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Loss Exposure and Risk Analysis Methodology (LERAM) Project Database Design

Lance Ryley

CompuCon
21808 East River Road
Grosse Ile, MI 48138

William H. Jones

U.S. Coast Guard
Research and Development Center
1082 Shennecossett Road
Groton, CT 06340-6096

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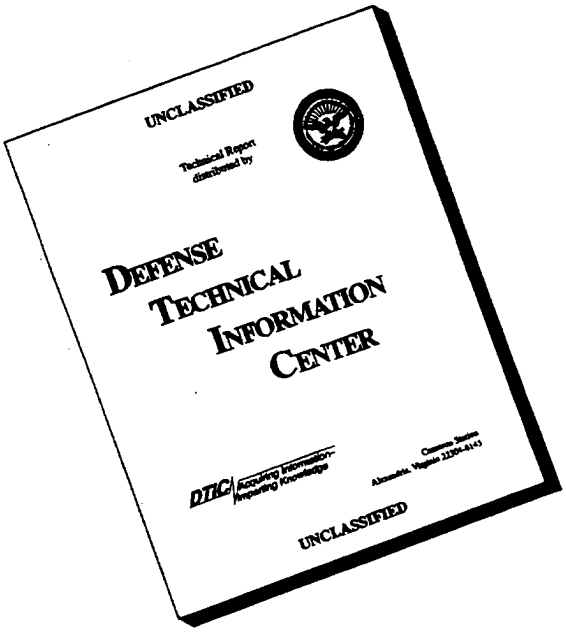

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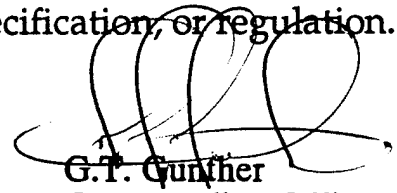

G.T. Gunther
Commanding Officer
United States Coast Guard
Research & Development Center
1082 Shennecossett Road
Groton, CT 06340-6096

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The Coast Guard technical contact and COTR is Mr. William Jones, 860-441-2764.

16. Abstract

This task is the culmination of multiple tasks directed at analyzing, restructuring, and enhancing the Coast Guard's Mishap Reporting Systems (MISREPS) to more capably support system safety engineering concepts such as hazard analysis and risk management. As part of the Loss Exposure and Risk Analysis Methodology (LERAM) project, the research into the methods which we employ to report, track, and analyze hazards has resulted in a series of low cost changes that should significantly alter the way data is viewed within the Coast Guard's Safety Program. In short, the traditional concepts of storing mishap data for historical archive purposes and seeking to identify trends in the data have been replaced by considerably more emphasis on causal factors leading to a mishap and the hazards responsible for the mishap.

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METRIC CONVERSION FACTORS

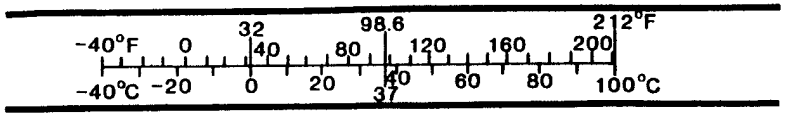
Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
in	inches	* 2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (WEIGHT)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (EXACT)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly).

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (WEIGHT)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	0.125	cups	c
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (EXACT)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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Acknowledgements

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1.0 Overview

This task is the culmination of multiple tasks directed at analyzing, restructuring, and enhancing the Coast Guard's Mishap Reporting Systems (MISREPS) to more capably support system safety engineering concepts such as hazard analysis and risk management. As part of the Loss Exposure and Risk Analysis Methodology (LERAM) project, the research into the methods which we employ to report, track, and analyze hazards has resulted in a series of low cost changes that should significantly alter the way data is viewed within the Coast Guard's Safety Program. In short, the traditional concepts of storing mishap data for historical archive purposes and seeking to identify trends in the data have been replaced by considerably more emphasis on causal factors leading to a mishap and the hazards responsible for the mishap.

As the Coast Guard's mishap rate was so low, trend analysis never revealed any information beyond the normal variances of the mishap data leading to difficulties in managing safety and operational risks. By targeting causal factors and hazards that lead to mishaps, rather than the mishaps themselves, management can effectively target appropriate resources toward the control of those hazards deemed most probable to result in a mishap of significant consequences. The historical database of reported mishaps has been restructured to support this new philosophy in risk management and will serve as a platform to provide useable statistics on causal factors, subsystems, and hazard groups most likely to be involved in a mishap, most likely to result in costly mishaps, or most likely to be significantly impacted by alterations in staffing levels, training levels, or other such crucial decisions that impact the daily operations of this service.

This final report highlights the data conversion and data query issues associated with transferring data from the Coast Guard's existing Mishap Reporting System to the recently enhanced version designed to run on Access®. Due to limitations in resources, the Hazard and CASREP database subsystems were not included in this design effort. The philosophy and requirements for integrating these two subsystems and key fields from other Coast Guard databases are discussed. An interim design that incorporates the Hazard and CASREP subsystems is provided in Appendix D for historical completeness. This report and its appendices provides a single source for the historical development of the enhanced data structures, lookup tables, expanded selections for causal factors, and other key features of the redesigned Mishap Reporting System.

2. Project Background

In support of the Loss Exposure and Risk Analysis Methodology (LERAM) project, a project database was designed on a Unix-based system that incorporated elements from several Coast Guard databases. The major databases incorporated into the LERAM project database were the Operating Facilities (OPFAC), Mishap Reporting System (MISREPS), and the Casualty Reporting System (CASREP). As part of the development of this database, much effort was expended to identify common links between these subsystems, determine ways in which their information could identify vessel hazards, and identify limitations in their structures and content. Most of the recent effort has focused on the MISREPS portion of the database, which is the only currently implemented subsystem that tracks costs associated with mishaps and casualties. The importance of the MISREPS subsystem to the overall database cannot be overstated: it is the reliance on MISREPS, the data elements that it contains, and the links it provides to other

subsystems that has led to its close scrutiny and constant refinement since the inception of the LERAM project in 1992.

Changes to the MISREPS subsystem since 1992 have focused in two directions. First, the quality of the original data has been improved through careful, multi-layer quality control, both by automated programs and by manual examination of the data. Secondly, the structure of the database has been analyzed to find better means of organizing the data elements captured within MISREPS. The original MISREPS system was constructed using database software in a way that resembled a long text file containing all of the data elements. While it was possible to search this file, none of the data within it was organized in a manner that showed its relationship to other data. Also, because all of the administrative information was duplicated for related mishaps, it was difficult to obtain accurate counts of mishaps and casualties. For instance, a fire on board ship in which three personnel were injured appeared as three separate incidences of "Fire."

The first major change to the database was to split this "flat file" -- obtained from the Office of Safety and Environmental Health (G-K) -- format into a structure with three major tables, allowing MISREPS to track multiple casualties for a given mishap. Other changes have included standardizing and revising entries for various fields considered 'key' to developing useful information queries.

The changes that have been made to the MISREPS system have been documented in previous reports (see Appendix D for documentation regarding the Informix implementation of the LERAM project database). While the changes have increased the usefulness of the MISREPS data, it has not been without costs. The complexity of the database design, coupled with the Informix product's reliance on hand-coded reports, has resulted in a situation in which one must be intimately acquainted with the overall database design in order to extract reliable and useful data from the system. Data requests made by G-KSE in support of vessel safety analysis reinforced the pervasiveness of these limitations as complex reports were created. These reports often required the results of several queries to be combined in one spreadsheet. Furthermore, the process of creating final data reports required that the queries be designed, coded and debugged by hand. Often, labor-intensive manipulation of the formatting was required before useful reports were generated. Query results were often integrated into one report using a combination of shell scripts, Pascal drivers, and spreadsheet macros to complete formatting. Because delivery of final reports was generally either in Excel® or CGSWII spreadsheet format, data had to be transferred from the Unix platform to the appropriate platform for final processing.

In an effort to reduce the labor required to maintain and modify the database, as well as to generate queries, forms, and reports, a search was made for a replacement database product. An examination of the MS Access® database product showed that it had the potential to provide a more integrated application development environment in which programs and queries can be combined in ways that A) are transparent to the user, B) are essentially self-documenting, and C) are easily transportable to other microcomputers that have Access® installed. Also, Access® was being used as a development environment at MLC-LANT, and will be the standard database provided with the Coast Guard Standard Workstation III (CGSWIII). It also met the Coast Guard requirement that the MISREPS database be implemented in an SQL-compliant

environment. While Access® implements many useful features that are not strictly SQL-compliant, documentation indicated that SQL-compliance rules could be enforced.

3. Historical Overview of MISREPS Development

The MISREPS database has undergone many design changes both at R&DC and G-KSE. This section highlights the major changes that have occurred.

- 1986 - 1992: MISREPS database maintained on VAX VMS mainframe using s1032 database management software. This version of MISREPS contained one record for each mishap casualty, duplicating much of the information. The absence of error-checking and the extensive use of text fields led to many typographical errors, and precluded the use of this system for meaningful mishap analysis.
- 1992 - 1993: R&DC performed a vessel mishap analysis based on eight years of mishap data (FY1984 - FY1992) from the s1032 MISREPS system. In order to perform this analysis, the database was redesigned to incorporate three major tables: a general mishap information table, a property information table, and a personnel information table. This reorganization of the data allowed mishaps to be grouped by personnel and property casualties, and also allowed related casualties to be grouped under one mishap number. As part of this effort, "lookup" tables were designed to help eliminate errors, and preliminary standardized entries for critical fields were developed. The database was designed and implemented on an HP 9000 835, using INFORMIX-SQL as the database system.
- 1992 - 1993: Concurrent to the R&DC development, work began at Commandant G-KSE and G-KRM to redesign the MISREPS database using Progress®. The G-KSE representation also used three major tables, allowing multiple casualties to be entered under a single mishap.
- 1993 - 1994: After redesigning the MISREPS project database, R&DC identified several problem areas that still existed. Most of the concerns revolved around inconsistencies in the original data, and the inability to map personnel casualties to the vessels on which the mishap occurred. This was remedied by linking personnel casualties directly to the property table, instead of to the administrative table. This change meant that for every personnel casualty, there was a property record in the database indicating the vessel upon which the casualty took place. Another significant change was the inclusion of mishap types, phases of operation, and causal factors reported at the personnel and property casualty level, instead of at the administrative level. Database designs were changed to incorporate these new ways to link records, and the results of the Preliminary Hazard Analysis conducted by Battelle were added to the database. Most database development centered on making the information contained within MISREPS more useful and accessible to safety personnel. Because of the labor required to quality-control the MISREPS database, it was decided to reduce the R&DC database to FY1989 - FY1992. This data set represented the "cleanest" of the records, and required less effort to convert and quality-control in the new database design. This design is documented fully in Appendix D.
- 1994 - 1995: R&DC provided data analysis support to G-KSE, forwarding the results of several specialized queries concerning vessel safety. These queries are detailed in

Appendix B. Because of the text-based nature of INFORMIX, it was difficult to generate some of these reports without extensive manual manipulation of the report formats. Further, INFORMIX did not present the data in an easily-transportable form, requiring that the results of the queries be converted to a spreadsheet before forwarding to G-KSE. These limitations to the MISREPS platform and software led to the conclusion that the database should be implemented on a PC platform. Other factors led to the conclusion that the database should be designed using Access®. This design and implementation effort is detailed in this report.

4. MISREPS Database Processing

It was decided to convert the MISREPS database to a PC platform using Access® for a number of reasons. First, Access® provides an integrated development environment, allowing concurrent development of tables, queries, reports, and forms in a single database "container." Secondly, Access® provides many options for output, from MSWord documents to spreadsheet formats, allowing easy transportability from one platform to another. Third, the graphical nature of the Access® environment facilitates rapid and accurate database development.

4.1. Pre-Implementation Considerations

Meetings with G-KSE, G-KRM and R&DC personnel identified several important goals for the MISREPS conversion project. These goals included:

- Redesign of the project MISREPS database to track mishap information not directly related to vessel mishaps. This was necessary in order to ensure that any design changes would be compatible with Coast Guard MISREP database requirements.
- Validation of design changes through the use of FY1993 and FY1994 data from the Coast Guard MISREPS database.
- Development of standard and specialized queries based upon similar queries written for the in-house database. These queries were then to be tested against existing Coast Guard queries to ensure consistent results.

Also integral to the design phase was an effort to take advantage of some of Access®'s advanced field types. The MISREPS database relies heavily on narrative fields to clarify events surrounding mishaps, probable causes, and actions taken to correct them. Neither the Coast Guard database nor the Informix database were equipped to efficiently handle large quantities of text. The Access® memo field type was chosen to represent these narrative fields because of its efficiency and the ability to search for text contained in such fields.

4.2. MISREPS Data Structure

The first step of the design process was to develop a data structure for the Access® database that represented the final database structure. To accomplish this, meetings were held with G-KSE and G-KRM outlining areas in which the project database needed to be enhanced from a vessel-oriented database to meet Coast Guard-wide mishap reporting requirements. The result of the meetings was an agreed-upon list of changes to be implemented during the design phase, including minor reordering of some data fields, standardizing data types and lengths, and

restructuring the types of certain fields to increase their efficiency. Once the format had been agreed upon, the table structures were created in Access®. The agreed-upon format maintained the three-table structure, but included links between the administrative table and the personnel table that allowed personnel casualties to be entered without an associated property casualty. This change was necessary in order to accommodate off-duty and home-related mishap reports.

Also agreed upon, as part of the design change, was a reworking of the manner in which causal factors were reported. In the Progress® version of MISREPS, causal factors were reported as "checkbox" fields, with the reporting unit and each level of review selecting up to three, rank-ordered causal factors. This method made it difficult to query for causal factors in a meaningful way, and was abandoned in favor of fields whose entries came from a "lookup" table of causal factors. This reduced the number of causal factors appearing in a report to nine (three causal factors per level of review), and made it possible to construct queries that took causal factors into account. A complete documentation of the tables, fields, and relationships used in this database appear in Appendix A.

The following agreements were made concerning the database design:

- Fields containing numeric data but not used for computation would be converted to character values.
- Text fields would be examined and their lengths standardized among the various database subsystems.
- Causal Factor, Mishap Type, and Phase of Operation would be tracked in MISPROP and MISPERS as well as in MISGEN, allowing a more accurate accounting of these values in multiple-casualty mishaps.
- An alphanumeric sequencer would be added to the report number in the MISGEN table in order to track multiple-unit mishaps.

These ideas were incorporated into the data structure concurrently with work to import the FY1993 - FY1994 validation data.

4.3 Coast Guard Data Import

4.3.1. Receipt of Data

The second step of the redesign process involved receiving extracts of MISREP data from the current Coast Guard MISREPS database (implemented in Progress®). These extracts have been used to ensure that the new design incorporates all of the necessary database fields, and to identify the issues, problems, and solutions surrounding the conversion of Progress® data to the new database format. They were also used to build some of the lookup tables that MISREPS will use to verify data integrity. The extracts arrived on 32 track tape, and were transferred from the CGSWII to the HP-UX operating system for preliminary evaluation and processing. From there, they were moved to the DOS-based PC for import into the database.

Originally, the importation plan called for the raw text files to be preprocessed on the HP-UX system before being transferred to the PC platform. This platform was chosen because of the ease with which files can be viewed and manipulated using Unix-based tools. Preprocessing was to consist of creating new text files from the originals. The data within the

new text files would reflect the layout of the new database, simplifying the actual importation of the data. Also, some error-checking of field types and content was to be performed.

It was decided instead to transfer the raw text files directly to the PC platform and process the files directly through Access® because work done on the Unix platform would not accurately reflect the environment under which Coast Guard development of MISREPS would occur. Also, by using Access®'s built-in data typing, error-checking and relationship definition tools, it was hoped that all aspects of database integrity and good design would be maintained.

To facilitate the processing, it was decided to build an Access® "copy" of the Progress® database using the raw data files. Field typing would be applied and errors corrected in this database before transferring the data to the final MISREPS data structure. This utilization of Access® for not only the final design, but as a preliminary development environment as well, allowed all database changes and specific design macros and code fragments to be documented. It also presented a unique method of "handing off" a database development package which could be implemented to convert the Progress® MISREPS data to Access® on any PC platform with Access® software.

4.3.2. Data Import

R&DC requested the complete MISREPS data set for FY1993 - FY1994. This data was to be used to build the Access® version of MISREPS, and provide a data set for testing and validation of the data structure. The majority of the problems encountered during the course of the development of the Access® database occurred while trying to import data from the Progress® raw files to Access®.

First attempts to read the administrative data (contained in a file called MISGEN) into Access® were unsuccessful. Progress® outputs flat text files using a double-quote (") as a field delimiter, with a comma (,) as a field separator. Access® allows field delimiters and separators to be defined at import time; however, MISREPS contains many instances where a (") is used as part of a field entry. For instance, quotes are used within narrative text to delimit actual quoted speech, and they are used within the mishap location to indicate minutes of latitude and longitude.

Access® also limits the overall length of any imported record to 2,000 characters, including field delimiters and field separators. Because of its text-based nature, exported MISREPS records are allowed to exceed this limit. In the case of the FY1993 and FY1994 data, 309 of 4,235 records exceeded the 2,000 character limit in the misgen.txt file.

These two limitations resulted in the rejection by Access® of 440 records out of 4235. [This 10% rejection rate applied to only two fiscal years, but was deemed significant enough to warrant development of a solution to the data import problems]. Even if the rejection rate were lower, lengthy narrative fields are considered valuable sources of information and worthy of preservation.

A preprocessing program, written in Visual Basic, was developed to address the data inconsistency and record length issues. The program accomplished two tasks. The first was to replace the text delimiter/field separator combination used within the raw files, and the second

was to split records longer than 2,000 characters in a way that allowed them to be loaded into the database.

The first task was accomplished by reading each record and replacing the combination "," with |,| and also placing a pipe (|) at the beginning and end of each line. This ensured that quotes used within narratives and other fields would be entered properly into the database. The second task tested each record, read in as a string, to determine its length. If the length exceeded 2,000 characters, the record number was extracted from the string and the string was split into two sections. The record number was added to the beginning of the second section, and the two records were saved in separate files.

By preserving the record number and splitting the records in this fashion, it was possible to create a database in which all 4,235 MISGEN records were loaded correctly. After loading, a "combine tables" query was formulated to recreate a single table with all the pertinent data. The main body of code used to perform this processing appears in Appendix C.

4.4. Database Validation

Originally, database validation was to consist of a two-tiered approach. First, the data provided by MLC would be tested to ensure that it conformed to the field types selected for the database. Secondly, a series of standard queries, based on queries run by MLC, were to be developed and run. The results of these queries were to be compared to results provided by MLC to ensure that the new database structure was able to meet standard reporting requirements. Also, this test was to show that the new database structure allowed for a more detailed understanding of mishap data.

Several issues precluded this type of database validation. MLC was asked to provide the code and sample results from the standard queries using the FY1993 - FY1994 data. The code for the queries arrived, but because Progress® is not SQL-compliant, and we were not familiar with Progress® programming, it was not useful in developing similar queries in Access®.

As the FY1993 - FY1994 data were more closely examined, it was determined that there were omissions of critical data that made that data unsuitable for database validation. The most critical of the omissions were the causal factors, which in many cases were not reported by any level of review. Efforts turned from database validation to data verification. These efforts are detailed below.

4.1.1. Data Verification

Once the raw files had been loaded into an Access® database and "split" tables were combined, work began to verify some of the data in this Progress® look-alike. Because of the manner in which the data was imported, Access® considered every field in every table to be of type "text." Before mapping could begin from this structure to the final MISREPS structure, narrative fields needed to be converted to memo fields, key fields needed to be designated, and data typing needed to be applied to the fields within each table. Also, general integrity checks between the major tables were performed.

One of the first issues encountered involved the mishap personnel and property tables that contained mishap report numbers not included in the MISGEN table. MISPERS contained 74 of these unmatched records, and MISPROP contained 16. Originally, it was

surmised that these records referred to mishaps with multiple casualties, but closer examination showed that all but three of the unmatched MISPERS records, and all but one of the unmatched MISPROP records, had data entry dates prior to the earliest date of the original request for FY1993 and FY1994 data. It is not known how the original data request was fulfilled; however, the inclusion of these records raised doubts about data completeness. If data was included prior to the FY1993 request, it is possible that data from the required time period could have been excluded also.

Another issue involved date fields. While most date fields complied with proper date format, in many cases the date field entry was a "?" if the date was not known. The inclusion of these non-date characters in these fields precluded the conversion of these fields within Access® to type "date" without first setting non-compliant dates to "null." In five cases, no mishap date was reported, and in many cases the initial report entry dates were not reported. In addition to the conversion problem presented by no date entry, there is a more important problem related to the usefulness of historical mishap data. This failure to preserve crucial information undoubtedly will affect the reliability of any reports generated from the system.

As problematic data fields were identified within the original data extracts, errors were eliminated. Records falling outside the data request dates were deleted from the database. Date fields and other fields were cleared of non-compliant data and converted to their proper data types. A meeting with the Resource Management Division of the Office of Safety and Environmental Health (G-KRM) identified some general compliance factors that needed to be addressed, such as converting non-computational numeric fields to character fields. In the scope of this project, however, not all of the problems were identified and corrected. The majority of the actions taken to correct problems and inconsistencies are detailed in the following section.

