PACIFIC STATES/BRITISH COLUMBIA OIL SPILL TASK FORCE

SPILL and INCIDENT DATA COLLECTION PROJECT REPORT July, 1997

A. Background on the Task Force

The Pacific States/British Columbia Oil Spill Task Force was established by a Memorandum of Cooperation signed by the governors of Alaska, Washington, Oregon and California, and the British Columbia premier in 1989 following two west coast oil spill incidents:

- The first involved the barge *Nestucca*, which spilled 231,000 gallons of fuel oil off of Grays Harbor, Washington and eventually oiled sections of shoreline from Oregon to Olympic National Park in Washington to as far away as the Canadian Pacific Rim National Park on Vancouver Island. This incident emphasized how major spills do not respect national boundaries as well as how they affect our most sensitive and valuable natural resources.

- The second incident was the catastrophic spill by the *T/V Exxon Valdez* in Alaska's Prince William Sound in March of 1989. This incident further highlighted the common concerns shared by west coast states and British Columbia regarding spill risks from coastal vessel traffic routes, the need for cooperation and sharing of response resources across shared borders, and a shared commitment among west coast citizens of both the USA and Canada to protect their unique marine resources by placing high priority on spill prevention.

The continuing focus of the Task Force is on enhancing the ability of its member agencies as well as other public and private stakeholders to effectively prevent, prepare for, and respond to marine oil spills. These goals are accomplished by fostering regulatory consistency, sharing information and resources, improving and coordinating on issues of common interest.

B. Spill and Incident Data Collection Project Background

The Pacific States/British Columbia Oil Spill Task Force launched its Five Year Strategic Plan in 1994. At that time the members thought it would be wise to analyze available spill data and determine primary spill causes in order to direct West Coast prevention efforts more effectively. It soon became obvious, however, that existing spill data provides less insight on spill causes than we need. In addition, it was almost impossible to correlate information between data systems due to a lack of standardization in reporting requirements and definitions. We discussed this concern with Task Force member agencies and those managing federal databases. Everyone agreed that this was a significant problem, yet no immediate action had been planned to resolve it.

The Task Force felt that the problem would best be approached on a regional scale, at least initially, because of the potential difficulty in reaching consensus if a wider range of agencies were involved in adopting the recommendations. Near miss reporting and spill cause information issues were identified by the Task Force as priorities in the *1990 Final Report of the States/ BC Oil Spill Task Force*. This current project takes further action on these important issues.
This project has three objectives:

1. To develop a set of spill reporting elements which can be used consistently among our members in order to generate compatible and compilable information which will provide a west coast data set describing the what? when? and where? of spill incidents;
2. To develop a set of spill reporting elements that will provide in-depth knowledge of spill causes (the how? and why?); and
3. To develop a training program which will assure consistent information collection.

The effort focuses on promoting the use of consistent reporting elements rather than the use of identical software, since every jurisdiction already has computer software systems in place which would be costly and time consuming to replace in the near term. While each agency has different data needs due to their differing statutory and policy mandates, the elements of the Data Collection Dictionary can easily be incorporated into each agency's data base.

The primary focus of the project has been to identify the common reporting elements on spill incidents which will provide a better understanding of spill causes. The understanding gained from the analysis of this data will be used to target our spill prevention efforts for both vessels and facilities. Improving our understanding of spill causes will be accomplished through implementation of the consistent Spill and Incident Data Collection format provided in this report. The term "incident" is incorporated into the title of the report because we include a mechanism for compiling near-miss data where it is available.

In addition to a representative from the Marine Facilities Inspection Division of the California State Lands Commission, each member agency appointed a representative to the Spill and Incident Reporting Project Workgroup; please see a list of Workgroup members in Appendix I. Jon Neel of the Washington Department of Ecology and Stan Norman of the Washington Office of Marine Safety co-chaired the Workgroup, and Megan Thomas of OMS was particularly helpful in the development of the Data Collection Dictionary. The Workgroup members worked by conference call, mail, and fax to develop this report and its recommendations.

