Without sounding too much like the 1996 press release, this system promises to be the first time that MMLD and MMDOC will be truly integrated into a single, highly compatible system. In addition, the use of WEB technology will facilitate enhancement of the system to meet future needs. Until it is fully operational, anticipated to be October 1999, the Raceways are using a combination of the current WEB system and the former Standard Workstation II system.

THE NAME RESPONSE

[On August 10, 1999 NAME wrote to Mr. John H. Anderson, Director, Transportation Issues, United States General Accounting Office to bring this report to the attention of the GAO. The General Accounting Office is the investigative arm of Congress. GAO performs many services including audits and evaluations of government programs and activities. Most of these reviews are made in response to specific congressional requests, such as those made by the Subcommittee on Coast Guard and Maritime Transportation of the Committee on Transportation and Infrastructure of the U.S. House of Representatives in the "reference" cited below.]

REFERENCE: Coast Guard Challenges for Addressing Budget Constraints. GAO/RCED-97-110, Annex II, p.60. (B-274164)

Dear Mr. Anderson,

We have addressed these comments to your attention because your name appears on the flysheet of the above captioned report.

As you know, the U.S. Coast Guard, among its many duties, maintains general superintendence over the United States Merchant Marine including merchant mariner licensing and documentation (MMLD). MMLD is an area of great concern to our Association.

In order to keep track of merchant mariners and their qualifications, the Coast Guard (quite naturally) uses computers. In 1996 a Coast Guard press release stated in part that: "The prototype (of a new MMLD computer program) was developed in 1992, and extensively tested at the Regional Examination Centers in New Orleans and Seattle." However, in March 1998 a significant report on License Reengineering circulated to a Federal advisory committee (MERPAC) indicated that this highly touted computer system had "cratered."

Since our Association is concerned with the effectiveness of licensing and documentation services provided to mariners (upon payment of substantial user fees), we sought to track down the cause of the discrepancy between the glowing news release on/about March 1996 and the License Reengineering report in March 1998, only a two-year period. Consequently, we sent a FOIA request on March 26, 1998 to the Coast Guard Regional Examination Center in New Orleans to find out what happened and why. (Copy enclosed).

After considerable prodding, we obtained a report from the National Maritime Center that detailed the problems that they had encountered with the MMLD computer system. The report was an eye-opener! (Copy attached).

In studying the above-captioned GAO report, we concur with your general observation (p. 60) of "diminished standards of service in certain programs" that we tie to the Coast Guard's policy of regularly rotating its military personnel that were noted by your organization as early as 1983. These results have been especially noticeable in the Washington (DC) Headquarters area where constant transfers of military personnel and several sweeping but misguided and botched reorganizations starting in 1995 that involved changing job titles, switching physical locations of offices, causing a constant turnover of new civilian employees, changes in mail codes, wholesale changes in telephone numbers, etc., have been notoriously disruptive to the nationwide personnel system that

controls the careers of our nation's merchant mariners.

**[GCMA 2007 Comment: Headquarters went through another sweeping reorganization in 2006 that corresponds to the preceding description in its disruptive effects to all that must deal with this agency.]**

We believe that sensible administration of merchant marine personnel programs has suffered egregiously from the effects of the frequent rotation of military personnel. It appears that each "Commanding Officer" or civilian "Director" has tried out a new management style, imposed a new outlook or approach in the area of merchant marine personnel. None of these "managers" has been particularly effective.

Licenses and merchant mariner documents are extremely important to every single merchant mariner in this country. Unfortunately, after controlling the program since 1937, the Coast Guard apparently has never had a firm count of the number of licensed or documented mariners it controls—to say nothing of accurate information on their names, addresses, and qualifications.

I am attaching a copy of the report we obtained as a result of our FOIA request titled Evolution of the Merchant Mariner Licensing and Documentation System: An Overview for your review. The report dated June 30, 1999 will give you an idea of the inner turmoil and short-sighted blunders that this program has encountered in just one area of (mis)managing the nation's merchant marine.

Perhaps the time has come for Representatives Gilchrest and Coble, who requested your original report, to direct their attention to cleaning up this rat hole of administrative inefficiency.

Here, as I recall them, is a roll call of the individuals who were placed in charge of the Merchant Vessel Personnel Division (subsequently reorganized as the National Maritime Center) since 1989. The majority of these individuals, with the sole exception of Captain Boothe, had no real background in the job they took over and performed with sad but predictable results.

- Captain Fred Grady (1989-92) ... Retired.
- Captain John McGowan (1993-94) ... Promoted in spite of our protests.
- Mr. Frank Flyntz (1994) ... Civilian. Transferred/ St. Lawrence Seaway
- Captain K.L. Ervin (1994-1995) ... Retired.
- Mr. Norman Lemley (1995-1996) ... Suddenly Retired.
- Captain M.M. Rosecrans (1997-1999) ... Transferred.
- Captain Chip Boothe (as of July 1999)

We respectfully submit that Coast Guard military officers have done such a pitifully poor job of managing merchant marine personnel (including selecting individual civilian successors) that they should be permanently removed from control over merchant marine personnel. s/Richard A. Block, NAME Newsletter Editor.

[NAME Comment: If any business entity in this country handled its business affairs the way the Coast Guard handles them they would have been out of business a long time ago.]