4.2.2. Data Mapping

As data fields were verified in the data extracts, strategies to map them into the new database structure were devised. Many data field descriptions were not changed and thus were easily mapped to the new database. This section addresses some of the major issues associated with data fields with different descriptions. Most of these issues arose from how to treat legacy data within the Coast Guard MISREPS system.

Part of the redesign of the MISREPS database focused on a revised method of tracking causal factors. The new system reduces the number of fields required to track the causal factors from over 40 to 9 (3 per level of review). While this simplified the database and query designs immensely, it created problems when attempting to map legacy data to the new structure. The problem was compounded by the fact that in many cases, the legacy data did not identify any causal factors.

A solution to this problem was not within the scope of this project. It is not impossible to design an algorithm that preserves as much of the legacy information as possible, however.

A change proposed to the database design involves incorporating the CASREP Equipment Identification Code (EIC) system to identify vessel equipment casualties. Adding this information to legacy data was determined to be labor intensive and is not recommended.

Another proposed change was to add hazard groups to the MISGEN table to logically group hazards. Hazard group definitions and characterizations were developed by Battelle's Human Factors Transportation Center in 1994 on FY1989 - FY1992 vessel-related legacy data. Adding hazard group information to legacy data was determined to be labor intensive and is not recommended.

A final issue that needed to be addressed involved the categories available to the database for fields such as mishap type and phase of operation. Early on in the LERAM project, the Coast Guard mishap type, phase of operation, and causal factor categories were examined, analyzed, and enhanced by R&DC in an attempt to provide mishap statistics that were more useful. Over the past three years, dialogue between R&DC, Commandant (G-KSE), and other product sponsors and customers suggest that Coast Guard categories might change to reflect the recommendations made by R&DC. So far, however, no official authorization has been received, and the values for these fields in the new Access® version of the database remain those that were provided in the legacy data extracts.

5. Conclusions

The MISREPS database design enhancement effort was successfully accomplished with the completion of the final data conversion task. The data has undergone strict quality control and many iterations of standard queries were processed to assure reports are easily generated and provide consistently accurate data for safety managers. The organization of the database has been redefined to focus management's attention on the roots of the problems, such as causal factors and system hazards. Integrating engineering casualty data, training data, hazardous condition notifications, operating hours, and other supporting data have enhanced the accuracy and consistency of mishap data through multi-source identification of hazards and causal factors. Reporting enhancements initiated through Commandant (G-KSE) were developed in concert with the new database to ease data entry and reduce the safety analysis effort of the reporting units. Multiple levels of review have been instituted to enhance situational awareness at the unit level, to ensure similar mishaps and hazards are reported consistently, and to facilitate meaningful historical safety analysis.

The enhanced Coast Guard Mishap Reporting System (MISREPS) must be managed aggressively to ensure its future usefulness. Quality data is the key to a useable data system. Without consistently accurate data, historical analysis will, at best, be flawed, and at worst, mis-target risk management efforts. Enforcement of the reviewer's duties should ensure the reports are submitted with good information and the analysis of mishaps and their associated hazards is performed consistently.

6. Report Endnotes

The following are comments regarding this final report on the LERAM project database. In Appendix A: Dictionary descriptions for causal factor, mishap type, and phase of operation fields were not included because dictionary descriptions were never agreed upon by the members of the natural working group, including KRM. It is the author's understanding that during

KRM's development of the final database, these issues will be resolved with the assistance of MLC and KSE. The taxonomy for mishap type and phase of operation were also never finalized, thus are not included in this report.

Addressing these changes now would be a major undertaking, requiring the issuance of a delivery order to accomplish. Given that KRM will be developing the final version of this database, it seems to make more sense to incorporate their database documentation as the Coast Guard's source for datafields and definitions.

Tables were not provided for causal factors and hazard groups because they are not handled by tables in the database, but rather by lookup lists incorporated into the haz_grp field. This is also true for causal factors. The information provided in Appendix D refers to the previous version of LERAM which was implemented in INFORMIX-SQL (not in Access®).

The hazard and CASREP databases were not included in the development of LERAM on the personal computer platform due to data quality control requirements and limited resources. If the quality control of the data had been performed prior to the final design validation process, these databases (in Access® format) would most likely have been included in this final report. Their inclusion in Appendix D is for historical completeness, and their data dictionaries appear in this Appendix (D).

Notes on Appendix B: The actual Access® code to produce these queries was never written, again largely due to quality control factors regarding the MLC data and limited resources. It is also important to realize that any queries would ultimately be influenced by the final form of the database, which as yet has not been agreed upon. These two factors precluded the development and testing of any of the queries within the Access® system. To reduce the impact of these queries not being written, the design rational and philosophies behind the queries are fully explained in the report.

Appendix A

MISREPS Database Dictionary

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Appendix A - MISREPS Database Dictionary

The following pages are divided into two sections. The first section details the MISGEN, MISPERS, MISPROP, and OPFAC tables. The second section shows the details about various "lookup" tables included in the database. In both sections, graphical representations of the relationships between tables follow the descriptions of field details.

This appendix was generated using the Access® Database Documentor Wizard. A question mark (?) indicates fields that were not clearly defined in the original Progress Database.

The structure of this database was designed and approved by a Natural Working Group (NWG) consisting of representatives from Headquarters, Maintenance and Logistics Command Atlantic, and the Research and Development Center. Although the design is complete, several dictionary descriptions were left unresolved. The three dictionary descriptions are Causal Factors, Mishap Types, and Phase of Operation. In addition, the final taxonomy for Mishap Types and Phase of Operation were left unresolved. As this database design will be implemented by Commandant (G-KSE), it was agreed that the NWG would resolve these issues during the implementation phase.

The reader should note that for Causal Factors and Hazard Groups are now handled by "lookup lists" rather than "tables" in the new database design. This is different than previous database designs and even different from an interim design (provided for historical completeness) described in Appendix D.

Properties

Date Created:	6/5/95 12:56:05 PM	Def. Updatable:	Yes
Last Updated:	9/13/95 11:57:48 AM	Record Count:	0

Columns

Name	Type	Size
misgen_no	Number (Long)	4
Allow Zero Length:	No	
Attributes:	Fixed Size, Auto-Increment	
Collating Order:	Unknown or Undefined	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Description:	uniquely identifies the misgen for links to misprop and mispers	
Ordinal Position:	1	
Required:	No	
Source Field:	misgen_no	
Source Table:	misgen	
Validate On Set:	No	
rno	Number (Integer)	2
Allow Zero Length:	No	
Attributes:	Fixed Size	
Caption:	Report Number	
Collating Order:	Unknown or Undefined	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Decimal Places:	Auto	
Default Value:	0	
Description:	Misrep Report Number (unique to the table and used to establish relationships with other tables)	
Ordinal Position:	2	
Required:	1	
Source Field:	rno	
Source Table:	misgen	
Validate On Set:	No	
rno_seq	Text	1
Allow Zero Length:	No	
Attributes:	Variable Length	
Collating Order:	General	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Description:	Report Number sequencer to identify multi-unit mishaps	

	Ordinal Position:	3	
	Required:	No	
	Source Field:	mo_seq	
	Source Table:	misgen	
	Validate On Set:	No	
dt		Date/Time	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Caption:	Mishap Date	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Date of the mishap	
	Format:	Short Date	
	Ordinal Position:	4	
	Required:	1	
	Source Field:	dt	
	Source Table:	misgen	
	Validate On Set:	No	
fy		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Caption:	Fiscal Year	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	Year(Now())	
	Description:	Fiscal Year of mishap	
	Ordinal Position:	5	
	Required:	1	
	Source Field:	fy	
	Source Table:	misgen	
	Validate On Set:	No	
	Validation Rule:	>=1992	
	Validation Text:	Year must be >= 1992	
tme		Date/Time	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Caption:	Mishap Time	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Time of Mishap	
	Format:	Short Time	

	Ordinal Position:	6	
	Required:	1	
	Source Field:	tme	
	Source Table:	misgen	
	Validate On Set:	No	
opfac		Text	5
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Unit Opfac	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Opfac of unit reporting mishap	
	Ordinal Position:	7	
	Required:	1	
	Source Field:	opfac	
	Source Table:	misgen	
	Validate On Set:	No	
di		Text	2
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Unit District	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	District that Opfac is assigned to	
	Ordinal Position:	8	
	Required:	1	
	Source Field:	di	
	Source Table:	misgen	
	Validate On Set:	No	
atmi		Text	4
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Mission at Time of Mishap	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Mission at time of Mishap	
	Ordinal Position:	9	
	Required:	1	
	Source Field:	atmi	
	Source Table:	misgen	
	Validate On Set:	No	

opmode		Text	16
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Operational Mode	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Operational Mode	
	Ordinal Position:	10	
	Required:	No	
	Source Field:	opmode	
	Source Table:	misgen	
	Validate On Set:	No	
loc		Text	90
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Geographic Location of Mishap	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Mishap Location	
	Ordinal Position:	11	
	Required:	1	
	Source Field:	loc	
	Source Table:	misgen	
	Validate On Set:	No	
wea		Text	90
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Weather at Time of Mishap	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Weather(text)	
	Ordinal Position:	12	
	Required:	1	
	Source Field:	wea	
	Source Table:	misgen	
	Validate On Set:	No	
w_dir		Text	3
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Wind Direction (Degrees True)	
	Collating Order:	General	
	Column Hidden:	No	

	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Wind Direction (Degrees True)	
	Ordinal Position:	13	
	Required:	1	
	Source Field:	w_dir	
	Source Table:	misgen	
	Validate On Set:	No	
w_spd		Text	3
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Wind Speed (Knots)	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Wind Speed (Knots)	
	Ordinal Position:	14	
	Required:	No	
	Source Field:	w_spd	
	Source Table:	misgen	
	Validate On Set:	No	
vis		Text	3
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Visibility (Nautical Miles)	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Visibility (Nautical Miles)	
	Ordinal Position:	15	
	Required:	No	
	Source Field:	vis	
	Source Table:	misgen	
	Validate On Set:	No	
sea		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Caption:	Sea Temperature (degrees Farenheit)	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Sea Temperature (degrees Farenheit?)	

	Ordinal Position:	16	
	Required:	No	
	Source Field:	sea	
	Source Table:	misgen	
	Validate On Set:	No	
air		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Caption:	Air Temperature (degrees Farenheit)	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Air Temperature (degrees Farenheit)	
	Ordinal Position:	17	
	Required:	No	
	Source Field:	air	
	Source Table:	misgen	
	Validate On Set:	No	
s_hgt		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Caption:	Sea Height (in feet)	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Sea Height (feet)	
	Ordinal Position:	18	
	Required:	No	
	Source Field:	s_hgt	
	Source Table:	misgen	
	Validate On Set:	No	
s_per		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Sea Period (seconds)	
	Ordinal Position:	19	

	Required:	No	
	Source Field:	s_per	
	Source Table:	misgen	
	Validate On Set:	No	
lite		Text	4
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Light Conditions	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Light Conditions	
	Ordinal Position:	20	
	Required:	No	
	Source Field:	lite	
	Source Table:	misgen	
	Validate On Set:	No	
sb		Text	3
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Default Value:	"N/A"	
	Description:	Seat Belt	
	Ordinal Position:	21	
	Required:	No	
	Source Field:	sb	
	Source Table:	misgen	
	Validate On Set:	No	
precip		Text	8
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Precipitation	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Default Value:	"None"	
	Description:	Precipitation	
	Ordinal Position:	22	
	Required:	No	
	Source Field:	precip	
	Source Table:	misgen	
	Validate On Set:	No	

nar		Memo	-
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Mishap Narrative	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Mishap Narrative	
	Ordinal Position:	23	
	Required:	No	
	Source Field:	nar	
	Source Table:	misgen	
	Validate On Set:	No	
cau		Memo	-
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Mishap Cause Description	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Mishap Cause description	
	Ordinal Position:	24	
	Required:	No	
	Source Field:	cau	
	Source Table:	misgen	
	Validate On Set:	No	
act		Memo	-
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Corrective Action Taken	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Action Taken to correct the mishap	
	Ordinal Position:	25	
	Required:	No	
	Source Field:	act	
	Source Table:	misgen	
	Validate On Set:	No	
rby_l		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	

	Column Width:	Default	
	Data Updatable:	No	
	Description:	Reported By (last name)	
	Ordinal Position:	26	
	Required:	No	
	Source Field:	rby_l	
	Source Table:	misgen	
	Validate On Set:	No	
rby_f		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Reported By (first name)	
	Ordinal Position:	27	
	Required:	No	
	Source Field:	rby_f	
	Source Table:	misgen	
	Validate On Set:	No	
rby_m		Text	1
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Reported By (middle initial)	
	Ordinal Position:	28	
	Required:	No	
	Source Field:	rby_m	
	Source Table:	misgen	
	Validate On Set:	No	
tle		Text	20
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Title of Reported By	
	Ordinal Position:	29	
	Required:	No	
	Source Field:	tle	
	Source Table:	misgen	
	Validate On Set:	No	

rdt		Date/Time	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Date of Report	
	Ordinal Position:	30	
	Required:	No	
	Source Field:	rdt	
	Source Table:	misgen	
	Validate On Set:	No	
com1		Memo	-
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	First Reviewer Comments	
	Ordinal Position:	31	
	Required:	No	
	Source Field:	com1	
	Source Table:	misgen	
	Validate On Set:	No	
tle1		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Title of First Reviewer	
	Ordinal Position:	32	
	Required:	No	
	Source Field:	tle1	
	Source Table:	misgen	
	Validate On Set:	No	
rby1_l		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	First Reviewer (last name)	

	Ordinal Position:	33	
	Required:	No	
	Source Field:	rby1_l	
	Source Table:	misgen	
	Validate On Set:	No	
rby1_f		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	First Reviewer (first name)	
	Ordinal Position:	34	
	Required:	No	
	Source Field:	rby1_f	
	Source Table:	misgen	
	Validate On Set:	No	
rby1_m		Text	1
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	First Reviewer (middle initial)	
	Ordinal Position:	35	
	Required:	No	
	Source Field:	rby1_m	
	Source Table:	misgen	
	Validate On Set:	No	
rdt1		Date/Time	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Date of First Review	
	Format:	Short Date	
	Ordinal Position:	36	
	Required:	No	
	Source Field:	rdt1	
	Source Table:	misgen	
	Validate On Set:	No	
tle2		Text	50
	Allow Zero Length:	No	

	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Title of 2nd Reviewer	
	Ordinal Position:	37	
	Required:	No	
	Source Field:	tle2	
	Source Table:	misgen	
	Validate On Set:	No	
rby2_l		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	2nd Reviewer (last name)	
	Ordinal Position:	38	
	Required:	No	
	Source Field:	rby2_l	
	Source Table:	misgen	
	Validate On Set:	No	
rby2_f		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	2nd Reviewer (first name)	
	Ordinal Position:	39	
	Required:	No	
	Source Field:	rby2_f	
	Source Table:	misgen	
	Validate On Set:	No	
rby2_m		Text	1
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	2nd Reviewer (middle initial)	
	Ordinal Position:	40	
	Required:	No	

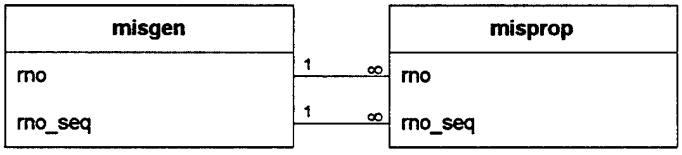
	Source Field:	rby2_m	
	Source Table:	misgen	
	Validate On Set:	No	
rdt2		Date/Time	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Date of 2nd Review	
	Format:	Short Date	
	Ordinal Position:	41	
	Required:	No	
	Source Field:	rdt2	
	Source Table:	misgen	
	Validate On Set:	No	
mlc		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Reporting MLC	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Reporting MLC	
	Ordinal Position:	42	
	Required:	No	
	Source Field:	mlc	
	Source Table:	misgen	
	Validate On Set:	No	
class		Text	1
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Caption:	Mishap Class	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Mishap Class	
	Ordinal Position:	43	
	Required:	No	
	Source Field:	class	
	Source Table:	misgen	
	Validate On Set:	No	
haz_grp		Text	50
	Allow Zero Length:	No	

	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Hazard Group (assigned by MLC reviewer)	
	Ordinal Position:	44	
	Required:	No	
	Source Field:	haz_grp	
	Source Table:	misgen	
	Validate On Set:	No	
audit		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Audit Code	
	Ordinal Position:	45	
	Required:	No	
	Source Field:	audit	
	Source Table:	misgen	
	Validate On Set:	No	
keyer_id		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	ID of person who keyed data initially	
	Ordinal Position:	46	
	Required:	No	
	Source Field:	keyer_id	
	Source Table:	misgen	
	Validate On Set:	No	
init_date		Date/Time	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Date of initial entry	
	Format:	Short Date	
	Ordinal Position:	47	

	Required:	No	
	Source Field:	init_date	
	Source Table:	misgen	
	Validate On Set:	No	
change_id		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	ID of person who keyed the change	
	Ordinal Position:	48	
	Required:	No	
	Source Field:	change_id	
	Source Table:	misgen	
	Validate On Set:	No	
change_date		Date/Time	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Date of entry change/update	
	Format:	Short Date	
	Ordinal Position:	49	
	Required:	No	
	Source Field:	change_date	
	Source Table:	misgen	
	Validate On Set:	No	

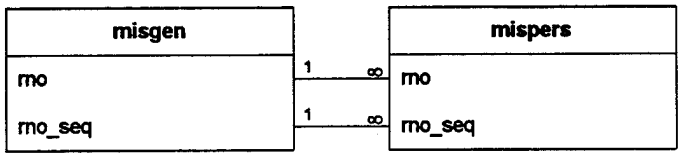
Relationships

Reference



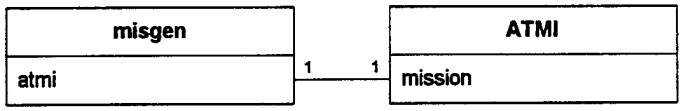
Attributes:	One to Many, Enforced

Reference1



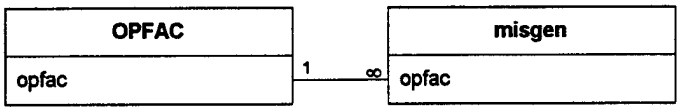
Attributes: One to Many, Enforced

Reference3



Attributes: One to One, Not Enforced

Reference8



Attributes: One to Many, Enforced

Table Indexes

Name	Number of Fields
opfac	1
Fields:	opfac, Ascending
PrimaryKey	2
Fields:	rno, Ascending
	rno_seq, Ascending
Reference8	1
Fields:	opfac, Ascending
rno	1
Fields:	rno, Ascending

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Read Permissions

Properties

Date Created:	6/6/95 5:04:16 PM	Def. Updatable:	Yes
Last Updated:	9/13/95 11:57:31 AM	Record Count:	0

Columns

Name	Type	Size
misprop_no	Number (Long)	4
Allow Zero Length:	No	
Attributes:	Fixed Size	
Collating Order:	Unknown or Undefined	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Decimal Places:	Auto	
Default Value:	0	
Description:	Link to misprop	
Ordinal Position:	2	
Required:	No	
Source Field:	misprop_no	
Source Table:	mispers	
Validate On Set:	No	
rno	Number (Integer)	2
Allow Zero Length:	No	
Attributes:	Fixed Size	
Caption:	Report Number	
Collating Order:	Unknown or Undefined	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Decimal Places:	Auto	
Default Value:	0	
Description:	Misrep Report Number	
Ordinal Position:	4	
Required:	1	
Source Field:	rno	
Source Table:	mispers	
Validate On Set:	No	
rno_seq	Text	1
Allow Zero Length:	No	
Attributes:	Variable Length	
Collating Order:	General	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	

	Description:	Report Number sequencer to identify multi-unit mishaps	
	Ordinal Position:	5	
	Required:	No	
	Source Field:	rno_seq	
	Source Table:	mispers	
	Validate On Set:	No	
ssn		Text	9
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	social security number	
	Input Mask:	000\-00\-0000;;_	
	Ordinal Position:	6	
	Required:	No	
	Source Field:	ssn	
	Source Table:	mispers	
	Validate On Set:	No	
name_l		Text	25
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Last Name of casualty	
	Ordinal Position:	7	
	Required:	No	
	Source Field:	name_l	
	Source Table:	mispers	
	Validate On Set:	No	
name_f		Text	16
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	First Name of casualty	
	Ordinal Position:	8	
	Required:	No	
	Source Field:	name_f	
	Source Table:	mispers	
	Validate On Set:	No	
name_m		Text	1

	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Middle Initial of casualty	
	Ordinal Position:	9	
	Required:	No	
	Source Field:	name_m	
	Source Table:	mispers	
	Validate On Set:	No	
age		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Age of casualty	
	Ordinal Position:	10	
	Required:	No	
	Source Field:	age	
	Source Table:	mispers	
	Validate On Set:	No	
sex		Text	1
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Sex of casualty	
	Ordinal Position:	11	
	Required:	No	
	Source Field:	sex	
	Source Table:	mispers	
	Validate On Set:	No	
grade		Text	5
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	

	Description:	Pay Grade	
	Ordinal Position:	12	
	Required:	No	
	Source Field:	grade	
	Source Table:	mispers	
	Validate On Set:	No	
rate		Text	5
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Rate	
	Ordinal Position:	13	
	Required:	No	
	Source Field:	rate	
	Source Table:	mispers	
	Validate On Set:	No	
stat		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Status	
	Ordinal Position:	14	
	Required:	No	
	Source Field:	stat	
	Source Table:	mispers	
	Validate On Set:	No	
pos		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Crew Location (on vessels, use CUI)	
	Ordinal Position:	15	
	Required:	No	
	Source Field:	pos	
	Source Table:	mispers	
	Validate On Set:	No	
job		Text	50
	Allow Zero Length:	No	