C. Spill Cause Determination

Given that the principle objective of this project is to gain a better understanding of spill causes, we must recognize that the analysis and understanding of the causes of most major spills is complex. There are a myriad of reasons for this, including:

- **Most major spills are difficult to analyze** given that they are often the result of a series of complex factors and conditions coming together at a particular moment in time. The factors may include both failures which are preventable, and conditions which are not within human control. Often a major incident would not have occurred if any one of the factors or conditions had been absent. Therefore, it is often difficult to boil an incident down to a single primary/root cause with identified contributing factors.
- **There is a lack of a consistent framework** for systematically analyzing and categorizing incidents. This is a problem both nationally and on the West Coast.

- **There is lack of consistently collected reliable information** on spill causes. This is partially due to the scarcity of highly trained staff resources in the investigating agencies, the reluctance of industry to fully disclose information for liability reasons, and the lack of agency funding to hire independent experts to conduct investigations.

- **There is also a reluctance on the part of many investigators** to directly place blame because of liability concerns, sympathy for an individual or organization who has already been affected by an incident, and concern that an employee who may have contributed to an incident may lose their livelihood. The result is that some investigations identify the cause of an incident as equipment failure or a natural incident, even when an easily preventable human error (individual or organizational) occurred.

D. Spill and Incident Reporting Data Collection Dictionary

In order to collect and analyze data regionally all of the participating agencies must agree to use common terms and definitions, i.e. a common data "language". We must not only collect the same data, we must collect it in a compatible format so that data can be shared and combined with confidence.

The Task Force Spill and Incident Reporting Workgroup has developed a dictionary of standard data terms and definitions that should be used by all member agencies. The dictionary is included as Appendix II to this report.

The dictionary facilitates the collection of information to answer the basic questions: Who? What? Where? When? and most importantly Why? Determination of the root causes and contributing factors that lead to spills and incidents will enable us to properly target prevention efforts to break the error chain that inevitably leads to an accident or near miss.

Causes and contributing factors are grouped into four major categories as follows:

- **Management/Organization** — The failure of an organization to provide the necessary policies, procedures, equipment, personnel, supervision, training or time to safely design and operate a system which could potentially cause a spill. In order to prevent spills, an organization may be expected to go beyond currently accepted industry practices.

- **Human Factor** — The ability (over which the organization has less control) of an individual to safely complete a task. Examples include poor communication, drugs/alcohol, improper equipment use, inaccurate computation, inattention, procedural error, complacency, not following training procedures, fatigue, illness or sabotage/intentional.

- **Equipment** — A mechanical, structural or electrical failure not attributable to a human error-related installation, operation or maintenance deficiency. An example which would not qualify for this category as an "equipment failure" would be a failure from normal wear and tear as a result of lack of maintenance. This would be either a management/organization or human factor caused spill.

- **External** — Natural phenomenon such as earthquakes, floods, storms, tsunami, fog, ice, lightning, tidal conditions, sea state, and landslides which occur with a magnitude outside of reasonably anticipated design or operating limits.

Studies have consistently shown that at least 80% of recorded spills and incidents are caused by human error. Human error, when used in this context, includes both individual human errors and organizational/management errors. It is important to split human error into two categories for data collection and analysis because individuals operating vessels and marine oil-handling facilities are frequently unable to correct the factors that lead to organizational/management errors. Upper levels of management must play an active leadership role in addressing human error.

The taxonomy, or list of human error causes and contributing factors, used in the dictionary is derived from the taxonomies most widely used and accepted in industrial human factors engineering. The Task Force has made an effort to ensure that the definitions in the Dictionary are as consistent as possible with those already in use within the Task Force member agencies. We have also attempted to ensure that they are as consistent as possible with US and Canadian federal definitions.

E. Investigation Training Objectives

The next phase of the project will be the development of a detailed basic training program to ensure consistent application of the reporting elements among our member agencies. Consistency of the training curriculum may be as critical as the common data elements and definitions. This is because accurate causal information is essential to member agencies who are trying to stretch resources and focus on measures that will be most effective in preventing spills and incidents that could lead to spills.