	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Job Description	
	Ordinal Position:	16	
	Required:	No	
	Source Field:	job	
	Source Table:	mispers	
	Validate On Set:	No	
etyp		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Total Experience	
	Ordinal Position:	17	
	Required:	No	
	Source Field:	etyp	
	Source Table:	mispers	
	Validate On Set:	No	
p_head		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Protective clothing	
	Format:	Yes/No	
	Ordinal Position:	18	
	Required:	No	
	Source Field:	p_head	
	Source Table:	mispers	
	Validate On Set:	No	
p_ear		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	

	Description:	Protective clothing	
	Format:	Yes/No	
	Ordinal Position:	19	
	Required:	No	
	Source Field:	p_ear	
	Source Table:	mispers	
	Validate On Set:	No	
p_eye		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Protective clothing	
	Format:	Yes/No	
	Ordinal Position:	20	
	Required:	No	
	Source Field:	p_eye	
	Source Table:	mispers	
	Validate On Set:	No	
p_resp		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Protective clothing	
	Format:	Yes/No	
	Ordinal Position:	21	
	Required:	No	
	Source Field:	p_resp	
	Source Table:	mispers	
	Validate On Set:	No	
p_hand		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Protective clothing	
	Format:	Yes/No	
	Ordinal Position:	22	
	Required:	No	
	Source Field:	p_hand	
	Source Table:	mispers	

	Validate On Set:	No	
p_foot		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Protective clothing	
	Format:	Yes/No	
	Ordinal Position:	23	
	Required:	No	
	Source Field:	p_foot	
	Source Table:	mispers	
	Validate On Set:	No	
p_cover		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Protective clothing	
	Format:	Yes/No	
	Ordinal Position:	24	
	Required:	No	
	Source Field:	p_cover	
	Source Table:	mispers	
	Validate On Set:	No	
p_pfd		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Protective clothing	
	Format:	Yes/No	
	Ordinal Position:	25	
	Required:	No	
	Source Field:	p_pfd	
	Source Table:	mispers	
	Validate On Set:	No	
p_harn		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	

	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Protective clothing	
	Format:	Yes/No	
	Ordinal Position:	26	
	Required:	No	
	Source Field:	p_harn	
	Source Table:	mispers	
	Validate On Set:	No	
p_none		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Protective clothing	
	Format:	Yes/No	
	Ordinal Position:	27	
	Required:	No	
	Source Field:	p_none	
	Source Table:	mispers	
	Validate On Set:	No	
nat		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Nature of illness	
	Ordinal Position:	28	
	Required:	No	
	Source Field:	nat	
	Source Table:	mispers	
	Validate On Set:	No	
bod		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Body Part Affected	
	Ordinal Position:	29	
	Required:	No	

	Source Field:	bod	
	Source Table:	mispers	
	Validate On Set:	No	
hazexp		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Hazardous Exposure	
	Ordinal Position:	30	
	Required:	No	
	Source Field:	hazexp	
	Source Table:	mispers	
	Validate On Set:	No	
contm		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Chemical Contaminant	
	Ordinal Position:	31	
	Required:	No	
	Source Field:	contm	
	Source Table:	mispers	
	Validate On Set:	No	
sev		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Severity of Injury	
	Ordinal Position:	32	
	Required:	No	
	Source Field:	sev	
	Source Table:	mispers	
	Validate On Set:	No	
dis		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	

	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Disability Level	
	Ordinal Position:	33	
	Required:	No	
	Source Field:	dis	
	Source Table:	mispers	
	Validate On Set:	No	
hosp		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Number of Days Hospitalized	
	Ordinal Position:	34	
	Required:	No	
	Source Field:	hosp	
	Source Table:	mispers	
	Validate On Set:	No	
loss		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Number of Lost Duty Days	
	Ordinal Position:	35	
	Required:	No	
	Source Field:	loss	
	Source Table:	mispers	
	Validate On Set:	No	
res		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	

	Description:	Number of Restricted Duty Days	
	Ordinal Position:	36	
	Required:	No	
	Source Field:	res	
	Source Table:	mispers	
	Validate On Set:	No	
cpers		Currency	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Cost of Personnel Casualty based on rank, loss, res, sev and dis	
	Ordinal Position:	37	
	Required:	No	
	Source Field:	cpers	
	Source Table:	mispers	
	Validate On Set:	No	
ca		Yes/No	1
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Workers Compensation Filed?	
	Format:	Yes/No	
	Ordinal Position:	38	
	Required:	No	
	Source Field:	ca	
	Source Table:	mispers	
	Validate On Set:	No	
drname		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Name of Health Provider	
	Ordinal Position:	39	
	Required:	No	
	Source Field:	drname	
	Source Table:	mispers	
	Validate On Set:	No	

drstreet		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Street Address of Health Provider	
	Ordinal Position:	40	
	Required:	No	
	Source Field:	drstreet	
	Source Table:	mispers	
	Validate On Set:	No	
drtown		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Town, City and Zip of Health Provider	
	Ordinal Position:	41	
	Required:	No	
	Source Field:	drtown	
	Source Table:	mispers	
	Validate On Set:	No	
misc		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Miscellaneous (?)	
	Ordinal Position:	42	
	Required:	No	
	Source Field:	misc	
	Source Table:	mispers	
	Validate On Set:	No	
tpri		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Mishap Type	

	Ordinal Position:	43	
	Required:	No	
	Source Field:	tpri	
	Source Table:	mispers	
	Validate On Set:	No	
phase		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Phase of Operation	
	Ordinal Position:	44	
	Required:	No	
	Source Field:	phase	
	Source Table:	mispers	
	Validate On Set:	No	
pri_cau		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Primary Causal Factor	
	Ordinal Position:	45	
	Required:	No	
	Source Field:	pri_cau	
	Source Table:	mispers	
	Validate On Set:	No	
sec_cau		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Secondary Causal Factor	
	Ordinal Position:	46	
	Required:	No	
	Source Field:	sec_cau	
	Source Table:	mispers	
	Validate On Set:	No	
ter_cau		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	

	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Tertiary Causal Factor	
	Ordinal Position:	47	
	Required:	No	
	Source Field:	ter_cau	
	Source Table:	mispers	
	Validate On Set:	No	
pri_cau1		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Primary Causal Factor (assigned by 1st reviewer)	
	Ordinal Position:	48	
	Required:	No	
	Source Field:	pri_cau1	
	Source Table:	mispers	
	Validate On Set:	No	
sec_cau1		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Secondary Causal Factor (assigned by 1st reviewer)	
	Ordinal Position:	49	
	Required:	No	
	Source Field:	sec_cau1	
	Source Table:	mispers	
	Validate On Set:	No	
ter_cau1		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Tertiary Causal Factor (assigned by 1st reviewer)	
	Ordinal Position:	50	
	Required:	No	
	Source Field:	ter_cau1	

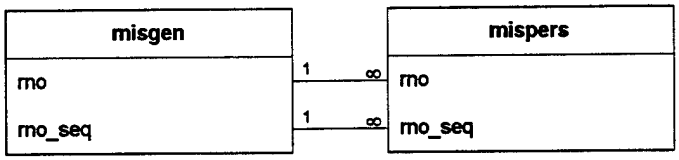
	Source Table:	mispers	
	Validate On Set:	No	
pri_cau2		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Primary Causal Factor (assigned by 2nd reviewer)	
	Ordinal Position:	51	
	Required:	No	
	Source Field:	pri_cau2	
	Source Table:	mispers	
	Validate On Set:	No	
sec_cau2		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Secondary Causal Factor (assigned by 2nd reviewer)	
	Ordinal Position:	52	
	Required:	No	
	Source Field:	sec_cau2	
	Source Table:	mispers	
	Validate On Set:	No	
ter_cau2		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Tertiary Causal Factor (assigned by 2nd reviewer)	
	Ordinal Position:	53	
	Required:	No	
	Source Field:	ter_cau2	
	Source Table:	mispers	
	Validate On Set:	No	
keyer_id		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	

	Column Width:	Default
	Data Updatable:	No
	Description:	ID of person who keyed data initially (note that these fields may not be necessary in prop and pers)
	Ordinal Position:	54
	Required:	No
	Source Field:	keyer_id
	Source Table:	mispers
	Validate On Set:	No
init_date	Date/Time	8
	Allow Zero Length:	No
	Attributes:	Fixed Size
	Collating Order:	Unknown or Undefined
	Column Hidden:	No
	Column Order:	Default
	Column Width:	Default
	Data Updatable:	No
	Description:	Date of initial entry
	Format:	Short Date
	Ordinal Position:	55
	Required:	No
	Source Field:	init_date
	Source Table:	mispers
	Validate On Set:	No
change_id	Text	50
	Allow Zero Length:	No
	Attributes:	Variable Length
	Collating Order:	General
	Column Hidden:	No
	Column Order:	Default
	Column Width:	Default
	Data Updatable:	No
	Description:	ID of person who keyed the change
	Ordinal Position:	56
	Required:	No
	Source Field:	change_id
	Source Table:	mispers
	Validate On Set:	No
change_date	Date/Time	8
	Allow Zero Length:	No
	Attributes:	Fixed Size
	Collating Order:	Unknown or Undefined
	Column Hidden:	No
	Column Order:	Default
	Column Width:	Default
	Data Updatable:	No
	Description:	Date of entry change/update
	Format:	Short Date
	Ordinal Position:	57
	Required:	No
	Source Field:	change_date

Source Table: mispers
Validate On Set: No

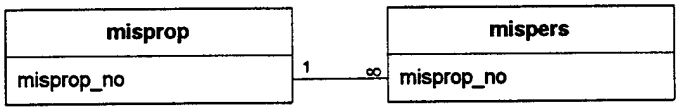
Relationships

Reference1



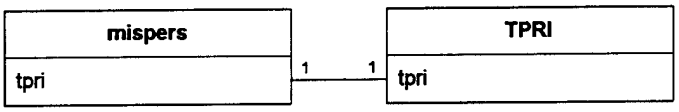
Attributes: One to Many, Enforced

Reference2



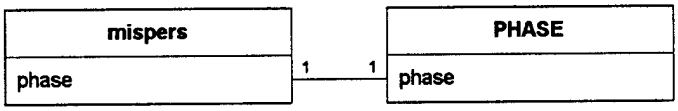
Attributes: One to Many, Enforced

Reference5



Attributes: One to One, Not Enforced

Reference7



Attributes: One to One, Not Enforced

Table Indexes

Name	Number of Fields
misprop_no	1
Fields:	misprop_no, Ascending
PrimaryKey	2

	Fields:	rno, Ascending
		rno_seq, Ascending
Reference1		2
	Fields:	rno, Ascending
		rno_seq, Ascending
Reference2		1
	Fields:	misprop_no, Ascending
rno		1
	Fields:	rno, Ascending

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Read Permissions

Properties

Date Created:	6/6/95 11:02:12 AM	Def. Updatable:	Yes
Last Updated:	9/13/95 11:57:24 AM	Record Count:	0

Columns

Name	Type	Size
misprop_no	Number (Long)	4
Allow Zero Length:	No	
Attributes:	Fixed Size, Auto-Increment	
Collating Order:	Unknown or Undefined	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Description:	Sequencer as a unique key in misprop	
Ordinal Position:	1	
Required:	No	
Source Field:	misprop_no	
Source Table:	misprop	
Validate On Set:	No	
rno	Number (Integer)	2
Allow Zero Length:	No	
Attributes:	Fixed Size	
Caption:	Report Number	
Collating Order:	Unknown or Undefined	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Decimal Places:	Auto	
Default Value:	0	
Description:	Misrep Report Number	
Ordinal Position:	3	
Required:	1	
Source Field:	rno	
Source Table:	misprop	
Validate On Set:	No	
rno_seq	Text	1
Allow Zero Length:	No	
Attributes:	Variable Length	
Collating Order:	General	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Description:	Report Number sequencer to identify multi-unit mishaps	
Ordinal Position:	4	

	Required:	No	
	Source Field:	rno_seq	
	Source Table:	misprop	
	Validate On Set:	No	
loc		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Location of mishap (for vessels, this is the CUI)	
	Ordinal Position:	5	
	Required:	No	
	Source Field:	loc	
	Source Table:	misprop	
	Validate On Set:	No	
ves_type		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Only applicable for vessels -- may autofill based on opfac	
	Ordinal Position:	6	
	Required:	No	
	Source Field:	ves_type	
	Source Table:	misprop	
	Validate On Set:	No	
ves_len		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Length of Vessel in feet	
	Ordinal Position:	7	
	Required:	No	
	Source Field:	ves_len	
	Source Table:	misprop	
	Validate On Set:	No	
tpri		Text	50
	Allow Zero Length:	No	

	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Mishap Type	
	Ordinal Position:	8	
	Required:	No	
	Source Field:	tpri	
	Source Table:	misprop	
	Validate On Set:	No	
phase		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Phase of Operation	
	Ordinal Position:	9	
	Required:	No	
	Source Field:	phase	
	Source Table:	misprop	
	Validate On Set:	No	
pri_cau		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Primary Causal Factor	
	Ordinal Position:	10	
	Required:	No	
	Source Field:	pri_cau	
	Source Table:	misprop	
	Validate On Set:	No	
sec_cau		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Secondary Causal Factor	
	Ordinal Position:	11	
	Required:	No	

	Source Field:	sec_cau	
	Source Table:	misprop	
	Validate On Set:	No	
ter_cau		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Tertiary Causal Factor	
	Ordinal Position:	12	
	Required:	No	
	Source Field:	ter_cau	
	Source Table:	misprop	
	Validate On Set:	No	
pri_cau1		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Primary Causal Factor (assigned by 1st reviewer)	
	Ordinal Position:	13	
	Required:	No	
	Source Field:	pri_cau1	
	Source Table:	misprop	
	Validate On Set:	No	
sec_cau1		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Secondary Causal Factor (assigned by 1st reviewer)	
	Ordinal Position:	14	
	Required:	No	
	Source Field:	sec_cau1	
	Source Table:	misprop	
	Validate On Set:	No	
ter_cau1		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	

	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Tertiary Causal Factor (assigned by 1st reviewer)	
	Ordinal Position:	15	
	Required:	No	
	Source Field:	ter_cau1	
	Source Table:	misprop	
	Validate On Set:	No	
pri_cau2		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Primary Causal Factor (assigned by 2nd reviewer)	
	Ordinal Position:	16	
	Required:	No	
	Source Field:	pri_cau2	
	Source Table:	misprop	
	Validate On Set:	No	
sec_cau2		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Secondary Causal Factor (assigned by 2nd reviewer)	
	Ordinal Position:	17	
	Required:	No	
	Source Field:	sec_cau2	
	Source Table:	misprop	
	Validate On Set:	No	
ter_cau2		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Tertiary Causal Factor (assigned by 2nd reviewer)	
	Ordinal Position:	18	
	Required:	No	
	Source Field:	ter_cau2	
	Source Table:	misprop	
	Validate On Set:	No	

gov		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	General Government Property (may eliminate in favor of EIC)	
	Ordinal Position:	19	
	Required:	No	
	Source Field:	gov	
	Source Table:	misprop	
	Validate On Set:	No	
gid		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Specific Government Property (specific)	
	Ordinal Position:	20	
	Required:	No	
	Source Field:	gid	
	Source Table:	misprop	
	Validate On Set:	No	
adpro		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Additional Non-government Property	
	Ordinal Position:	21	
	Required:	No	
	Source Field:	adpro	
	Source Table:	misprop	
	Validate On Set:	No	
gpts		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	This will eventually be the EIC for the specified property	

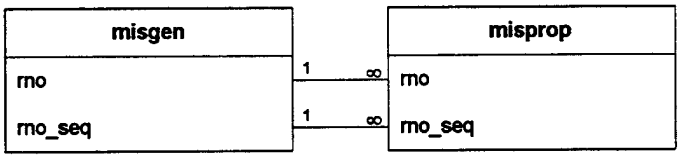
	Ordinal Position:	22	
	Required:	No	
	Source Field:	gpts	
	Source Table:	misprop	
	Validate On Set:	No	
cgov		Currency	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Government Property Damage Costs	
	Ordinal Position:	23	
	Required:	No	
	Source Field:	cgov	
	Source Table:	misprop	
	Validate On Set:	No	
cadd		Currency	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Adittional Property Damage Costs	
	Format:	$#,##0.00;($#,##0.00)	
	Ordinal Position:	24	
	Required:	No	
	Source Field:	cadd	
	Source Table:	misprop	
	Validate On Set:	No	
opdl		Number (Integer)	2
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Decimal Places:	Auto	
	Default Value:	0	
	Description:	Operational Days Lost	
	Ordinal Position:	25	
	Required:	No	

	Source Field:	opdl	
	Source Table:	misprop	
	Validate On Set:	No	
keyer_id		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	ID of person who keyed data initially (note that these fields may not be necessary in prop and pers)	
	Ordinal Position:	26	
	Required:	No	
	Source Field:	keyer_id	
	Source Table:	misprop	
	Validate On Set:	No	
init_date		Date/Time	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	
	Collating Order:	Unknown or Undefined	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Date of initial entry	
	Format:	Short Date	
	Ordinal Position:	27	
	Required:	No	
	Source Field:	init_date	
	Source Table:	misprop	
	Validate On Set:	No	
change_id		Text	50
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	ID of person who keyed the change	
	Ordinal Position:	28	
	Required:	No	
	Source Field:	change_id	
	Source Table:	misprop	
	Validate On Set:	No	
change_date		Date/Time	8
	Allow Zero Length:	No	
	Attributes:	Fixed Size	

Collating Order:	Unknown or Undefined
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Date of entry change/update
Format:	Short Date
Ordinal Position:	29
Required:	No
Source Field:	change_date
Source Table:	misprop
Validate On Set:	No

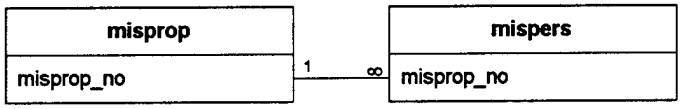
Relationships

Reference



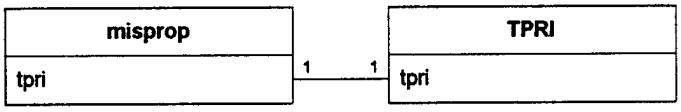
Attributes: One to Many, Enforced

Reference2



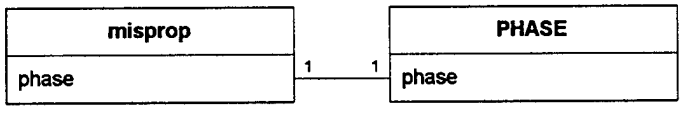
Attributes: One to Many, Enforced

Reference4



Attributes: One to One, Not Enforced

Reference6



Attributes: One to One, Not Enforced

Table Indexes

Name	Number of Fields
misprop_no	1
Fields:	misprop_no, Ascending
PrimaryKey	2
Fields:	rno, Ascending
	rno_seq, Ascending
Reference	2
Fields:	rno, Ascending
	rno_seq, Ascending
rno	1
Fields:	rno, Ascending

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Read Permissions

Properties

Date Created:	8/11/95 11:44:26 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:42:04 PM	Record Count:	1724

Columns

Name		Type	Size
opfac		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Opfac Number	
	Ordinal Position:	0	
	Required:	No	
	Source Field:	opfac	
	Source Table:	OPFAC	
	Validate On Set:	No	
di		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	District	
	Ordinal Position:	1	
	Required:	No	
	Source Field:	di	
	Source Table:	OPFAC	
	Validate On Set:	No	
unit		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Unit Name	
	Ordinal Position:	2	
	Required:	No	
	Source Field:	unit	
	Source Table:	OPFAC	

	Validate On Set:	No		
addr			Text	255
	Allow Zero Length:	No		
	Attributes:	Variable Length		
	Collating Order:	General		
	Column Hidden:	No		
	Column Order:	Default		
	Column Width:	Default		
	Data Updatable:	No		
	Description:	Address		
	Ordinal Position:	3		
	Required:	No		
	Source Field:	addr		
	Source Table:	OPFAC		
	Validate On Set:	No		
city			Text	255
	Allow Zero Length:	No		
	Attributes:	Variable Length		
	Collating Order:	General		
	Column Hidden:	No		
	Column Order:	Default		
	Column Width:	Default		
	Data Updatable:	No		
	Description:	City		
	Ordinal Position:	4		
	Required:	No		
	Source Field:	city		
	Source Table:	OPFAC		
	Validate On Set:	No		
st			Text	255
	Allow Zero Length:	No		
	Attributes:	Variable Length		
	Collating Order:	General		
	Column Hidden:	No		
	Column Order:	Default		
	Column Width:	Default		
	Data Updatable:	No		
	Description:	Street		
	Ordinal Position:	5		
	Required:	No		
	Source Field:	st		
	Source Table:	OPFAC		
	Validate On Set:	No		
zip			Text	255
	Allow Zero Length:	No		
	Attributes:	Variable Length		
	Collating Order:	General		
	Column Hidden:	No		
	Column Order:	Default		
	Column Width:	Default		

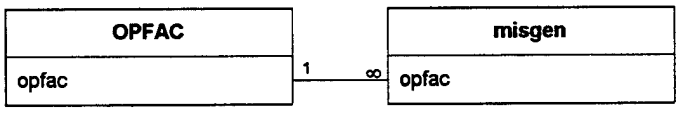
Data Updatable:	No	
Description:	5-Digit ZipCode	
Ordinal Position:	6	
Required:	No	
Source Field:	zip	
Source Table:	OPFAC	
Validate On Set:	No	

zip4	Text	255
Allow Zero Length:	No	
Attributes:	Variable Length	
Collating Order:	General	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Description:	4-Digit Zip4 Code	
Ordinal Position:	7	
Required:	No	
Source Field:	zip4	
Source Table:	OPFAC	
Validate On Set:	No	

aid	Text	255
Allow Zero Length:	No	
Attributes:	Variable Length	
Collating Order:	General	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Description:	???	
Ordinal Position:	8	
Required:	No	
Source Field:	aid	
Source Table:	OPFAC	
Validate On Set:	No	

Relationships

Reference8



Attributes:	One to Many, Enforced

Table Indexes

Name	Number of Fields

PrimaryKey	1	
Fields:	opfac, Ascending	

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:43:53 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:38:08 PM	Record Count:	22

Columns

Name	Type	Size
mission	Text	255

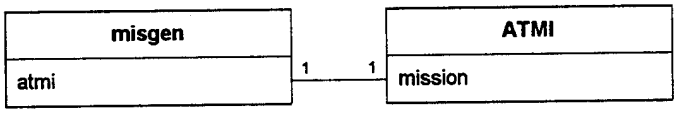
Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Mission
Ordinal Position:	0
Required:	No
Source Field:	mission
Source Table:	ATMI
Validate On Set:	No

descrip	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Mission Descriptor
Ordinal Position:	1
Required:	No
Source Field:	descrip
Source Table:	ATMI
Validate On Set:	No

Relationships

Reference3



Attributes: One to One, Not Enforced

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:43:57 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:38:53 PM	Record Count:	39

Columns

Name	Type	Size
body_part	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Body Part Affected
Ordinal Position:	0
Required:	No
Source Field:	body_part
Source Table:	BOD
Validate On Set:	No

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:01 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:39:30 PM	Record Count:	73

Columns

Name		Type	Size
gov		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Government Part	
	Ordinal Position:	0	
	Required:	No	
	Source Field:	gov	
	Source Table:	GOV	
	Validate On Set:	No	
descrip		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Part Description	
	Ordinal Position:	1	
	Required:	No	
	Source Field:	descrip	
	Source Table:	GOV	
	Validate On Set:	No	
cat		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Part Category	
	Ordinal Position:	2	
	Required:	No	
	Source Field:	cat	
	Source Table:	GOV	

Validate On Set: No

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:04 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:40:00 PM	Record Count:	17

Columns

Name		Type	Size
gpts		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Government Parts	
	Ordinal Position:	0	
	Required:	No	
	Source Field:	gpts	
	Source Table:	GPTS	
	Validate On Set:	No	
cat		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Category	
	Ordinal Position:	1	
	Required:	No	
	Source Field:	cat	
	Source Table:	GPTS	
	Validate On Set:	No	
descrip		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	Part Description	
	Ordinal Position:	2	
	Required:	No	
	Source Field:	descrip	
	Source Table:	GPTS	

Validate On Set: No

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:07 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:40:19 PM	Record Count:	59

Columns

Name	Type	Size
rank	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Rank
Ordinal Position:	0
Required:	No
Source Field:	rank
Source Table:	GRADE
Validate On Set:	No

descrip	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Rank Description
Ordinal Position:	1
Required:	No
Source Field:	descrip
Source Table:	GRADE
Validate On Set:	No

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	

Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:11 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:40:32 PM	Record Count:	11

Columns

Name	Type	Size
haz_exp	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Hazardous Exposure
Ordinal Position:	0
Required:	No
Source Field:	haz_exp
Source Table:	HAZEXP
Validate On Set:	No

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:17 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:40:50 PM	Record Count:	77

Columns

Name	Type	Size
jobdesc	Text	255
Allow Zero Length:	No	
Attributes:	Variable Length	
Collating Order:	General	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Description:	Job Description	
Ordinal Position:	0	
Required:	No	
Source Field:	jobdesc	
Source Table:	JOB	
Validate On Set:	No	
seq	Text	255
Allow Zero Length:	No	
Attributes:	Variable Length	
Collating Order:	General	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Description:	Sequence	
Ordinal Position:	1	
Required:	No	
Source Field:	seq	
Source Table:	JOB	
Validate On Set:	No	

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	

Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:22 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:41:15 PM	Record Count:	44

Columns

Name	Type	Size
Nature	Text	255
Allow Zero Length:	No	
Attributes:	Variable Length	
Collating Order:	General	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Description:	Nature of Injury	
Ordinal Position:	0	
Required:	No	
Source Field:	Nature	
Source Table:	NAT	
Validate On Set:	No	
Category	Text	255
Allow Zero Length:	No	
Attributes:	Variable Length	
Collating Order:	General	
Column Hidden:	No	
Column Order:	Default	
Column Width:	Default	
Data Updatable:	No	
Description:	Injury Category	
Ordinal Position:	1	
Required:	No	
Source Field:	Category	
Source Table:	NAT	
Validate On Set:	No	

Table Indexes

Name	Number of Fields
PrimaryKey	1
Fields:	Nature, Ascending

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:26 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:42:04 PM	Record Count:	1724

Columns

Name	Type	Size
opfac	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Opfac Number
Ordinal Position:	0
Required:	No
Source Field:	opfac
Source Table:	OPFAC
Validate On Set:	No

di	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	District
Ordinal Position:	1
Required:	No
Source Field:	di
Source Table:	OPFAC
Validate On Set:	No

unit	Text	255

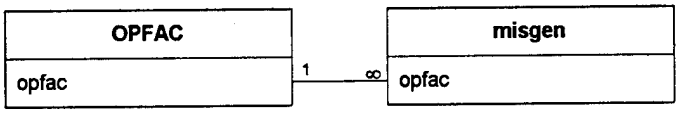
Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Unit Name
Ordinal Position:	2
Required:	No
Source Field:	unit
Source Table:	OPFAC

	Validate On Set:	No		
addr			Text	255
	Allow Zero Length:	No		
	Attributes:	Variable Length		
	Collating Order:	General		
	Column Hidden:	No		
	Column Order:	Default		
	Column Width:	Default		
	Data Updatable:	No		
	Description:	Address		
	Ordinal Position:	3		
	Required:	No		
	Source Field:	addr		
	Source Table:	OPFAC		
	Validate On Set:	No		
city			Text	255
	Allow Zero Length:	No		
	Attributes:	Variable Length		
	Collating Order:	General		
	Column Hidden:	No		
	Column Order:	Default		
	Column Width:	Default		
	Data Updatable:	No		
	Description:	City		
	Ordinal Position:	4		
	Required:	No		
	Source Field:	city		
	Source Table:	OPFAC		
	Validate On Set:	No		
st			Text	255
	Allow Zero Length:	No		
	Attributes:	Variable Length		
	Collating Order:	General		
	Column Hidden:	No		
	Column Order:	Default		
	Column Width:	Default		
	Data Updatable:	No		
	Description:	Street		
	Ordinal Position:	5		
	Required:	No		
	Source Field:	st		
	Source Table:	OPFAC		
	Validate On Set:	No		
zip			Text	255
	Allow Zero Length:	No		
	Attributes:	Variable Length		
	Collating Order:	General		
	Column Hidden:	No		
	Column Order:	Default		
	Column Width:	Default		

	Data Updatable:	No	
	Description:	5-Digit ZipCode	
	Ordinal Position:	6	
	Required:	No	
	Source Field:	zip	
	Source Table:	OPFAC	
	Validate On Set:	No	
zip4		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	4-Digit Zip4 Code	
	Ordinal Position:	7	
	Required:	No	
	Source Field:	zip4	
	Source Table:	OPFAC	
	Validate On Set:	No	
aid		Text	255
	Allow Zero Length:	No	
	Attributes:	Variable Length	
	Collating Order:	General	
	Column Hidden:	No	
	Column Order:	Default	
	Column Width:	Default	
	Data Updatable:	No	
	Description:	???	
	Ordinal Position:	8	
	Required:	No	
	Source Field:	aid	
	Source Table:	OPFAC	
	Validate On Set:	No	

Relationships

Reference8



Attributes: One to Many, Enforced

Table Indexes

Name	Number of Fields

PrimaryKey	1	
Fields:	opfac, Ascending	

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:35 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:42:29 PM	Record Count:	19

Columns

Name	Type	Size
opmode	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Unit Opmode at time of Mishap
Ordinal Position:	0
Required:	No
Source Field:	opmode
Source Table:	OPMODE
Validate On Set:	No

descrip	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Description
Ordinal Position:	1
Required:	No
Source Field:	descrip
Source Table:	OPMODE
Validate On Set:	No

Table Indexes

Name	Number of Fields
PrimaryKey	1
Fields:	opmode, Ascending

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:40 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:42:46 PM	Record Count:	74

Columns

Name	Type	Size
phase	Text	255

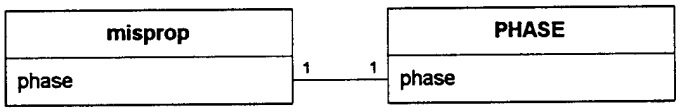
Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Phase of Operation
Ordinal Position:	0
Required:	No
Source Field:	phase
Source Table:	PHASE
Validate On Set:	No

descrip	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Description
Ordinal Position:	1
Required:	No
Source Field:	descrip
Source Table:	PHASE
Validate On Set:	No

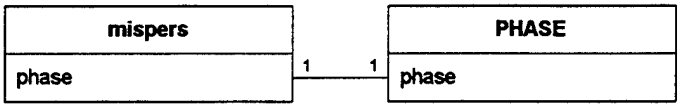
Relationships

Reference6



Attributes: One to One, Not Enforced

Reference7



Attributes: One to One, Not Enforced

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:45 AM	Def. Updatable:	Yes
Last Updated:	8/14/95 12:43:10 PM	Record Count:	11

Columns

Name	Type	Size
stat	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Duty Status
Ordinal Position:	0
Required:	No
Source Field:	stat
Source Table:	STAT
Validate On Set:	No

descrip	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	Default
Data Updatable:	No
Description:	Status Description
Ordinal Position:	1
Required:	No
Source Field:	descrip
Source Table:	STAT
Validate On Set:	No

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	

Users	Delete, Read Permissions, Set Permissions, Change Owner

Properties

Date Created:	8/11/95 11:44:50 AM	Def. Updatable:	Yes
Last Updated:	9/29/95 12:02:04 PM	Record Count:	31

Columns

Name	Type	Size
tpri	Text	255

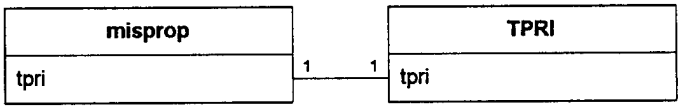
Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	1
Column Width:	1932
Data Updatable:	No
Description:	Mishap Type
Ordinal Position:	0
Required:	No
Source Field:	tpri
Source Table:	TPRI
Validate On Set:	No

description	Text	255

Allow Zero Length:	No
Attributes:	Variable Length
Collating Order:	General
Column Hidden:	No
Column Order:	Default
Column Width:	3672
Data Updatable:	No
Description:	Mishap Type Description
Ordinal Position:	1
Required:	No
Source Field:	description
Source Table:	TPRI
Validate On Set:	No

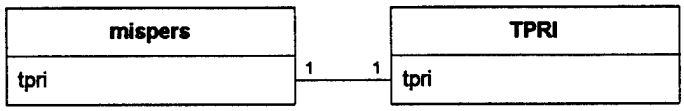
Relationships

Reference4



Attributes: One to One, Not Enforced

Reference5



Attributes: One to One, Not Enforced

User Permissions

admin	Delete, Read Permissions, Set Permissions, Change Owner
guest	

Group Permissions

Admins	Delete, Read Permissions, Set Permissions, Change Owner
Guests	
Users	Delete, Read Permissions, Set Permissions, Change Owner

Appendix B

Queries

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Appendix B - Queries

Database queries are the key to extracting information from the Mishap Reporting System necessary for safety professionals to identify potential hazards and dangerous trends before they develop into major mishaps. This appendix describes the rationale and philosophy behind the queries that were developed and prototyped on earlier versions of the database. As the final form of the database influences the actual query implementation, the Natural Working Group agreed to forgo development of the code necessary to implement the queries until such time the final version of the database was being implemented by Commandant (G-KSE).

As part of the Loss Exposure and Risk Analysis Methodology (LERAM) project database enhancement, a large number of queries involving the Mishap Reporting System (MISREPS) and Abstract of Operations (AOPS) portions of the database were designed to meet Commandant (G-KSE) requirements. These queries were tested using the INFORMIX version of the LERAM project database by R&DC. From these queries, several report formats were identified as being useful as measures of effectiveness. Limitations of the INFORMIX database forced many of these reports to use external driver programs (written mainly in Pascal). These driver programs executed the requisite reports and then manipulated them in order to create a spreadsheet containing the desired information.

While the information obtained from the queries was useful, the process was labor-intensive. Reports generated on the Unix-based system were transferred to a PC and translated into the final Excel spreadsheet form.

The final changes to the MISREPS database and its implementation in Access® required that the queries be redesigned to take advantage of the new data structure and validate Access®'s ability to generate reports either in its native reporting form or as a spreadsheet to Excel. These queries were not completely implemented in Access®; however, the following section details the intended product of each of the reports and the data elements necessary to generate each report, as well as any special characteristics needed to complete the report.

B.1. Description of Required Reports

1. Annual Vessel Mishap Statistics
   by mishap class
   by personnel lost time and cost
   by property loss and days not operational
2. Annual Vessel Mishap Rates/Risk Indexes for each mishap class
3. Annual Cutter Mishap Rates/Risk Indexes
4. Annual Marine & Marine-Related Modal Rates/Risk Indexes
   for all cutters
   for all shore boats
5. Annual Marine & Marine-Related Modal Rates/Risk Indexes
   for each cutter class
   for each shore boat class

6. Annual Phases of Operation Rates/Risk Indexes
   for vessel activities (primary)
   for personnel activities (secondary)
7. Biennial Causal Analysis for Property and Personnel Losses
   frequency of occurrence and dollar loss of primary cause
   frequency of occurrence of contributing factor
   for missions
   for phases of operation
   for mishap type
   for vessel class

Each of these queries will now be examined in more detail.

B.1.1 Annual Vessel Mishap Statistics

This report (Sample Report No. 1) summarizes the magnitude and costs of losses associated with mishap personnel and property. This report makes no distinction between cutters or shore facilities; it represents a summary of some of the important data elements contained within the MISREPS database.

B.1.1.1. Sample Report No. 1

Personnel	1989	1990	1991	1992	Total	Yearly Average	Std. Dev.
Incidents	#	#	#	#			
Fatality	0	0	3	1	4	1.00	1.22
Lost Time	120	114	58	76	368	92.00	25.88
No Lost Time	63	99	53	62	277	69.25	17.61
First Aid	109	67	66	42	284	71.00	24.11
N/A	13	5	5	13	36	9.00	4.00
# Incidents	305	285	185	194	969	242.25	53.32
Lost Work Days	825	596	429	419	2269	567.25	164.58
Restricted Duty Days	1947	1863	962	1781	6553	1638.25	394.82
Personnel							
Incident Costs	$	$	$	$			
Fatality	$0	$0	$375,000	$125,000	$500,000	$125,000	$153,093
Lost Time	$589,950	$451,755	$841,205	$470,470	$2,353,380	$588,345	$155,316
No Lost Time	$51,840	$106,680	$47,760	$103,680	$309,960	$77,490	$27,748
First Aid	$0	$0	$0	$840	$840	$210	$364
N/A	$0	$0	$0	$0	$0	$0	$0
Total Pers Cost	$641,790	$558,435	$1,263,965	$699,990	$3,164,180	$791,045	$277,637
Property							
Equipment Days Lost	393	1053	494	726	2666	666.50	253.71
Govt. Equip Costs	$1,691,682	$37,430,091	$272,011	$777,392	$40,171,176	$10,042,794	$15,820,248
Add'l Equip Costs	$457,358	$5,162	$7,516	$10,753	$480,789	$120,197	$194,670
Total Costs	$2,790,830	$37,993,688	$1,543,492	$1,488,135	$43,816,145	$10,954,036	$15,620,038
MISHAPS							
Class A	0	1	3	1	5	1.25	1.09
Class B	4	1	6	1	12	3.00	2.12
Class C	130	115	64	92	401	100.25	24.92
Class D	240	244	221	219	924	231.00	11.11
TOTAL	374	361	294	313	1342	335.50	33.02

B.1.1.2. Key Data Elements

The following MISREPS elements are needed in order to generate this report:

- Admin: fiscal year, mishap class.
- Property: Equipment days lost, government equipment costs, other equipment costs.
- Personnel: mishap severity, lost work days, restricted duty days, personnel costs.

This spreadsheet (Sample Report No. 1) represents the combined results of five queries in which each query corresponds to a discrete section of the report. The function of each query is listed below:

1. Summarizes Personnel Mishaps categorized by injury severity.
2. Summarizes Lost Duty Days and Restricted Days.
3. Summarizes Personnel Costs categorized by injury severity.
4. Summarizes Property Days Lost, Government and Non-government Costs.
5. Summarizes numbers of mishaps categorized by mishap class.

B.1.2. Annual Vessel Mishap Rates/Risk Indexes by Mishap Class

This report (Sample Report No. 2) provides a workbook of spreadsheets detailing mishap rates and risk indexes for Coast Guard cutters and shore-facility boats. This report does not distinguish among the various cutter and boat types. Summary information for the general categories of "cutter" or "shore-facility boat" are provided.

The report consists of ten spreadsheets: one for each mishap class for either cutters or boats, and a summary spreadsheet for each section.

B.1.2.1. Sample Report No. 2

Mishap Class A Report Generated on Wed Jan 4 1995							
# mishaps = cutters only							
Underway and Inport Hours provided by AOPS DB							
Marine Mishaps	**1989**	**1990**	**1991**	**1992**	**Avg.**	**Total**	**Std. Dev.**
# Mishaps	0	1	0	1	0.5	2	0.50
Underway Hrs (Total EmpCat ResHrs)	440,996	439,912	409,209	414,480	426,149	1,704,597	14,431
Total Mishap Costs	$0	$37,001,500	$0	$128,000	$9,282,375	$37,129,500	$16,003,730
Mishap Rate/100K Hrs	0.00	0.23	0.00	0.24	0.12		0.12
Facility Risk Index	0.00	8.41	0.00	0.03	2.11		3.64
Marine Related Mishaps							
# Mishaps	0	0	0	0	0	0	0.00
Inport Hrs (Inport+HighRdy+Maint+Stdby)	1,705,066	1,702,579	1,718,628	1,724,953	1,712,807	6,851,226	9,300
Total Mishap Costs	$0	$0	$0	$0	$0	$0	$0
Mishap Rate/100K Hrs	0.00	0.00	0.00	0.00	0.00		0.00
Facility Risk Index	0.00	0.00	0.00	0.00	0.00		0.00
Summary							
# Mishaps (Marine + Marine Related)	0	1	0	1	0.5	2	0.50
Total Hrs (Underway + Inport)	2,146,062	2,142,491	2,127,837	2,139,433	2,138,956	8,555,823	6,835
Total Costs (Marine + Marine Related)	$0	$37,001,500	$0	$128,000	$9,282,375	$37,129,500	$16,003,730
Mishap Rate/100K Hrs	0.00	0.05	0.00	0.05	0.02		0.02
Facility Risk Index	0.00	1.73	0.00	0.01	0.43		0.75

B.1.2.2. Sample Report No. 3

Report Generated on Wed Jan 4 1995							
# mishaps = shore facility small boats only							
Underway and Inport Hours provided by AOPS DB							
Marine Mishaps	**1989**	**1990**	**1991**	**1992**	**Avg.**	**Total**	**Std. Dev.**
# Mishaps	0	0	2	0	0.5	2	0.87
Underway Hrs (Total EmpCat ResHrs)	386,352	360,136	373,310	352,977	368,194	1,472,775	12,771
Total Mishap Costs	$0	$0	$250,000	$0	$62,500	$250,000	$108,253
Mishap Rate/100K Hrs	0.00	0.00	0.54	0.00	0.13		0.23
Facility Risk Index	0.00	0.00	0.13	0.00	0.03		0.06
Marine Related Mishaps							
# Mishaps	0	0	1	0	0.25	1	0.43
Inport Hrs (Maint + Stdby)	7,612,681	7,163,190	7,571,216	7,281,870	7,407,239	29,628,957	189,982
Total Mishap Costs	$0	$0	$125,000	$0	$31,250	$125,000	$54,127
Mishap Rate/100K Hrs	0.00	0.00	0.01	0.00	0.00		0.01
Facility Risk Index	0.00	0.00	0.00	0.00	0.00		0.00
Summary							
# Mishaps (Marine + Marine Related)	0	0	3	0	0.75	3	1.30
Total Hrs (Underway + Inport)	7,999,033	7,523,326	7,944,526	7,634,847	7,775,433	31,101,732	201,191
Total Costs (Marine + Marine Related)	$0	$0	$375,000	$0	$93,750	$375,000	$162,380
Mishap Rate/100K Hrs	0.00	0.00	0.04	0.00	0.01		0.02
Facility Risk Index	0.00	0.00	0.01	0.00	0.00		0.01

These two examples, Sample Report No. 2 and Sample Report No. 3, show the first spreadsheets for cutters and boats. The first spreadsheet (Sample Report No. 2) details mishap rate and risk index information for Class "A" cutter mishaps, and the second spreadsheet (Sample Report No. 3) details Class "A" information for shore-facility boats. The following definitions are used in the report (formulas for mishap rate and facility risk index as requested by Commandant (G-KSE)):

- mishap rate = # mishaps / 100,000 Hours (either underway or in-port)
- underway hours = total employment category Resource Hours (as reported in AOPS)
- in-port hours (For Cutters) = total reported In-port, High Readiness, Maintenance and Standby hours)
- Facility Risk Index = (mishap rate * mishap cost) / 1,000,000

B.1.2.3. Key Data Elements

These reports (Sample Reports Nos. 2 and 3) depend upon information contained within the MISREPS and AOPS databases. Information required from MISREPS:

- Admin: Fiscal Year, OPMODE (used to determine Marine, Marine-Related, Cutter and Shore Boat information)
- Property: Government and Non-government costs
- Personnel: Personnel Costs

The following information is required from the AOPS database:

- For underway cutters: fiscal year totals of employment category resource hours.