Investigators must be properly trained to ask the right questions and gather the right evidence if the root causes of spills and incidents are to be determined accurately and consistently throughout the region. For example, incident investigators must not confuse "what happened" with spill causation, since the what? is only part of understanding the root cause of spills. The key questions are "why did it happen" and "what could have been done to prevent the spill?" It is our intent to develop a training program that will ensure that the right questions get asked, and asked correctly.

A prototype Investigator Training Course was conducted by the Washington State Department of Ecology and Office of Marine Safety in early 1997. The course is being evaluated for its usefulness and applicability to other member agencies. The Investigator Training Course covers the following topics:

- Investigation Planning and Preparation
- Investigation Protocols (legal aspects, cultural attitudes, etc.)
- Evidence Types, Collection, and Analysis
- Causal Models and Cause Analysis and Determination
- Human Factors in Accident Causation

F. Other Initiatives

- The US Coast Guard is working with a select group of marine safety offices in a project aimed at training personnel to acquire more information on human factors which contribute to spills, especially fatigue factors. While this effort will be very helpful, it is not sufficiently comprehensive for our purposes.

- The University of Washington's School of Marine Affair's Safe Marine Transportation (SMART) Forum's Subcommittee on Waterways Management is working to develop a model near-miss reporting system which provides industry with the opportunity to identify and share information about unsafe practices without fear of punitive actions through use of an anonymous reporting system.

- The National Governors Association (NGA) is sponsoring an inland oil spill prevention workgroup of state and US Environmental Protection Agency (EPA) officials which is focused on sharing state and EPA information. Using the Data Dictionary developed by this Task Force project, as well as a data dictionary associated with the data systems used by EPA and the National Response Center, the workgroup will develop a compendium of definitions. The workgroup then plans to develop a compendium of data sources such as permitting and tank registration information, natural resource information, site characterization, incident reports, and other information from the state and local levels. Their final goal is to address how states are using risk based data to prioritize their oil spill prevention, planning, and response workloads.

G. Workgroup Recommendations

The Spill and Incident Data Collection Project Workgroup recommends that the Pacific States/British Columbia Oil Spill Task Force Members sign the accompanying Agreement[1] in order to indicate their acceptance of this project report and the following Recommendations:

[1] Agreement to be developed.

1. The Task Force Member agencies should incorporate the terms and format of the Spill and Incident Reporting Data Collection Dictionary into their data systems by ……...[2]

2. Member agencies should participate in investigator training sessions during the Fall of 1997.

3. Member agencies should begin submitting data to the States/BC Oil Spill Task Force for compilation by …….. and quarterly thereafter, no later than three months following the end of the reporting quarter. [3]

4. Member agencies should agree to the following criteria for spill information which will be collected and compiled consistent with this report are as follows:
   - The minimum spill size on which information will be submitted includes all liquid petroleum hydrocarbon spills where at least 42 gallons (1 petroleum barrel) or more of oil has reached surface waters and/or spills of over 500 gallons which affect the land. Surface waters includes both marine and fresh waters, but exempts ground waters.
   - Data will be collected on spills from all sources for which participating agencies receive reports. This includes vessels, marine terminals, refineries, other facilities, transmission pipelines, production facilities, underground storage tanks, truck and rail transport, and other significant sources of spills.
   - Near miss information will be provided by those member agencies which collect that information.

5. Understanding the challenge of making changes in database systems on a national level, the Workgroup recommends that Canadian and US federal agencies evaluate and consider adopting the definitions in the Data Dictionary.

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[2] This date is negotiable. Each member agency will agree to an implementation date and process. The Project Co-Chairs recommend that each agency consider implementing a parallel, stand alone system on an interim basis, ultimately incorporating this into their full data system as feasible. Ecology can provide a copy of their Microsoft Access system to be used during this interim phase.

[3] This date is a function of the date which is eventually agreed to per #1.