- For in-port cutters: fiscal year totals of in-port, maintenance, standby and high-readiness hours.
- For underway shore-facility boats: fiscal year totals of employment category resource hours.
- For underway shore-facility boats: fiscal year totals of maintenance and standby hours.

Because of the complexity of reporting hours for cutter-based small boats, this report makes no attempt to determine mishap rates or facility risk indexes for those vessels.

B.1.3. Annual Cutter Mishap Rates/Risk Indexes

This report (Sample Report No. 4) provides a summary of mishap rates and risk indexes for Coast Guard cutters. This report consists of two spreadsheets, and is similar to report number two, but does not categorize mishap rates and facility risk indexes by mishap class.

B.1.3.1. Sample Report No. 4

Report Generated on Mon Oct 16 1995							
# mishaps = cutters only							
Underway and Inport Hours provided by							
AOPS DB							
Marine Mishaps	**1989**	**1990**	**1991**	**1992**	**Avg.**	**Total**	**Std. Dev.**
# Mishaps	122	130	92	101	111.25	445	15.35
Underway Hrs (Total EmpCat ResHrs)	440,996	439,912	409,209	414,480	426,149	1,704,597	14,431
Total Mishap Costs	$874,970	$37,432,421	$832,435	$805,344	$9,986,293	$39,945,170	$15,846,049
Mishap Rate/100K Hrs	27.66	29.55	22.48	24.37	26.02		2.76
Facility Risk Index	24.21	1106.18	18.72	19.62	292.18		469.97
Marine Related Mishaps							
# Mishaps	107	122	63	88	95	380	22.06
Inport Hrs (Inport+HighRdy+Maint+Stdby)	1,705,066	1,702,579	1,718,628	1,724,953	1,712,807	6,851,226	9,300
Total Mishap Costs	$1,267,712	$151,933	$119,887	$198,313	$434,461	$1,737,845	$481,885
Mishap Rate/100K Hrs	6.28	7.17	3.67	5.10	5.55		1.31
Facility Risk Index	7.96	1.09	0.44	1.01	2.62		3.09
Summary							
# Mishaps (Marine + Marine Related)	229	252	155	189	206.25	825	37.20
Total Hrs (Underway + Inport)	2,146,062	2,142,491	2,127,837	2,139,433	2,138,956	8,555,823	6,835
Total Costs (Marine + Marine Related)	$2,142,682	$37,584,354	$952,322	$1,003,657	$10,420,754	$41,683,015	$15,690,129
Mishap Rate/100K Hrs	10.67	11.76	7.28	8.83	9.64		1.71
Facility Risk Index	22.86	442.07	6.94	8.87	120.18		185.94

B.1.3.2. Key Data Elements

This report (Sample Report No. 4) uses the same data elements as Sample Report No. 2. From the MISREPS database:

- Admin: Fiscal Year, OPMODE (used to determine Marine, Marine-Related, Cutter and Shore Boat information)
- Property: Government and Non-government costs
- Personnel: Personnel Costs

The following information is required from the AOPS database:

- For underway cutters: fiscal year totals of employment category resource hours.
- For in-port cutters: fiscal year totals of in-port, maintenance, standby and high-readiness hours.
- For underway shore-facility boats: fiscal year totals of employment category resource hours.
- For underway shore-facility boats: fiscal year totals of maintenance and standby hours.

Because of the complexity of reporting hours for cutter-based small boats, this report makes no attempt to determine mishap rates or facility risk indexes for those vessels.

B.1.4. Annual Marine and Marine-Related Modal Rates / Risk Indexes for All Cutters / for All Shore-Facility Boats

This report (Sample Report No. 5) summarizes cutter and shore-facility boat mishap rates and risk indexes for a small set of operational mishap types. These mishaps are defined to be Capsizes, Collisions, Floodings, Fouled Screws, Groundings, and Sinkings.

B.1.4.1. Sample Report No. 5

Report Generated on Wed Nov 8 1995							
Cutter Operational Mishaps include Capsizes, Collisions, Floodings, Fouled Screws, Groundings, and Sinkings							
Underway and Inport Hours provided by							
AOPS DB							
Marine Mishaps	**1989**	**1990**	**1991**	**1992**	**Avg.**	**Total**	**Std. Dev.**
# Mishaps	8	20	13	21	15.5	62	5.32
Underway Hrs (Total EmpCat ResHrs)	440,996	439,912	409,209	414,480	426,149	1,704,597	14,431
Total Mishap Costs	$429,900	$37,199,325	$35,742	$230,040	$9,473,752	$37,895,007	$16,007,974
Mishap Rate/100K Hrs	1.81	4.55	3.18	5.07	3.65		1.27
Facility Risk Index	0.78	169.12	0.11	1.17	42.80		72.94
Marine Related Mishaps							
# Mishaps	2	3	1	3	2.25	9	0.83
Inport Hrs (Inport+HighRdy+Maint+Stdby)	1,705,066	1,702,579	1,718,628	1,724,953	1,712,807	6,851,226	9,300
Total Mishap Costs	$256,300	$2,167	$1,300	$52,550	$78,079	$312,317	$104,967
Mishap Rate/100K Hrs	0.12	0.18	0.06	0.17	0.13		0.05
Facility Risk Index	0.03	0.00	0.00	0.01	0.01		0.01
Summary							
# Mishaps (Marine + Marine Related)	10	23	14	24	17.75	71	5.93
Total Hrs (Underway + Inport)	2,146,062	2,142,491	2,127,837	2,139,433	2,138,956	8,555,823	6,835
Total Costs (Marine + Marine Related)	$686,200	$37,201,492	$37,042	$282,590	$9,551,831	$38,207,324	$15,965,222
Mishap Rate/100K Hrs	0.47	1.07	0.66	1.12	0.83		0.28
Facility Risk Index	0.32	39.94	0.02	0.32	10.15		17.20

This spreadsheet (Sample Report No. 5) summarizes the operational mishaps for cutters. The shore-facility boat spreadsheet is similar in format.

B.1.4.2. Key Data Elements

This report (Sample Report No. 5) uses the same data elements from MISREPS and AOPS, as well as the same formulas, as Sample Report No. 3. The only difference is the use of mishap type (found in the Property table) to further restrict the data set:

- Admin: Fiscal Year, OPMODE (used to determine Marine, Marine-Related, Cutter and Shore Boat information)
- Property: Government and Non-government costs
- Personnel: Personnel Costs

The following information is required from the AOPS database:

- For underway cutters: fiscal year totals of employment category resource hours.
- For in-port cutters: fiscal year totals of in-port, maintenance, standby and high-readiness hours.
- For underway shore-facility boats: fiscal year totals of employment category resource hours.
- For underway shore-facility boats: fiscal year totals of maintenance and standby hours.

B.1.5. Annual Marine and Marine-Related Modal Rates/Risk Indexes for Each Cutter Class / Shore-Facility Boat Type

Sample Report No. 6 consists of a workbook with separate pages for each cutter class and each boat type summarizing modal mishap rates and risk indexes. No summary spreadsheet is included in the workbook.

B.1.5.1. Sample Report No. 6

The following example shows the report page for WMEC 270 class cutters.

Report Generated on Wed Nov 8 1995							
# mishaps = cutters only							
Underway and Inport Hours provided by							
AOPS DB							
Marine Mishaps	**1989**	**1990**	**1991**	**1992**	**Avg.**	**Total**	**Std. Dev.**
# Mishaps	9	19	18	15	15.25	61	3.90
Underway Hrs(Total EmpCat ResHrs)	29,372	38,585	40,546	40,167	37,168	148,670	4,560
Total Mishap Costs	$6,040	$41,486	$53,480	$21,680	$30,672	$122,686	$18,198
Mishap Rate/100K Hrs	30.64	49.24	44.39	37.34	40.41		7.05
Facility Risk Index	0.19	2.04	2.37	0.81	1.35		0.89
Marine Related Mishaps							
# Mishaps	15	14	14	9	13	52	2.35
Inport Hrs (Inport+HighRdy+Maint+Stdby)	61,396	65,463	73,334	74,025	68,555	274,218	5,328
Total Mishap Costs	$718,786	$15,030	$30,975	$19,875	$196,167	$784,666	$301,790
Mishap Rate/100K Hrs	24.43	21.39	19.09	12.16	19.27		4.52
Facility Risk Index	17.56	0.32	0.59	0.24	4.68		7.44
Summary							
# Mishaps (Marine + Marine Related)	24	33	32	24	28.25	113	4.26
Total Hrs (Underway + Inport)	90,768	104,048	113,880	114,192	105,722	422,888	9,549
Total Costs (Marine + Marine Related)	$724,826	$56,516	$84,455	$41,555	$226,838	$907,352	$287,925
Mishap Rate/100K Hrs	26.44	31.72	28.10	21.02	26.82		3.85
Facility Risk Index	19.17	1.79	2.37	0.87	6.05		7.59

B.1.5.2. Key Data Elements

This report (Sample Report No. 6) uses the same key data elements and formulas as Sample Reports Nos. 3, 4, and 5:

- Admin: Fiscal Year, OPMODE (used to determine Marine, Marine-Related, Cutter and Shore Boat information)
- Property: Government and Non-government costs
- Personnel: Personnel Costs

The following information is required from the AOPS database:

- For underway cutters: fiscal year totals of employment category resource hours.
- For in-port cutters: fiscal year totals of in-port, maintenance, standby and high-readiness hours.
- For underway shore-facility boats: fiscal year totals of employment category resource hours.
- For underway shore-facility boats: fiscal year totals of maintenance and standby hours:

The report requires the following additional information:

- Property: vessel type and length. These fields, in conjunction with opmode, are used as the sort criteria for the report.

B.1.6. Annual Phases of Operation Rates / Risk Indexes for Vessel Activities (primary) / Personnel Activities (secondary)

Sample Report No. 7 summarizes rate and risk index information by phases of operation reported in the Property and Personnel tables. In the R&DC version of the MISREPS database, phases of operation have been delineated into vessel and personnel activities in order to facilitate this type of query. The workbook is comprised of a separate spreadsheet for each fiscal year for cutters and boats.

One problem that occurred while developing this report was ensuring that an accurate mishap count appeared in the report. The problem occurs because the phase of operation is reported in both the Property and Personnel tables of the database, and the categories can overlap. Since the number of mishaps reported is categorized by the phase of operation, it was necessary to develop a method of combining personnel and property casualties that fell under the same phase of operation. The phases of operation are sorted on the spreadsheet so that vessel phases appear before personnel phases.

B.1.6.1. Sample Report No. 7

Cutter Phase Information - 1989				
Marine and Marine-Related Hours:	2,146,062			
Phase of Operations	# Mishaps	Cost	Rate	Risk Index
WORKING AIDS TO NAVIGATION	41	$119,503.00	1.91	0.23
TOWING EVOLUTION	3	$ 25,495.00	0.14	0
BOARDING EVOLUTION	3	$310,001.00	0.14	0.04
FIREFIGHTING EVOLUTION	1	$ 1,725.00	0.05	0
TRAINING EVOLUTION	24	$ 48,921.00	1.12	0.05
YARD MAINTENANCE	81	$955,933.00	3.77	3.61
SMALL BOAT LAUNCH / RECOVERY FROM LAND	1	$ -	0.05	0
SMALL BOAT LAUNCH / RECOVERY FROM CUTTER	1	$ 6,226.00	0.05	0
VESSEL NOT UNDERWAY ANCHORED / MOORED / STORED	20	$298,931.00	0.93	0.28
VESSEL LEAVING OR RETURNING	5	$ 67,306.00	0.23	0.02
VESSEL UNDERWAY IN TRANSIT	8	$ 5,208.00	0.37	0
VESSEL UNDERWAY MANEUVERING IN RESTRICTED WATERS	2	$ 4,495.00	0.09	0
VESSEL UNDERWAY MANEUVERING IN OPEN WATERS	39	$298,938.00	1.82	0.54
ASSEMBLING/DISASSEMBLING/INSTALLING	19	$122,830.00	0.89	0.11
CLEANING	14	$ 11,940.00	0.65	0.01
JUMPING	5	$ 27,275.00	0.23	0.01
CUTTING/DRILLING/GRINDING/HAMMERING	19	$ 42,870.00	0.89	0.04
INSPECTING	4	$ 22,875.00	0.19	0
REPAIRING	10	$ 13,740.00	0.47	0.01
COOKING	7	$ 6,660.00	0.33	0
STANDING WATCH / DUTY	33	$ 30,735.00	1.54	0.05
EMBARKING / DISEMBARKING	6	$ 12,855.00	0.28	0
RIGGING	3	$ 480.00	0.14	0
HOISTING	7	$ 16,350.00	0.33	0.01
LOADING	6	$ 7,420.00	0.28	0
WORKING ALOFT / ASIDE	2	$ 1,725.00	0.09	0
CLIMBING	11	$ 26,325.00	0.51	0.01
CLOSING / OPENING	2	$ -	0.09	0
ORGANIZED SPORTS - OTHER	2	$ 2,040.00	0.09	0
LIFTING	6	$ 12,300.00	0.28	0
STANDING	4	$ 735.00	0.19	0
WALKING	12	$ 13,185.00	0.56	0.01
FIREFIGHTING	4	$ 10,025.00	0.19	0
TRAINING	6	$ 14,325.00	0.28	0
PUMPING	2	$ 5,250.00	0.09	0
WELDING	3	$ 1,060.00	0.14	0
PAINTING	3	$ 4,740.00	0.14	0
WORKING CONFINED SPACE	1	$ -	0.05	0
CARRYING	6	$ 7,545.00	0.28	0
SITTING	3	$ 11,340.00	0.14	0
ORGANIZED SPORTS - BASKETBALL	1	$ 1,965.00	0.05	0

This report (Sample Report No. 7) does not distinguish between property and personnel casualties, instead it relies on overall totals for each phase of operation.

B.1.6.2. Key Data Elements

Sample Report No. 7 requires the same data elements and formulas as Sample Report No. 3 to generate the mishap rates and risk indexes. In addition, it requires the following information:

- Property: phase of operation (used as a primary sort key).
- Personnel: phase of operation (used as a secondary sort key).

B.1.7. Biennial Causal Analysis For Property and Personnel Losses

This workbook proved to be one of the more difficult to formulate, again because causal factors are reported in the Property and Personnel tables. In order to facilitate an accurate mishap count, separate spreadsheets for property and personnel casualties were generated, then the results were combined using an Excel macro that compared the causal factor values in each of the spreadsheets.

B.1.7.1. Sample Spreadsheet

Because of the size of these reports, an actual sample does not appear here; however, the spreadsheets are of the following format:

Primary Sort					
	# mishaps	$ cost	Primary Cause		
				Causal Factor 1*	Causal Factor 2*
Primary Sort Totals:	#	$			

* depending upon the reporting, there may not be causal factors associated with a mishap.

Note that each combination of secondary causes is treated as a discrete set in which order is significant. Therefore, the same **secondary cause 1** can appear several times, each with a different **secondary cause 2**. A **secondary cause 2** can also appear later in the same list as a **secondary cause 1**. The summary spreadsheet, however, only totals and lists the number and costs associated with the primary causes.

B.2. Summary of Queries

These sample reports illustrate some of the ways in which the LERAM project database has been used to extract useful vessel safety information. The structure of the Access® MISREPS system ensures the queries will be easier to design and test. Future queries will make use of hazard group and vessel subsystem information that has been proposed for the MISREPS database. Data transport problems, which hindered the development of some of the presented queries, can be alleviated by the development and implementation of the MISREPS database in Access®.

Another problem that will be eliminated by implementing MISREPS in a Graphical User Interface (GUI) development environment is the ease of modifying queries to produce similar, but discretely different, output. The ease with which queries and reports can be built and validated helps to ensure that the database development and implementation remains economical.

Appendix C

Visual Basic Code Used to Process Legacy Data

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Appendix C - Visual Basic Code Used to Process Legacy Data

The following Visual Basic code processes Progress® extract files for import to Access® databases.

```
Sub ProcessFile (Filename As String)
   Const MB_OK = 0
   Const MB_ICONINFORMATION = 64

   Dim inputfile, char, msgtype
   Dim i As Integer, count As Integer
   Dim msg, title, out1, out2, out3
   Dim inputline As String, outputline1 As String

   inputfile = Filename
   MisPrep.Caption = "Processing " & OpenFile.Filetitle
   out1 = Left$(OpenFile.Filetitle, (Len(OpenFile.Filetitle) - 4))
   out1 = out1 & "a.txt"
   out2 = Left$(OpenFile.Filetitle, (Len(OpenFile.Filetitle) - 4))
   out2 = out2 & "b.txt"
   out3 = Left$(OpenFile.Filetitle, (Len(OpenFile.Filetitle) - 4))
   out3 = out3 & "c.txt"
   On Error Resume Next
   Kill out1
   Kill out2
   Kill out3
   On Error GoTo 0
   count = 0      ' tracks the number of characters read in
   If Len(inputfile) Then
      Open inputfile For Input As #1
      Do While DoEvents() And Not EOF(1)
         If QuitProg Then
            Close
            Exit Sub
         End If
         char = Input(1, #1)
         If char <> Chr(10) Then
            inputline = inputline & char
         Else
         If Len(inputline) > 1 Then
            inputline = RTrim$(inputline)
            position% = 1
            searchfor = ""","""
'           search for and replace "," with |,|
            While position% <> 0
```

```
            position% = InStr(1, inputline, searchfor)
            If position% > 0 Then
               Mid$(inputline, position%) = "|,|"
            End If
         Wend
         position% = 1
         searchfor = "|___|"
'        search for and replace |___| with ||
         While position% <> 0
            position% = InStr(1, inputline, searchfor)
            If position% > 0 Then
            inputline = Left$(inputline, position%) & Right$(inputline, (Len(inputline) -
(position% + 3)))
'            Mid$(inputline, position%, 5) = "||"
            End If
         Wend

'Put a pipe at the beginning and at the end of the file
         Mid$(inputline, 1) = "|"
         Mid$(inputline, Len(inputline) - 1) = "|"
'Shorten the inputline by one character
         inputline = Left$(inputline, Len(inputline) - 1)

'Get the first field as the index number for output
         position% = InStr(1, inputline, "|,|")
         IndexNo = Mid$(inputline, 1, position%)

'The next section should create some output files containing data from the
'original files
      If Len(inputline) > 2000 Then
         position% = 1
         For i = 1 To 68
            position% = InStr(position%, inputline, "|") + 1
         Next i
         position% = position% - 1
         outputline1 = Mid$(inputline, 1, position%)
         inputline = IndexNo & Mid$(inputline, position% + 1, Len(inputline))
         Open out1 For Append As #2
         Print #2, outputline1
         Close #2
         Open out2 For Append As #3
         Print #3, inputline
         Close #3
      Else
         Open out1 For Append As #2
```

```
            Print #2, inputline
            Close #2
          End If 'inputline > 2000
          inputline = ""
          End If
          End If 'char <> chr(10)
        Loop
        msgtype = MB_OK + MB_ICONINFORMATION
        MsgBox "  All Done", msgtype, OpenFile.Filetitle
    End If
Close   'close all open files
'Maximize the Icon if the window was minimized
If MisPrep.WindowState = 1 Then
    MisPrep.WindowState = 0
End If
'Reset the Form Caption
MisPrep.Caption = "MISREP Database Prep Program"
'Re-enable the Start Button
QuitProgram.Caption = "Quit"
StartProgram.Enabled = True
Exit Sub

erhandler:
    Resume
End Sub
```

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Appendix D

LERAM Project Database Enhancement and Maintenance Report

UNIX–based Implementation (January 30, 1995)

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Appendix D

LERAM Project Database Enhancement and Maintenance Report
Unix-based Implementation (January 30, 1995)

D.1. Overview

The major task of this project was for maintenance, enhancements and data analysis on the Vessel Loss Exposure and Risk Analysis (LERAM) project database. This database was developed on an HP 825 minicomputer, using HP-UX version 7 as an operating system and Informix SQL as a relational database engine. System safety, equipment, and personnel related data contained on existing CG databases needed to be incorporated in the LERAM project database and correlated with the Mishap Reports (MISREPS), Abstract of Operations (AOPS), and Hazardous Condition Notification (HCN, formerly Safety and Health Hazard Abatement Data System (SHHADS)) data contained in the project database.

This effort included the incorporation of the Casualty Reporting (CASREP) subsystem and the TRAINING subsystem (PAL). Also, the usability of the MISREPS was tested by executing simple and complex queries for mishap data.

Development efforts centered on MISREPS led to the identification of several areas of the subsystem that required further improvement. Proposals to enhance these areas led to meetings with Commandant (G-KSE) and Maintenance and Logistics Command (MLC) personnel. The meetings focused on defining the data structures and fields required for the LERAM and Coast Guard MISREPS systems, with the goal of aligning the two.

The LERAM project database ties together several project representations of available Coast Guard databases, organized into subsystems (Figure D-1). Subsystems were developed from the fields in each Coast Guard database that were found to be relevant to the LERAM project. Each of the LERAM Project database subsystems contributes to a comprehensive, hazard-based mishap data management system. There are several direct links between various subsystems, such as by unit OPFAC number. The purpose of the LERAM Project database, however, is to allow the safety analyst to observe the indirect links between the subsystems for a more meaningful and in-depth analysis of the data.

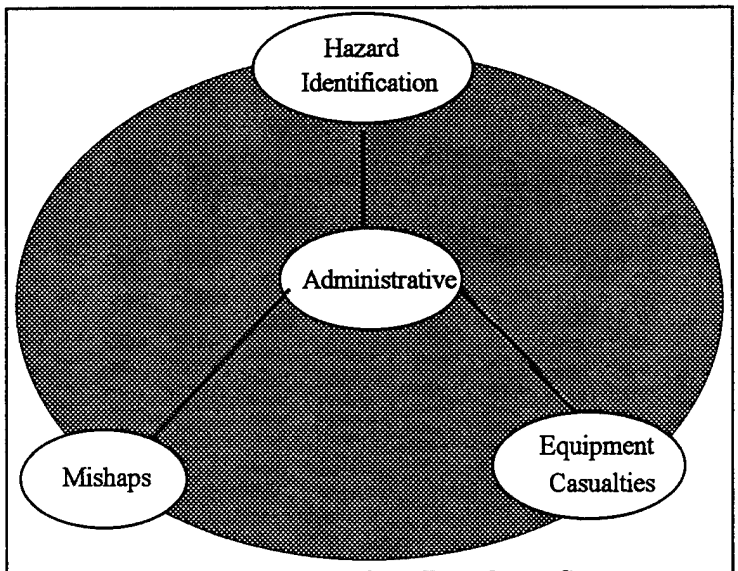

Figure D-1 Leram Project Database Structure

D.2. Current LERAM Project Database Structure

Table D-1 identifies the Coast Guard databases used to develop the LERAM database subsystems and describes the key data and the links to the other subsystems.

Table D-1 LERAM Project Database Sources, Key Data and Links

LERAM DB Subsystem	Parent CG Database	Key Data	Links to other Subsystems	Database Manager
Administrative	OPFAC	OPFAC numbers, unit names, vessel types	by OPFAC: **MISREPS, CASREP, HAZARDS, TRAINING**	G-C
	AOPS	maint., u/w, resource hours, etc. for cutters and shore-based boats	by cutter type, length, FY: **MISREPS, CASREP**	G-O
Hazard Identification	HCN	hazard groups, criticality, violated standards	by OPFAC, hazard group: **MISREPS**	G-KSE
	IHMIS (projected)			
Mishaps	MISREPS	hazard groups, mishap types, phases of ops, causal factors, property and personnel costs	by OPFAC, hazard group: **HCN** by vessel subsystem: **CASREP(projected)**	G-KSE
Equipment Casualties	CASREP	vessel subsystems, causal factors, severity, repair time	by OPFAC: **MISREPS** by hazard group: **MISREPS, HCN(projected)**	FMIS

Figure D-2 shows the prototype data structure for the LERAM project database. Boxes outlined with a bold line indicate major subsystems of the database, while the other boxes indicate information contained in tables associated with those subsystems. The figure is divided in half, with uncontrolled text fields appearing on the left and coded fields appearing on the right. By using a standard list of codes as entries in critical query fields, query results are less prone to data entry inconsistencies and are easier for safety personnel to evaluate. Since the integrity of the direct and indirect links between subsystems of the LERAM Project database are so important to the validity and usefulness of the data, much of the effort surrounding the LERAM project database enhancements focused on developing standardized values for information such as hazard groups, mishap types, phases of operation, and causal factors. The standardization of these fields has led to a database design that returns a useable set of discrete values for standard queries.

Each major subsystem's contents and table structures will be discussed in the following sections of this report.

D.2.1. Administrative

The administrative subsystem is comprised mainly of data from the Coast Guard Operational Facility (OPFAC) database. It contains unit OPFAC numbers, unit names, and the operational district for the unit. If the OPFAC number represents a Coast Guard cutter, the cutter type and length are also recorded in this section. This section is used by other subsystems as a source of amplifying information. It has also proved useful as a method of verifying administrative data contained within other subsystems.

A proposed change to the administrative subsystem would incorporate a "lessons learned" section. This section would contain information assembled from analysis of all safety-related subsystems, and make this information available to facility managers and safety personnel. Proposed links include key fields such as facility type and phase of operation as a means of requesting information relevant to a particular type of facilities or Coast Guard mission.

"Lookup" tables are tables used by other subsystems to conserve space in the database for standardized, high-use data. These tables also help preserve consistency by standardizing data input. The use of these standardized values for such fields as hazard group, mishap type, and causal factors ensures that queries return valid data. The contents of each "lookup" table will be discussed in the descriptions of the subsystems that use them.

Table D-2 identifies the database tables and fields used in the administrative subsystem of the LERAM Project database

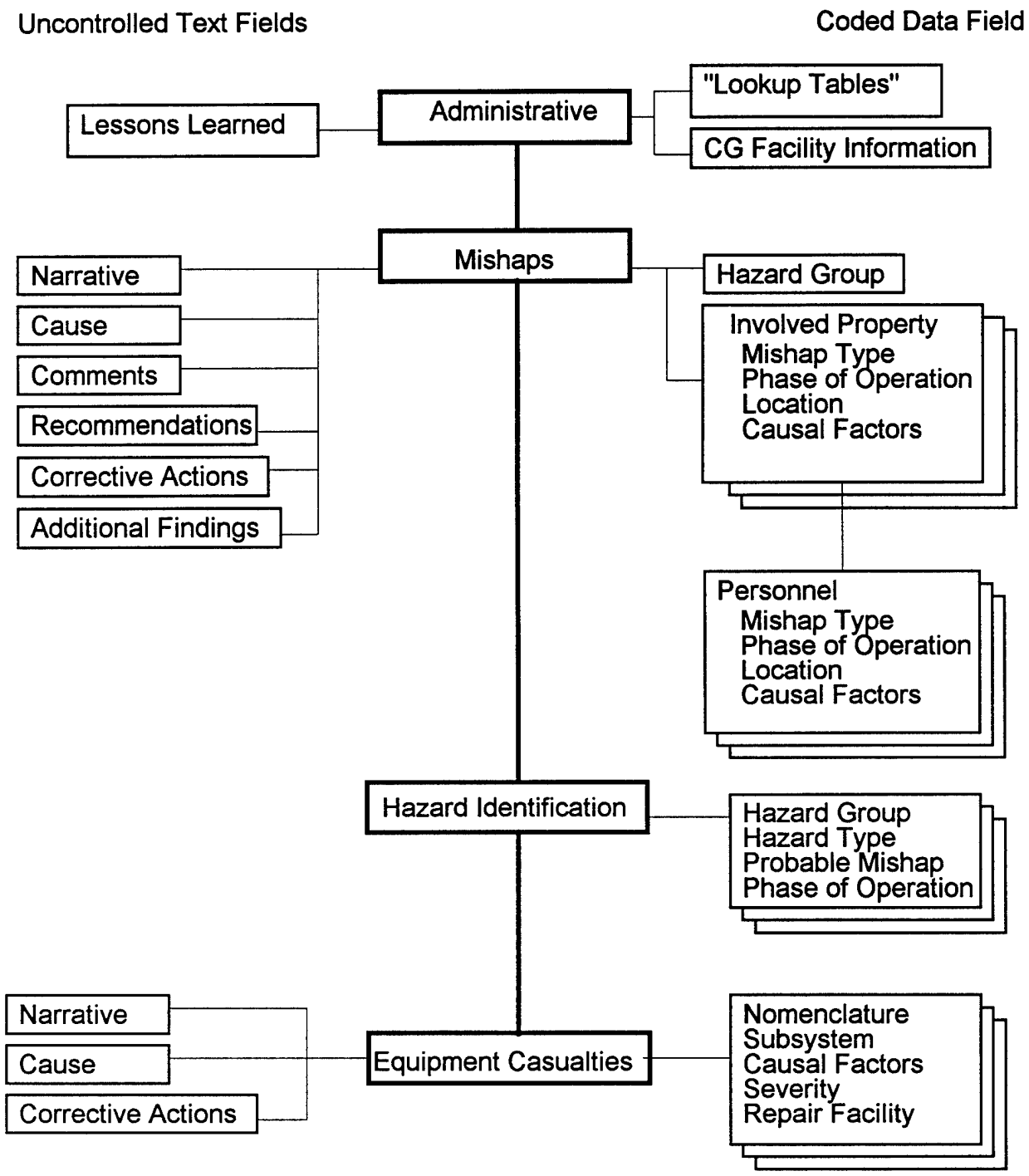

Figure D-2 Coast Guard Prototype LERAM Project Database Structure

Table D-2 Current LERAM Administrative Subsystem Tables and Data Fields

Table/Field Names	Comments	Source
Table *opfac*	Main table used by the administrative subsystem to verify administrative data contained in other subsystems	
opfac number	Unit operating facility number	OPFAC
unit name	The Coast Guard standard unit name	OPFAC
cutter type	If the OPFAC represents a cutter, its type is listed here	OPFAC
cutter class	For cutter OPFACs, cutter class	OPFAC
cutter length	For cutter OPFACs, cutter length	OPFAC
hull number	For cutter OPFACs, the official CG hull number	OPFAC
district	District to which the OPFAC is assigned	OPFAC
Table *district*	Contains text-based descriptive information about each Coast Guard District	OPFAC

D.2.2. Mishaps

This subsystem is comprised mainly of data from the Coast Guard MISREPS database. It is made up of many tables containing both coded and uncoded data. Table D-3 indicates the placement and use of each data element in each table. Data elements marked as NEW are either project implementations or are based on the G-KSE MISREPS database proposal.

Table D-3 Current LERAM MISREPS Subsystem Tables and Data Fields

Table/Field Names	Comments	Source
Table *mrs _admin*	Main mishap table containing administrative data for mishaps	
mishap number	Unique report number used as an index by other mishap tables	NEW
mishap class	A. Rep. Damage >= $1 million **or** Fatality / Perm. Tot. Disability B. Rep. Damage, $200K - $1 million **or** Perm. Part. Disability / 5 or more personnel are hospitalized inpatient. C. Rep. Damage $10K - $200K **or** Nonfatal Injury / Occupational Illness resulting in lost time case. D. Rep. Damage < $10K **or** Nonfatal Injury / Occupational Illness not meeting Class C criteria.	MISREPS
general opmode	Marine, Marine Related, Shore, Aviation, etc.	MISREPS
mishap date	Date Mishap Occurred	MISREPS
fiscal year	Used as a sort field for some mishap reports	NEW
report date	Date report was submitted to MLC	MISREPS
mishap time	Time of mishap reported in Military (24 hour) Time	MISREPS
weather		MISREPS

Table D-3 Current LERAM MISREPS Subsystem Tables and Data Fields (continued)

Table/Field Names	Comments	Source
Table mrs_property	Table tracks all information regarding property involved in a mishap	
prop_no	Unique number used to link to personnel table	
mishap number	Links to admin table	
spec_opmode	C(utter), C(utter) B(oat), S(hore) B(oat) (for vessel mishaps)	MISREPS
opfac number	Links to table containing OPFAC information	MISREPS
district		MISREPS
location	For marine mishaps, vessel lat/long location when mishap occurred	MISREPS
mishap origin	This field was originally proposed to track the room of origin for shipboard fires. More interaction is required before implementing this field in a Coast Guard database.	NEW
vessel type	Allows entry of cutter or small boat types	NEW
vessel length	Allows entry of cutter or small boat lengths	NEW
mission	CG mission being performed at time of mishap	MISREPS
mishap type	Mishap that the property suffered during the mishap	NEW
phase of operation	Phase of operation which the vessel was performing at time of mishap	NEW
causal factor 1	Primary causal factor (based on mishap review)	NEW
causal factor 2	Secondary causal factor (based on mishap review)	NEW
causal factor 3	Secondary causal factor (based on mishap review)	NEW
damaged gov. property	Uncontrolled text. Recommend that this field become controlled text	MISREPS
damaged parts	Uncontrolled text. Recommend link with EIC's to provide a standard link to CASREP information	MISREPS
non-gov. property	Uncontrolled text	MISREPS
$cost to repair gov. prop.	Estimate based on?	MISREPS
$cost to repair non-gov. prop	Estimate based on?	MISREPS
days lost	How long damaged property was not able to perform its mission	MISREPS

Table D-3 Current LERAM MISREPS Subsystem Tables and Data Fields (continued)

Table/Field Names	Comments	Source
Table mrs_personnel	Tracks information relating to personnel casualties. Linked to property table. The following description does not include any sensitive personnel information	
pers_no	Unique number used to link to personnel table	
mishap number	Can be used as a link back to the administrative table	
property number	Links the personnel table to the property table. Using this format, every personnel record is linked to the property table. If there was no property casualty, information contained there is used as augmentation of the administrative data.	NEW
location	Personnel location at time of mishap (for vessel mishaps, based on Compartment Use Indicator)	NEW
mishap type	Mishap that personnel suffered during the mishap	NEW
phase of operation	Phase of operation which the person was performing at time of mishap	NEW
cause1	Primary causal factor (based on mishap review)	NEW
cause2	Secondary causal factor (based on mishap review)	NEW
cause3	Secondary causal factor (based on mishap review)	NEW
age		MISREPS
sex		MISREPS
rank		MISREPS
rate		MISREPS
status	On Duty, CG, Civilian, Contractor, etc.	MISREPS
job	Coded description of the job position at time of mishap (at this time, the LERAM proj. database does not have this field standardized, pending further guidance from G-KSE)	MISREPS
years experience	Years of experience performing the job recorded above	MISREPS
personal protection gear	Standardized list of personal protection being worn at time of mishap	MISREPS
disability	Total, Partial or None	MISREPS
days hospitalized		MISREPS
injury information	information regarding the type of injury and body parts involved. Some of these fields are coded.	MISREPS
severity	Coded severity for injuries	MISREPS
contaminant	Standardized list of contaminants that may have contributed to mishap	MISREPS
days off work	Total number of days lost as a result of the mishap	MISREPS
restricted duty days	Total number of days spent on restricted duty as a result of the mishap	MISREPS
personnel cost	Cost to CG of personnel mishap, based on days off work, restricted duty days, rank and personnel status. Formula for this reported in COMDINST 5100.47	MISREPS

Table D-3 Current LERAM MISREPS Subsystem Tables and Data Fields (continued)

Table/Field Names	Comments	Source
Table mrs_nar	Linked by mishap number to the administrative table, this table contains the narrative submitted by the reporting unit.	MISREPS
Table mrs_cause	Linked by mishap number to the administrative table, this table contains the description of the mishap cause submitted by the reporting unit.	MISREPS
Table mrs_comment	Linked by mishap number to the administrative table, this table contains comments made by reviewing officials..	MISREPS
Table mrs_corrective	Linked by mishap number to the administrative table, this table contains corrective actions recommended by reviewing officials.	MISREPS
Table mrs_additional	Linked by mishap number to the administrative table, this table contains any additional comments, submitted by reviewing officials.	MISREPS
Table mrs_haz	The information in this table is based on a Preliminary Hazard Analysis (PHA) conducted by Battelle. It links hazard groups to individual mishap reports in the administrative table by the mishap number. The study allowed up to three hazard groups to describe each mishap. This information can be used to identify potential problem areas before conducting an in-depth hazard analysis.	NEW
mishap number	Link to mishap administrative table	MISREPS
hazard group 1	Primary hazard group for the specified mishap report	BATTELLE
hazard group 2	Secondary hazard group for the specified mishap report	BATTELLE
hazard group 3	Secondary hazard group for the specified mishap report	BATTELLE

Table D-3 Current LERAM MISREPS Subsystem Tables and Data Fields (continued)

Table/Field Names	Comments	Source
Table causes	"Lookup" table containing a list of valid causal factors for the mishap subsystem. Causal factors are loosely grouped into four general categories. This list is based upon the latest version of the CG MISREPS database.	NEW
valid causal factors	ENVIRONMENTAL - UNKNOWN FACTORS TEMPERATURE VISIBILITY NOISE SURFACE ATMOSPHERE WIND WAVE SHIP MOTION CURRENT CONGESTION ATON/CHART MATERIAL FAILURE - UNKNOWN FACTORS DESIGN MANUFACTURE OPERATION MAINTENANCE NORMAL WEAR AND TEAR PERSONNEL ERROR - UNKNOWN FACTORS FATIGUE HEALTH DRUGS ALCOHOL INATTENTION STRESS MOTIVATION WORKLOAD KNOWLEDGE JUDGMENT COMMAND SUPERVISORY ERROR - UNKNOWN FACTORS COMMUNICATION TRAINING PROCEDURES SUPERVISION RESOURCES UNKNOWN OR UNDETERMINED CAUSE NO CAUSAL FACTOR SPECIFIED	

Table D-3 Current LERAM MISREPS Subsystem Tables and Data Fields (continued)

Table/Field Names	Comments	Source
Table ***mishap_types***	"Lookup" table containing valid property and personnel mishap types. This list of choices, while comprehensive, may provide more detail than necessary for a mishap analysis. The LERAM subsystem implementation allows mishap types to be sorted by varying levels of detail. Each indented level below represents a sortable level.	NEW
valid mishap types	**Personnel Mishap Types** DROWNING OVERBOARD HAZARDOUS EXPOSURE CHEMICAL COLD HEAT NOISE RADIATION INJURY BURN ELECTRIC SHOCK / ELECTROCUTION FALL FIREARM DISCHARGE EQUIPMENT RELATED ENVIRONMENT RELATED OTHER **Property Mishaps** CAPSIZING ASIDE CAPSIZING UNDERWAY COLLISION WITH ANOTHER VESSEL WITH FIXED STRUCTURE WITH FLOATING OBJECT WITH SUBMERGED OBJECT OTHER EQUIP FAILURE/DAMAGE FIRE / EXPLOSION FIREARM DISCHARGE FLOODING FOULED SCREW GROUNDING SINKING **NOT APPLICABLE** **NO PROPERTY DAMAGE PERSONNEL INVOLVED** (this option is used if there are personnel casualties but no property damage. It allows the database to be sorted by personnel-only casualties.)	

Table D-3 Current LERAM MISREPS Subsystem Tables and Data Fields (continued)

Table/Field Names	Comments	Source
Table *phases*	"Lookup" table containing valid property and personnel phases of operation. While this list appears to be comprehensive, it may reduce the phase of operation's usefulness by being too detailed. The LERAM subsystem implementation allows phases to be sorted by varying levels of detail. Each indented level below represents a sortable level.	NEW
valid phases of operation	**Vessel Phases** WORKING AIDS TO NAVIGATION TOWING EVOLUTION BOARDING EVOLUTION FIREFIGHTING EVOLUTION TRAINING EVOLUTION HELICOPTER OPERATIONS FUELING EVOLUTION YARD MAINTENANCE SMALL BOAT LAUNCH / RECOVERY FROM LAND FROM CUTTER VESSEL NOT UNDERWAY ANCHORED / MOORED / STORED DRIFTING / HOVE TO VESSEL LEAVING OR RETURNING VESSEL UNDERWAY IN TRANSIT MANEUVERING IN RESTRICTED WATERS MANEUVERING IN OPEN WATERS **Personnel Phases of operation** MAINTENANCE ASSEMBLING / DISASSEMBLING / INSTALLING CLEANING CUTTING / DRILLING / GRINDING/HAMMERING INSPECTING REPAIRING WELDING PAINTING SANDBLASTING DUTY RELATED COOKING STANDING WATCH / DUTY TRAINING EMBARKING / DISEMBARKING FIREFIGHTING RIGGING HOISTING LOADING PUMPING SHOVELING WORKING ALOFT / ASIDE WORKING CONFINED SPACE OTHER ACTIVITY CARRYING CLIMBING CLOSING / OPENING WEAPONS DISCHARGE - OPERATIONS RECREATION TRAINING OTHER ACTIVITY EXERCISING	

Table D-3 Current LERAM MISREPS Subsystem Tables and Data Fields (continued)

Table/Field Names	Comments	Source
	ORGANIZED SPORTS - BASEBALL BASKETBALL FOOTBALL RACQUETBALL OTHER ACTIVITY SKIING SOCCER SWIMMING TENNIS VOLLEYBALL OTHER JUMPING LIFTING PULLING / PUSHING REACHING / HOOKING RECLINING / SLEEPING STANDING SITTING WALKING RUNNING (LINE OF DUTY)	
	NO PHASES APPLY	
Table ***haz_type***	"Lookup" table containing list of hazard groups for Mishap, Hazard Identification and Equipment Casualty subsystems. This list is based on a PHA conducted by Battelle's Human Factors Transportation Center.	NEW
valid hazard groups	CAPSIZE COLLISION FIRE AND EXPLOSION MECHANICAL/ELECTRICAL FAILURE ELECTRIC SHOCK CONTAMINATION ENVIRONMENT/TEMPERATURE EXTREMES VIBRATION AND NOISE LOSS OF HABITABLE ATMOSPHERE RADIATION PATHOLOGICAL/PSYCHOLOGICAL ERGONOMIC FIREARM DISCHARGE SLIP/TRIP/FALL	

D.2.3. Hazard Identification

The Hazard Identification Subsystem of the LERAM project database is based on the Coast Guard Safety and Health Hazard Abatement Data System (SHHADS) database. Since its integration into the LERAM project database, the Coast Guard has redesigned and renamed SHHADS to the Hazardous Condition Notification (HCN) database. The LERAM project will need to re-evaluate HCN to determine the best way to make use of this information.

Table D-4 lists the tables and data fields currently in use in the LERAM HAZARD subsystem.

Table D-4 Current LERAM HAZARD Subsystem Tables and Data Fields

Table/Field Names	Comments	Source
Table ***hazard***	This is the main table of the hazard subsystem. It contains information regarding vessel hazardous conditions	SHHADS
hazard number	Unique number assigned to hazardous condition notifications	NEW
opfac number	Identifies unit reporting hazardous conditions. Serves as link to MISREPS and CASREP	SHHADS
report date	Date HCN was reported	SHHADS
fiscal year	Fiscal year of the report. Used to sort summary reports	NEW
location	physical location of the hazardous condition	SHHADS
vessel type and length	Identifies type and length of cutter or small boat. Links to MISREPS and CASREP	NEW
criticality	Severity of the HCN	SHHADS
hazard group	Uses the same categories of hazard groups as MISREPS	NEW
number exposed	Estimated number of personnel exposed to the hazardous condition	SHHADS
standard violated		SHHADS
estimated cost		SHHADS
actual cost		SHHADS
completion date		SHHADS
complete?	If checked "Y," tags the hazardous condition as corrected	SHHADS
Table ***hazard_nar***	This table describes the hazardous condition. It is linked to the *hazard* table by the hazard number	SHHADS
Table ***hazard_action***	This table describes any actions taken to correct the hazardous condition. It is linked to the *hazard* table by the hazard number	SHHADS

D.2.4. Equipment Casualties

The Equipment Casualty subsystem is based upon the Coast Guard subset of the Navy's Casualty Reporting (Consolidated Casualty Reporting System (CASREP)) database. This database is used to report engineering casualties, and does not contain personnel or cost information. This subsystem is integrated into the LERAM project database, making use of opfac numbers and vessel subsystems to link to other subsystems of the database. Table D-5 lists the tables and data fields currently in use in the CASREP subsystem.

Table D 5 Current LERAM CASREP Subsystem Tables and Data Fields

Table/Field Names	Comments	Source
Table *cas_admin*		
casrep number	Unique number used to identify casualty reports	NEW
unit opfac	Opfac number of reporting unit	NEW
report date	Date report was filed	CASREP
fy	Fiscal Year in which CASREP occurred	NEW
casrep time	Time at which CASREP occured (Military Time)	CASREP
correction date	Date CASREP was corrected	CASREP
correction time	Time at which CASREP was corrected	CASREP
casrep entry date	Date CASREP was entered into system	CASREP
cascor entry date	Date CASCOR was entered into system	CASREP
severity	2: Substantially Ready (minor degradation of any primary mission area) 3: Marginally Ready (major degradation but not loss of any primary mission area) 4: Not Ready (loss of at least one primary mission area)	CASREP
cause code	Reported cause of the casualty (see list of valid choices below)	CASREP
repair action taken	Echelon of repair required to correct casualty (see list of valid choices below)	CASREP
eic	Equipment Identification Code	CASREP
estimated repair date	Estimated date casualty will be repaired	CASREP
Table *cas_sitrep*		
ser_no	Used to ensure narrative comes out in proper order	
casrep number	Indexed back to *cas_admin*	
sitrep	Narrative describing actions taken to correct the CASREP	CASREP
Table *cas_assist*		
ser_no	Used to ensure narrative comes out in proper order	
casrep number	indexed back to *cas_admin*	
assistance	Text field outlining the assistance required by unit	CASREP
Table *cas_damage*		
ser_no	Used to ensure narrative comes out in proper order	
casrep number	Indexed back to *cas_admin*	
damage	Narrative describing the damage done to equipment	CASREP
Table *cas_parts*		
ser_no	Used to ensure narrative comes out in proper order	
casrep number	indexed back to *cas_admin*	
part_info	Text field describing the damaged equipment	CASREP

Table D-5 Current LERAM CASREP Subsystem Tables and Data Fields (continued)

Table/Field Names	Comments	Source
Table *cas_repair*	"Lookup" table used by *cas_admin* to encode the repair echelon required to correct the casualty	
valid repair echelons	SHIPS FORCE SHIPYARD/TENDER TECHNICAL ASSISTANCE OVERHAUL REPAIR FACILITY DRYDOCK	CASREP
Table *cas_base_cause*	"Lookup" table used by *cas_admin* to encode the base causal factor of the casualty	
valid causal factors	UNKNOWN MATERIAL FAILURE DESIGN FAILURE DEFICIENCY PERSONNEL ERROR BATTLE DAMAGE STORM/WEATHER COLLISION GROUNDING FIRE/EXPLOSION SABOTAGE/DELIBERATE DAMAGE NORMAL WEAR/DETERIORATION CANNIBALIZATION CORROSION FLOODING CONTAMINATION REPAIR/OVERHAUL INADEQUATE ELECTRICAL GROUND LOST FOULED MOISTURE PARTS DEFECTIVE/DAMAGED OBSOLETE/OBSOLESCENT POWER LOSS/OVERLOAD/FLUX EXCESSIVE DYNAMIC LOAD BATTERY DEAD/WEAK AIRCRAFT JET BLAST PERSONNEL SHORTAGE	CASREP

D.3 LERAM Project Database Subsystem Processing

The following sections describe the effort to incorporate, validate and enhance the CASREP, TRAINING, and MISREPS subsystems of the LERAM project database.

D.3.1. CASREP

D.3.1.1. Processing Procedures

In March 1994, a data request was sent to Ships Parts Control Center (SPCC) for CASREP data involving Coast Guard cutters for the time period FY1989 - 1992. Two 9-track tapes were received. These tapes were transferred to the database computer for processing. The two tapes yielded two files whose combined size was nearly 70 megabytes. This represented a tremendous amount of data that threatened to overflow the system disk reserved for it.

When contacted, SPCC explained that their CASREP system used to be tape-based; therefore the routines for writing out raw data files left large, repeated headers and blank spaces necessary for tape formatting. A revised system was being developed, but it would not be completed in time for this project. To aid in the decoding process, SPCC forwarded a mapping of the file layout that showed that the majority of the pertinent data was contained in 79-character blocks. This layout was used to extract the relevant CASREP information, paring down file sizes to approximately 36 megabytes. These layouts were also used to develop the subsystem database tables.

After the desired data was filtered from the original tape files, another processing program split the file into five files properly delimited for loading into the database tables. The program also indexed related fields to further reduce occurrences of redundant information, resulting in final file sizes totaling approximately 25 megabytes. Each database table was loaded individually and then its raw data file was deleted in order to preserve system resources.

D.3.1.2 Problems During Processing

Despite the enormous amount of data, incorporating CASREP data into the LERAM project database was straightforward. CASREP data passes through an error-checking protocol before entering into the Navy system. The following problem areas were identified, however:

- The Casualty Correction (CASCOR) "hour" field (listed in the database dictionary as an integer field) contained character data in at least one instance. The temporary solution was to reassign the field using characters and review all non-conforming entries. The final solution after review was to leave the "hour" field as four characters in order to preserve a neat appearance when reporting, e.g., "0430" vice "430." Since all of this data has been checked to ensure that it falls into the proper format, it is possible to sort the CASCOR time using a simple ASCII sort. It may prove difficult in the future, however, to error-check this field if left in this format.
- The "estimated time of repair" field contained invalid dates and garbled data in at least 200 instances. In the database dictionary provided by SPCC, this field was defined as a character field and not a date field. The temporary solution was to convert this field to eight characters and review all non-conforming entries. The final solution was to convert the corrected field data back to date format.

D.3.1.3. Enhancements and Changes

The following enhancements and changes were made to the CASREP subsystem of the LERAM project database:

- OPFAC numbers were not contained in the original CASREP data that was provided; however, the vessel name, type and hull number were. It was decided to add the OPFAC number to the CASREP admin table. The OPFAC was determined by looking up the vessel type and hull number in the administrative subsystem. In only one known case was the reported hull number in error. This record was updated.

- A Fiscal Year field was added to the CASREP admin table to facilitate relationships between this and other subsystems of the LERAM project database.
- Part information was not decoded into its individual components, but was kept as a single line of text in the database. Individual part information was not considered relevant to the project at this time, but could easily be changed to reflect the information recorded there.
- Damage was linked to vessel subsystems by the Equipment Identification Code (EIC) used by the Navy. This system is engineered to allow many levels of detail about damaged vessel systems to be examined by facility managers and safety personnel. A detailed discussion of two methods for classifying vessel subsystems appears in Appendix B.
- The CASREP cause field was coded and linked to a lookup table.

As part of the enhancement process, several types of reports were developed to test the usefulness of the CASREP data. One of the suggested reports broke down casualty reports by vessel type and vessel subsystem (Table D-6).

Table D-6 Sample CASREP Report Organized by Vessel Type and Subsystem

Vessel Type					
	Damaged Subsystem	Repair Force	Cause	ETR*	ATR*
	Damaged Subsystem	Repair Force	Cause	ETR	ATR
	Damaged Subsystem	Repair Force	Cause	ETR	ATR
Vessel Type					
	Damaged Subsystem	Repair Force	Cause	ETR	ATR
	Damaged Subsystem	Repair Force	Cause	ETR	ATR

* ETR= Estimated Time of Repair
ATR= Actual Time of Repair

Several methods were evaluated for identifying vessel subsystems. One method utilizes the Equipment Identification Code (EIC) which identifies the damaged part in the CASREP database. A complete description of the EIC encoding method and a comparison with the Naval Ships Technical Manual (NSTM) system appear in Appendix B. An example report using this coding technique appears in Appendix C.

D.3.1.4. Integration Possibilities, Concerns and Problems

It may be possible to link CASREPS to other systems by categories such as casualty severity, causal factors, and damaged vessel subsystem. Integration is hampered by a lack of field standardization between subsystems, however. The list of valid CASREP causal factors as defined by SPCC contains many of the same categories as the MRS causal factors and mishap types, as well as causal factors specific to CASREP reports. This mixing of types makes a direct correlation between CASREP and MISREPS difficult. One solution is to standardize the lists of causal factors, mishap types, hazard groups and vessel subsystems so that all database subsystems work from the same definitions.

D.3.1.5 Database Subsystem Statistics

Table D-7 shows the severity codes, descriptions and number of records of each type appearing in the CASREP subsystem.

Table D-7 Severity Code Statistics for the CASREP Subsystem

Severity Code	Description	# Records
2	Substantially Ready (minor degradation of any primary mission area)	12,012
3	Marginally Ready (major degradation but not loss of any primary mission area)	4,111
4	Not Ready (loss of at least one primary mission area)	1,215
Total Records:		**17,338**

Table D-8 details Vessel Repair Assistance appearing in the CASREP subsystem.

Table D-8 Vessel Repair Assistance Statistics for CASREP

Vessel Repair Assistance	# of Records
Overhaul Repair Facility	9,176
Ship's Force	4,860
Technical Assistance	3,246
Dry-Dock	54
Shipyard/Tender	2
Total # Records:	**17,338**

Table D-9 shows statistics concerning CASREP subsystem causal factors. Note that the highest number of casualties are reported under the general heading of "Material Failure." Note also that some of the causal factors could also serve as mishap types or hazard groups.

Table D-9 Valid CASREP Causal Factors and Numbers of Records

Alphabetical Order	# Recs	Numerical Order	# Recs
BATTLE DAMAGE	1	MATERIAL FAILURE	9,300
CANNIBALIZATION	5	UNKNOWN	4,671
COLLISION	59	NORMAL WEAR/DETERIORATION	716
CONTAMINATION	115	REPAIR/OVERHAUL INADEQUATE	657
CORROSION	379	ELECTRICAL GROUND	612
DESIGN FAILURE DEFICIENCY	58	CORROSION	379
ELECTRICAL GROUND	612	POWER LOSS/OVERLOAD/FLUX	192
EXCESSIVE DYNAMIC LOAD	3	STORM/WEATHER	186
FIRE/EXPLOSION	25	CONTAMINATION	115
FLOODING	40	FOULED	114
FOULED	114	COLLISION	59
GROUNDING	8	DESIGN FAILURE DEFICIENCY	58
LOST	22	MOISTURE	53
MATERIAL FAILURE	9,300	PERSONNEL ERROR	47
MOISTURE	53	PARTS DEFECTIVE/DAMAGED	44
NORMAL WEAR/DETERIORATION	716	FLOODING	40
OBSOLETE/OBSOLESCENT	13	FIRE/EXPLOSION	25
PARTS DEFECTIVE/DAMAGED	44	LOST	22
PERSONNEL ERROR	47	OBSOLETE/OBSOLESCENT	13
PERSONNEL SHORTAGE	8	GROUNDING	8
POWER LOSS/OVERLOAD/FLUX	192	PERSONNEL SHORTAGE	8
REPAIR/OVERHAUL INADEQUATE	657	CANNIBALIZATION	5
STORM/WEATHER	186	EXCESSIVE DYNAMIC LOAD	3
UNKNOWN	4,671	BATTLE DAMAGE	1
Total *:	17,328		17,328

* 10 records in the CASREP subsystem did not report a causal factor

D.3.1.6 Conclusion

The CASREP database, while largely text-based in its SPCC version, lends itself quite well to categorization of information based on vessel subsystems, causal factors, casualty severity and corrective actions. Minor organizational and category changes to these coded fields would further enhance the usefulness of this database subsystem.

Although in their current form the EIC categories are useful for identifying vessel subsystems, some are not applicable to Coast Guard vessels and facilities and could be eliminated. While changes to the EIC system are beyond the scope of this project, it will be necessary in the future to come to an agreement concerning the issue of vessel subsystem identification.

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D.3.2. TRAINING

D.3.2.1. Processing Procedures

In April 1994, an inquiry into available personnel training data and its applicability to the LERAM project began. The following implementation goals were set. The database should contain the recommended billet/training structure for a given Coast Guard cutter. In addition, the actual CG cutter's personnel and training billets at a fixed point in time (e.g., at the time of a mishap) should be available for comparison. Research into the types of electronic data available pointed at the Personnel Allowance List (PAL) as a potential source of this information. A preliminary data set was requested from the PAL. This system is supposed to contain the recommended billet structure and minimum training requirements for each cutter in CG inventory.

The information was provided in several files which were used to construct a preliminary table structure for the LERAM project database.

The main file contained OPFACs, districts, billet numbers and rank/job title descriptions for all CG cutters. This information was integrated into the database table *cut_billet*, dropping district and unit name information as redundant with the OPFAC table. The billet number in this table was used to link to the data located in the next table.

The second file contained a list of billet numbers followed by either 5 or 10 characters. Each five character group was broken down into a 3-digit rate number and a 2-digit qualification code. If there were two sets of coding, the first set represented primary qualifications and the second set represented secondary qualifications. There could be multiple rate and qualification entries for each billet number, signifying a list of primary and secondary qualifications required for that billet. This information was incorporated into the database table *cut_tng*, linked to *cut_billet* by the billet_num field. The separate fields of rate number and qualification code were combined to create a unique, single index to a lookup table containing a list of the qualification codes.

Another file that was provided contained a table correlating the 3-digit rate number and the alphanumeric rate. This file was used to help build the qualification code table.

Two lookup tables, one for primary qualifications and one for secondary qualifications, were built based on the COMDTINST M1414.9A and the list of 3-digit rates.

D.3.2.2. Problems During Processing

After the database tables were designed and loaded, a screen was created to examine the data. Debugging of the screen took approximately two days, as some of the data relations required special handling. The primary database table contains approximately 8100 records, representing every billet on every CG cutter in April 1994.

The following observations about the data have been made:

- The alphanumeric rank reported in the *cut_billet* and the 3-digit code reported in *cut_tng* are not an exact match. This affects the ability to verify data in certain cases.
- The job description reported in the cut_billet table appears often to be a mirror of the rate.

D.3.2.3 Enhancements and Changes

No special enhancements or changes were made during the course of this project. A listing of the tables used in this subsystem is included in Appendix A of this report.

D.3.2.4. Integration Possibilities, Concerns and Problems

It is hoped that the Coast Guard integrated data system G-K Resource Information System (KRIS) will become a source of the training/billeting information required by the LERAM project. Further study of this new system may provide integration possibilities and alleviate any data integration concerns.

D.3.2.5. Database Subsystem Statistics

There are approximately 5000 cases in which a billet number is reported in *cut_billet* but does not appear in *cut_tng*. There are no cases of a billet number in *cut_tng* not appearing in *cut_billet*. This indicates that either the data set provided for analysis was incomplete, or nearly 63% of Coast Guard billets do not require any special qualifications. More information is needed before a final analysis of this statistic can be made.

D.3.2.6. Conclusion

Not enough is known about the expectations/purpose of the PAL to know whether this is the data source that should be used for the personnel subsystem of the LERAM project database. Its implementation is therefore incomplete pending further investigation of database sources and LERAM requirements.

D.3.3. MISREPS

D.3.3.1. Processing Procedures

Data involving cutter and small boat mishaps was requested from the MISREP system in November of 1992. This data was reorganized, formatted and loaded into a relational database model. While the new structure solved some of the old structure's problems, such as allowing multiple personnel and property casualties under one mishap report, the design raised other questions when it was used in support of the Vessel Mishap Analysis. There were several weaknesses and suggested improvements for the design.

Two areas that needed refinement surrounded the ability to track damaged assets. First, if a cutter's small boat was involved in the mishap, it was difficult to tell whether it was the only property damaged or if the parent cutter was involved as well. Secondly, it was impossible to tell to which asset injured personnel belonged if more than one property was reported in the mishap.

Another drawback to the original design stemmed from the attempt to combine a mishap's property and personnel casualties under one mishap report. The original MISREP data contained a single mishap type, phase of operation and cause for each report. When the reports were reorganized in the original database subsystem, these fields were assigned to the mishap at the "administrative" level. In cases involving several property and/or personnel assets, a single description of mishap type did not provide an accurate portrayal of mishaps suffered by all involved assets. This limited the ability of safety analysts to use the database without referring to uncontrolled narrative text.

D.3.3.2. Problems During Processing

There were no major problems processing the MISREPS data.

D.3.3.3. Enhancements and Changes

There were several general areas of the subsystem requiring enhancement or redesign to increase its usefulness in mishap trend analysis and to provide a structure flexible enough to allow further changes:

- **Data Field Reorganization:** The original structure scattered related pieces of information across several tables. Each data element was examined in order to determine whether it belonged in an administrative section, property casualty section, or personnel casualty section. Small boat data was incorporated directly into the Property section of the subsystem. The result is a more intuitive mapping of mishap data facilitating marine mishap reconstruction and analysis.
- **Expansion of Coded Choices:** Because the system was originally designed to only flag certain mishap types, many mishaps were classified under the mishap type of "N/A." This was especially true of personnel mishaps. Expanding the choices facilitated better statistical analysis and may assist safety personnel in pinpointing problem areas.
- **Tracking of Mishap Type, Phase of Operation and Causal Factors:** The new structure implemented an approach that allows different mishap types, phases of operation and causal factors to be entered for property and personnel casualties within a single mishap. This allows a level of detail not previously available to the analyst.

The updated structure is further enhanced by the recent addition of a hazard group field to the MISREPS administrative table. The hazard group, based on a PHA conducted by Battelle's Human Factors Transportation Center, allows the safety professional to point out potential problem areas regardless of the mishap type that is assigned to the mishap.

Another potential change to the property section of the MISREPS subsystem involves using EIC nomenclature from the CASREP subsystem to augment the damaged property information.

D.3.3.4. Results of Update

After the initial push to update the structure and content of the Mishap Reporting Subsystem (MRS), several integrity checks were made to clean up any records that had slipped through the screening process. These checks indicated that the reorganization was successful within the framework of the stated goals. The enhanced structure of the project database requires the analyst to consider the data relationships when analyzing mishaps or obtaining specific mishap reports. Increasing the flexibility of the database to better account for all aspects of a mishap facilitates more accurate, yet more complex analysis.

After validating the structure, several complex queries based on the new structure were run. These queries included compiling information about mishap rates and facility risk indexes for cutters and shore boats, sorted by a key field such as mishap type. These queries pushed the limits of the database software in which the LERAM project database was written, but the flexibility of the design was proven. In the case of mishap rates for cutters and boats, information from the Abstract of Operations (AOPS) and MISREPS subsystems needed to be combined and used in formulas provided by G-KSE. Although the reports were fairly complex to compile, this was due more to the lack of flexibility in the database report writing software rather than a limitation of the database design. Review of the compiled data reports by the COTR and G-KSE personnel indicated that the information available through the redesigned MRS was useful and desirable.

D.3.3.5. Integration Possibilities, Concerns and Problems

The MISREPS subsystem currently makes up the backbone of the LERAM project database. Much of the design of other subsystems in the database has relied upon lessons learned during MISREPS development. Effort has therefore centered on integrating the LERAM MISREPS into the Coast Guard system.

During testing of the MISREPS design, it was determined that there were relations that were designed into the LERAM project database that could not be supported by accessing the actual Coast Guard databases the LERAM project database was meant to represent. Many of the link problems were due to implementation inconsistencies between similar fields in different databases. Support from G-KSE has led to a number of meetings to attempt to align the LERAM project database subsystem design concepts with the needs and designs of existing Coast Guard databases to make the information available across Coast Guard safety communities. In order for the LERAM MISREPS subsystem design to be adopted by the Coast Guard, the following criteria must be met:

- Data fields definitions must be standardized.
- The LERAM MISREPS structure must be proven with data not specifically related to the vessel safety community.
- A method of transferring data from previous versions of the Coast Guard MISREPS system to a redesigned system must be developed. Any such method should rely as much as possible on automated data transfer and minimize the amount of manual quality-control needed.
- Standard queries and reports must be defined, written and tested to ensure the database structure meets Coast Guard reporting requirements.
- The database structure must conform to the rules of good relational database design.

A serious effort to meet these goals has been undertaken, although further work in standardizing certain fields still must be done.

D.3.3.6. Database Subsystem Statistics

Table D-10 illustrates some of the statistics available in the Mishap Reporting Subsystem (MRS) system. This list was compiled after completion of the database validation.

D.3.3.7. Conclusion

The lists of valid choices for hazard groups, mishap types, phases of operation and causal factors must be standardized among safety organizations and database subsystems. Although project leaders have begun efforts to accomplish this task, these efforts must continue in order to ensure delivery of a useful, validated product.

The data used to populate the MISREPS subsystem of the LERAM project database pertained only to Coast Guard vessels, and did not contain restricted personnel information. Fields for reviewers' comments also were not included. This project has attempted to identify changes to the database structure that consider the needs of all safety communities that utilize MISREPS data. Careful coordination with project sponsors and customers will ensure that all major needs are met and concerns are addressed before any new database designs are implemented.

Table D-10 Summary of Information Contained in MISREPS

Personnel	1989	1990	1991	1992	Total	Yearly Average	Std. Dev.
Incidents	#	#	#	#			
Fatality	0	0	3	1	4	1.00	1.22
Lost Time	120	114	58	76	368	92.00	25.88
No Lost Time	63	99	53	62	277	69.25	17.61
First Aid	109	67	66	42	284	71.00	24.11
N/A	13	5	5	13	36	9.00	4.00
# Incidents	305	285	185	194	969	242.25	53.32
Lost Work Days	825	596	429	419	2269	567.25	164.58
Restricted Duty Days	1947	1863	962	1781	6553	1638.25	394.82
Personnel Incident Costs	$	$	$	$			
Fatality	$0	$0	$375,000	$125,000	$500,000	$125,000	$153,093
Lost Time	$589,950	$451,755	$841,205	$470,470	$2,353,380	$588,345	$155,316
No Lost Time	$51,840	$106,680	$47,760	$103,680	$309,960	$77,490	$27,748
First Aid	$0	$0	$0	$840	$840	$210	$364
N/A	$0	$0	$0	$0	$0	$0	$0
Total Pers Cost	$641,790	$558,435	$1,263,965	$699,990	$3,164,180	$791,045	$277,637
Property							
Equipment Days Lost	393	1053	494	726	2666	666.50	253.71
Govt. Equip Costs	$1,691,682	$37,430,091	$272,011	$777,392	$40,171,176	$10,042,794	$15,820,248
Add'l Equip Costs	$457,358	$5,162	$7,516	$10,753	$480,789	$120,197	$194,670
Total Costs	$2,790,830	$37,993,688	$1,543,492	$1,488,135	$43,816,145	$10,954,036	$15,620,038
MISHAPS							
Class A	0	1	3	1	5	1.25	1.09
Class B	4	1	6	1	12	3.00	2.12
Class C	130	115	64	92	401	100.25	24.92
Class D	240	244	221	219	924	231.00	11.11
TOTAL	374	361	294	313	1342	335.50	33.02

D.4 Data Dictionary for LERAM Project Database

Table D-11 lists all of the database tables currently part of the LERAM Project database design.

Table D-11 All Database Tables Contained in the LERAM Project Database

Table Name	Data Type	Comment
Table *opfac*		Main table used by the administrative subsystem to verify administrative data contained in other subsystems
opfac_no	integer	Unit operating facility number
unit_name	char(35),	The Coast Guard standard unit name
ctype	char(4),	If the OPFAC represents a cutter, its type is listed here
cclass	char(5)	For cutter OPFACs, cutter class
clength	smallint,	For cutter OPFACs, cutter length
hull_no	integer	For cutter OPFACs, the official CG hull number
district	char(2)	District to which the OPFAC is assigned
Table *district*		Contains text-based descriptive information about each Coast Guard District
dist_num	integer,	Numeric representation of district number
district	char(2)	Alphanumeric representation of district numbers
dist_short	char(15)	Short description of district
dist_long	char(25)	Long description of district
Table *cas_admin*		
casrep_no	integer,	Ties to other CASREP tables
opfac_no	integer,	Ties to opfac tables and MRS
report_date	date,	Date report was filed
fy	smallint,	Fiscal Year in which CASREP occurred
casrep_time	char(4),	Time at which CASREP occured (MST)
correct_date	date,	Date CASREP was corrected
correct_time	char(4),	Time at which CASREP was corrected
cas_entry	date,	Date CASREP was entered into system
correct_entry	date,	Date CASCOR was entered into system
severity	smallint,	Valid value 2<=x<=4
cause_code	char(1),	See following table for list of valid causal factors
rep_act_code	char(1),	See following table for list of valid repair action codes
eic	char(7),	Equipment Identification Code
est_repair_dt	date	Estimated Repair Date
Table *cas_sitrep*		
ser_no	serial not null,	Used to ensure narrative comes out in proper order
casrep_no	integer,	Indexed back to *cas_admin*
sitrep	char(290)	Narrative describing actions taken to correct the CASREP
Table *cas_assist*		
ser_no	serial not null,	Used to ensure narrative comes out in proper order
casrep_no	integer,	indexed back to *cas_admin*
assistance	char(171)	Text field outlining the assistance required by unit
Table *cas_damage*		
ser_no	serial not null,	Used to ensure narrative comes out in proper order
casrep_no	integer,	Indexed back to *cas_admin*
damage	char(174)	Narrative describing the damage done to equipment
Table *cas_parts*		
ser_no	serial not null,	Used to ensure narrative comes out in proper order
casrep_no	integer,	indexed back to *cas_admin*
part_info	char(60)	Text field describing the damaged equipment

Table D-11 All Database Tables Contained in the LERAM Project Database (continued)

Table Name	Data Type	Comment
Table *cas_repair*		"Lookup" table used by *cas_admin* to encode the repair echelon required to correct the casualty
rep_act_code		SHIPS FORCE SHIPYARD/TENDER TECHNICAL ASSISTANCE OVERHAUL REPAIR FACILITY DRYDOCK
Table *cas_base_cause*		"Lookup" table used by *cas_admin* to encode the base causal factor of the casualty
cas_base_cause		UNKNOWN MATERIAL FAILURE DESIGN FAILURE DEFICIENCY PERSONNEL ERROR BATTLE DAMAGE STORM/WEATHER COLLISION GROUNDING FIRE/EXPLOSION SABOTAGE/DELIBERATE DAMAGE NORMAL WEAR/DETERIORATION CANNIBALIZATION CORROSION FLOODING CONTAMINATION REPAIR/OVERHAUL INADEQUATE ELECTRICAL GROUND LOST FOULED MOISTURE PARTS DEFECTIVE/DAMAGED OBSOLETE/OBSOLESCENT POWER LOSS/OVERLOAD/FLUX EXCESSIVE DYNAMIC LOAD BATTERY DEAD/WEAK AIRCRAFT JET BLAST PERSONNEL SHORTAGE
Table *cut_billet*		Contains lists of billets for CG Cutters
rec_idx	serial,	Provides indexed link for Training Subsystem
opfac_no	integer,	Indexed, linked to OPFAC Subsystem
billet_num	char(7),	Links to table *cut_tng*
rate	char(5),	Temporary field for verifying data
job_desc	char(60)	Title/job description
Table *cut_tng*		List of training qualification codes for each cutter billet
tng_idx	serial,	
billet_num	char(7),	Indexed, links to cut_billet
pri_rate_num	char(3),	Primary rate, used to build qual codes
pri_tng_code	char(2),	Primary training code, used to build qual codes
pri_qual_code	char(5),	Indexed, composite of tng_code and rate_num
sec_rate_num	char(3),	Secondary rate, used to build qual codes
sec_tng_code	char(2),	Secondary training code, used to build qual codes
sec_qual_code	char(5)	Indexed, composite of tng_code and rate_num

Table D-11 All Database Tables Contained in the LERAM Project Database (continued)

Table Name	Data Type	Comment
Table *pers_rate*		Used to verify rate reported in *cut_billet* with rate # reported in *cut_tng*}
rate_num	char(3),	numeric representation of the rate
rate_desc	char(20),	Description of the rate
rate	char(5)	Char representation of rate; e.g. ET1
Table *pri_tng_code*		Primary training code lookup table
qual_code	char(5),	Indexed, composite of rate_num and qual_code
qual_desc	char(150)	Description of qual code
Table *sec_tng_code*		Secondary code lookup table (exact duplicate of *pri_tng_code*)
qual_code	char(5),	Indexed, composite of rate_num and qual_code}
qual_desc	char(150)	Description of qual code
Table *mrs _admin*		Main mishap table containing administrative data for mishaps
mishap_no	serial not null,	Unique report number used as an index by other mishap tables
mishap_class	char(1),	A. Rep. Damage >= $1 million **or** Fatality / Perm. Tot. Disability B. Rep. Damage, $200K - $1 million **or** Perm. Part. Disability / 5 or more personnel are hospitalized inpatient. C. Rep. Damage $10K - $200K **or** Nonfatal Injury / Occupational Illness resulting in lost time case. D. Rep. Damage < $10K **or** Nonfatal Injury / Occupational Illness not meeting Class C criteria.
gen_opmode	char(15),	Marine, Marine Related, Shore, Aviation, etc.
mishap_date	date,	Date Mishap Occurred
fy	smallint,	Used as a sort field for some mishap reports
report_date	date,	Date report was submitted to MLC
mishap_time	smallint,	Time of mishap reported in Military (24 hour) Time
weather	char(100)	

Table D-11 All Database Tables Contained in the LERAM Project Database (continued)

Table Name	Data Type	Comment
Table *mrs_property*		Table tracks all information regarding property involved in a mishap
prop_no	serial not null,	Unique number used to link to personnel table
mishap_no	integer,	Links to admin table
spec_opmode	char(2),	C(utter), C(utter) B(oat), S(hore) B(oat) (for vessel mishaps)
opfac_no	integer,	Links to table containing OPFAC information
district	char(2),	
location	char(80),	For marine mishaps, vessel lat/long location when mishap occurred
mishap_origin	char(15),	This field was originally proposed to track the room of origin for shipboard fires. More interaction is required before implementing this field in a Coast Guard database.
vessel_type	char(6),	Allows entry of cutter or small boat types
vessel_length	smallint,	Allows entry of cutter or small boat lengths
mission	char(5),	CG mission being performed at time of mishap
mishap_code	char(3),	Mishap that the property suffered during the mishap
phase_code	char(4),	Phase of operation which the vessel was performing at time of mishap
cause1	char(2),	Primary causal factor (based on mishap review)
cause2	char(2),	Secondary causal factor (based on mishap review)
cause3	char(2),	Secondary causal factor (based on mishap review)
gov_prop	char(40),	Uncontrolled text. Recommend that this field become controlled text
damaged_parts	char(30),	Uncontrolled text. Recommend link with EIC's to provide a standard link to CASREP information
other_property	char(30),	Uncontrolled text
gov_prop_cost	money(16,2),	Estimate based on?
other_prop_cost	money(16,2),	Estimate based on?
days_lost	smallint,	How long damaged property was not able to perform its mission

Table D-11 All Database Tables Contained in the LERAM Project Database (continued)

Table Name	Data Type	Comment
Table *mrs_personnel*		Tracks information relating to personnel casualties. Linked to property table. The following description does not include any sensitive personnel information
pers_no	serial not null,	Unique number used to link to personnel table
mishap_no	integer,	Can be used as a link back to the administrative table
prop_no	integer,	Links the personnel table to the property table. Using this format, *every* personnel record is linked to the property table. If there was no property casualty, information contained there is used as augmentation of the administrative data.
location	char(40),	Personnel location at time of mishap (for vessel mishaps, based on Compartment Use Indicator)
mishap_code	char(3),	Mishap that personnel suffered during the mishap
phase_code	char(4),	Phase of operation which the person was performing at time of mishap
cause1	char(2),	Primary causal factor (based on mishap review)
cause2	char(2),	Secondary causal factor (based on mishap review)
cause3	char(2),	Secondary causal factor (based on mishap review)
age	smallint,	
sex	char(1),	
rank	char(10),	
rate	char(3),	
status_no	integer,	On Duty, CG, Civilian, Contractor, etc.
position	char(35),	Coded description of the job position at time of mishap (at this time, the LERAM proj. database does not have this field standardized, pending further guidance from G-KSE)
yrs_experience	decimal(6,2),	Years of experience performing the job recorded above
pers_protect	char(50),	Standardized list of personal protection being worn at time of mishap
disability	char(7),	Total, Partial or None
days_hospital	smallint,	
injury_code	char(2),	Information regarding the type of injury and body parts involved. Some of these fields are coded.
sev_no	integer,	Severity code for injuries
contaminant	char(40),	Standardized list of contaminants that may have contributed to mishap
days_off_work	smallint,	Total number of days lost as a result of the mishap
restricted_days	smallint,	Total number of days spent on restricted duty as a result of the mishap
personnel_cost	money(16,2)	Cost to CG of personnel mishap, based on days off work, restricted duty days, rank and personnel status. Formula for this reported in COMDINST 5100.47
Table *mrs_nar*		Linked by mishap number to the administrative table; this table contains the narrative submitted by the reporting unit.
ser_no	serial not null,	
mishap_no	integer,	
narrative	char(500)	
Table *mrs_cause*		Linked by mishap number to the administrative table; this table contains the description of the mishap cause submitted by the reporting unit.
ser_no	serial not null,	
mishap_no	integer,	
cause	char(250)	

Table D-11 All Database Tables Contained in the LERAM Project Database (continued)

Table Name	Data Type	Comment
Table *mrs_comment*		Linked by mishap number to the administrative table; this table contains comments made by reviewing officials.
ser_no	serial not null,	
mishap_no	integer,	
comment	char(100)	
Table *mrs_corrective*		Linked by mishap number to the administrative table; this table contains corrective actions recommended by reviewing officials.
ser_no	serial not null,	
mishap_no	integer,	
cor_action	char(250)	
Table *mrs_additional*		Linked by mishap number to the administrative table; this table contains any additional comments, submitted by reviewing officials.
ser_no	serial not null,	
mishap_no	integer,	
added_findings	char(100)	
Table *mrs_haz*		The information in this table is based on a Preliminary Hazard Analysis (PHA) conducted by Battelle. It links hazard groups to individual mishap reports in the administrative table by the mishap number. The study allowed up to three hazard groups to describe each mishap. This information can be used to identify potential problem areas before conducting an in-depth hazard analysis.
mishap_no	integer,	Link to mishap administrative table
haz_gp1	integer,	Primary hazard group for the specified mishap report
haz_gp2	integer,	Secondary hazard group for the specified mishap report
haz_gp3	integer	Secondary hazard group for the specified mishap report

Table D-11 All Database Tables Contained in the LERAM Project Database (continued)

Table Name	Data Type	Comment
Table ***causes***		"Lookup" table containing a list of valid causal factors for the mishap subsystem. Causal factors are loosely grouped into four general categories. This list is based upon the latest version of the CG MISREPS database.
cause_code	char(2) not null,	**ENVIRONMENTAL - UNKNOWN FACTORS** TEMPERATURE VISIBILITY NOISE SURFACE ATMOSPHERE WIND WAVE SHIP MOTION CURRENT CONGESTION ATON/CHART **MATERIAL FAILURE - UNKNOWN FACTORS** DESIGN MANUFACTURE OPERATION MAINTENANCE NORMAL WEAR AND TEAR **PERSONNEL ERROR - UNKNOWN FACTORS** FATIGUE HEALTH DRUGS ALCOHOL INATTENTION STRESS MOTIVATION WORKLOAD KNOWLEDGE JUDGMENT COMMAND **SUPERVISORY ERROR - UNKNOWN FACTORS** COMMUNICATION TRAINING PROCEDURES SUPERVISION RESOURCES **UNKNOWN OR UNDETERMINED CAUSE** **NO CAUSAL FACTOR SPECIFIED**
cause_desc	char(35)	

Table D-11 All Database Tables Contained in the LERAM Project Database (continued)

Table Name	Data Type	Comment
Table ***mishap_types***		"Lookup" table containing valid property and personnel mishap types. This list of choices, while comprehensive, may provide more detail than necessary for a mishap analysis. The LERAM subsystem implementation allows mishap types to be sorted by varying levels of detail. Each indented level below represents a sortable level.
mishap_code	char(3),	**Personnel Mishap Types** DROWNING OVERBOARD HAZARDOUS EXPOSURE CHEMICAL COLD HEAT NOISE RADIATION INJURY BURN ELECTRIC SHOCK / ELECTROCUTION FALL FIREARM DISCHARGE EQUIPMENT RELATED ENVIRONMENT RELATED OTHER **Property Mishaps** CAPSIZING ASIDE CAPSIZING UNDERWAY COLLISION WITH ANOTHER VESSEL WITH FIXED STRUCTURE WITH FLOATING OBJECT WITH SUBMERGED OBJECT OTHER EQUIP FAILURE/DAMAGE FIRE / EXPLOSION FIREARM DISCHARGE FLOODING FOULED SCREW GROUNDING SINKING
		NOT APPLICABLE **NO PROPERTY DAMAGE PERSONNEL INVOLVED** (this option is used if there are personnel casualties but no property damage. It allows the database to be sorted by personnel-only casualties.)
mishap_desc mishap_desc2	char(20), char(30)	

Table D-11 All Database Tables Contained in the LERAM Project Database (continued)

Table Name	Data Type	Comment
Table *phases*		"Lookup" table containing valid property and personnel phases of operation. While this list appears to be comprehensive, it may reduce the phase of operation's usefulness by being too detailed. The LERAM subsystem implementation allows phases to be sorted by varying levels of detail. Each indented level below represents a sortable level.
phase_code	char(4),	**Vessel Phases** WORKING AIDS TO NAVIGATION TOWING EVOLUTION BOARDING EVOLUTION FIREFIGHTING EVOLUTION TRAINING EVOLUTION HELICOPTER OPERATIONS FUELING EVOLUTION YARD MAINTENANCE SMALL BOAT LAUNCH / RECOVERY FROM LAND FROM CUTTER VESSEL NOT UNDERWAY ANCHORED / MOORED / STORED DRIFTING / HOVE TO VESSEL LEAVING OR RETURNING VESSEL UNDERWAY IN TRANSIT MANEUVERING IN RESTRICTED WATERS MANEUVERING IN OPEN WATERS **Personnel Phases of operation** MAINTENANCE ASSEMBLING/DISASSEMBLING/INSTALLING CLEANING CUTTING/DRILLING/GRINDING/HAMMERING INSPECTING REPAIRING WELDING PAINTING SANDBLASTING DUTY RELATED COOKING STANDING WATCH / DUTY TRAINING EMBARKING / DISEMBARKING FIREFIGHTING RIGGING HOISTING LOADING PUMPING SHOVELING WORKING ALOFT / ASIDE WORKING CONFINED SPACE OTHER ACTIVITY CARRYING CLIMBING CLOSING / OPENING WEAPONS DISCHARGE OPERATIONS RECREATION TRAINING OTHER ACTIVITY

Table D-11 All Database Tables Contained in the LERAM Project Database (continued)

Table Name	Data Type	Comment
		EXERCISING ORGANIZED SPORTS - BASEBALL BASKETBALL FOOTBALL RACQUETBALL SKIING SOCCER SWIMMING TENNIS VOLLEYBALL OTHER JUMPING LIFTING PULLING / PUSHING REACHING / HOOKING RECLINING / SLEEPING STANDING SITTING WALKING RUNNING (LINE OF DUTY)
		NO PHASES APPLY
phase_desc phase_desc2	char(40), char(40)	
Table *haz_type*		"Lookup" table containing list of hazard groups for Mishap, Hazard Identification and Equipment Casualty subsystems.
hazard_no hazard_desc	serial not null, char(40)	CAPSIZE COLLISION FIRE AND EXPLOSION MECHANICAL/ELECTRICAL FAILURE ELECTRICALSHOCK CONTAMINATION ENVIRONMENT/TEMPERATURE EXTREMES VIBRATION AND NOISE LOSS OF HABITABLE ATMOSPHERE RADIATION PATHOLOGICAL/PSYCHOLOGICAL ERGONOMIC FIREARM DISCHARGE SLIP/TRIP/FALL