Chapter 1
INTRODUCTION

In this chapter:

- ***What are the objectives of this review?***
- ***What are Caps?***
- ***What is the scope of this review?***
- ***How is this review organized?***

1.1 PURPOSE AND OBJECTIVES

In accordance with federal regulations (33 CFR 155 and 33 CFR 154), the purpose of this review is to determine if proposed increases in oil spill response plan equipment capability limits ("Caps") are practicable. *Webster's New World Dictionary* defines the word "practicable" as "that can be done or put into practice; feasible, as in a practicable plan." *Webster's* defines "feasible" as "capable of being done, reasonable, capable of being used effectively." This review studies whether proposed Caps will place a practicable limit on the amount of resources that a vessel or facility plan holder must ensure available by contract to respond to a worst case discharge (WCD) scenario. Federal regulations charge responsibility for this review to the United States Coast Guard (USCG) and require the review to address the following specific items:

- Increases in skimming efficiencies and technology
- Oil tracking technology
- High rate response techniques
- Other applicable response technologies
- Increases in the availability of private response resources

To fulfill the purpose outlined in the federal regulations, the objectives of this Caps review are to determine whether:

- A 25% increase in the mechanical recovery Caps is practicable at this time as proposed in the regulations. A further increase in mechanical recovery Caps will be practicable in 5 years. Note: In this report, mechanical recovery focuses primarily on those equipment and techniques designed to prevent oil from reaching the shoreline, e.g., collection and containment booming, skimming, and protection/deflection booming.

- A dispersant Cap is practicable, and if so, whether dispersant equipment capabilities should result in a decrease (offset) in the mechanical recovery Caps that a vessel or facility plan holder is required to maintain. Note: In this report, dispersant use involves the application of a National Product Schedule listed chemical dispersant via aircraft or surface craft to oil spilled on the water.
- An *in situ* burn Cap is practicable, and if so, whether *in situ* burn equipment capabilities should result in a decrease (offset) in the mechanical recovery Caps that a vessel or facility plan holder is required to maintain. Note: *In situ* burning as used throughout this document refers to a response technique which involves the use of fire-resistant containment booms in open water to corral and concentrate oil to a sufficient thickness to allow that oil to be ignited and burned. This report does not address *in situ* burning on shore, in marshes or other confined areas.
- Advances in oil spill tracking technologies have enhanced the effectiveness of oil spill response.

1.2 BACKGROUND

In February 1993, the USCG issued interim rules requiring certain vessels and marine transportation-related facilities to develop oil spill response plans. The final rules for vessels and facilities were incorporated into federal regulations in 1996 (33 CFR 155 and 33 CFR 154, respectively). The regulations require that each vessel and facility engaged in transporting, storing, and handling oil as cargo ensures by contract or other approved means the availability of mechanical recovery equipment necessary to respond to an oil discharge from that vessel or facility. The goals of these regulations are to ensure prompt response to and effective cleanup of oil discharged anywhere within U.S. waters. The USCG, however, recognizes that there are limits to the capabilities of mechanical recovery equipment available to accomplish these goals. The regulations, therefore, establish equipment capability limits (Caps) on the amount of resources that vessel and facility plan holders are required to ensure available by contract or other approved means (Table 1-1). The vessel or facility plan holder must ensure *by contract* the availability of the resources required to respond to a spill scenario that is less than or equal to the Caps. If a vessel or facility plan holder needs equipment in excess of the Caps to respond to a specific scenario, an oil spill response plan is only required to *identify* additional resources.

The Caps are expressed as an effective daily recovery capacity (EDRC), which is the amount of oil that can be recovered during a day of cleanup effort. EDRC is limited by the existing capability and technology of oil cleanup resources, transportation logistics, and commercial availability of equipment. The 1993 Caps account for these limitations while trying to ensure prompt, effective responses to vessel and facility discharge scenarios, including WCD scenarios. The regulations further address logistical and availability limitations by specifying response times (Tier I, Tier II, and Tier III response times) as shown in Table 1-2. A response plan must ensure that the contracted resources are capable of being deployed to the spill scene within a specified time limit.

TABLE 1-1. Current and Proposed Equipment Capability Limits on Mechanical Recovery Equipment for Vessels and Facilities.

	1993 CAPS (BPD)			PROPOSED INITIAL INCREASE (BPD)		
GEOGRAPHIC AREA	**TIER I**	**TIER II**	**TIER III**	**TIER I**	**TIER II**	**TIER III**
All except rivers and canals and Great Lakes	10,000	20,000	40,000	12,500	25,000	50,000
Great Lakes	5,000	10,000	20,000	6,350	12,300	25,000
Rivers and canals	1,500	3,000	6,000	1,875	3,750	7,500

Note: bpd, barrels per day.

TABLE 1-2. Tier Response Times (in Hours) from the Time of Discovery of a Discharge.

	VESSELS			FACILITIES		
GEOGRAPHIC AREA	**TIER I**	**TIER II**	**TIER III**	**TIER I**	**TIER II**	**TIER III**
Higher volume port	12	36	60	6	30	54
Great Lakes	18	42	66	12	36	60
All other rivers and canals, inland, nearshore, and offshore	24	48	72	12	36	60
Open ocean (plus travel time)	24+	48+	72+	n/a	n/a	n/a

For many vessels and facilities, the Caps are far below the EDRC required to clean up a WCD scenario. The USCG assumed that equipment capability and availability would improve after establishing the 1993 Cap levels; therefore, the regulations stipulated that the Caps should be raised by 25% in 1998 and by as much as another 25% in 2003. Prior to implementing the 1998 increase, the USCG is required by the regulations to conduct a review to determine if the increases are practicable. The regulations also charge the USCG with proposing a specific Cap increase for 2003. This Caps review presumes that if increases are determined to be appropriate, the first increase would be implemented upon publication of a notice by the USCG and any subsequent increase would be implemented 5 years later.

1.3 SCOPE

This Caps review examines whether it is practicable to increase the existing mechanical equipment Caps by 25% as proposed in the regulations. This review focuses on whether, in the last 5 years, there has been:

- Increasing availability of mechanical recovery equipment around the United States.
- Increasing effectiveness of mechanical recovery equipment in removing oil from the water in the three operating environments established in the regulations.

- Technical advancement in mechanical recovery equipment (especially related to skimming and boom technologies and design).

In addition, the review examines whether there have been sufficient advances in technology and/or policy to make establishing equipment Caps for high-rate removal technologies, specifically dispersants and *in situ* burning, practicable. The review also investigates whether a requirement for high-rate removal technology Caps should result in a reduction in the mechanical recovery Caps that a vessel or facility plan holder is required to maintain. For both mechanical recovery equipment and high-rate removal technologies, the impact of advances in oil spill tracking technology is reviewed.

Technologies that fill only specialty niches in spill response are not included in this review. Various chemical countermeasures such as herding agents, solidifiers, elasticity modifiers, and surface washing agents are not primary response options but may be used in conjunction with mechanical recovery, dispersants, or *in situ* burning to enhance those primary response options. None of these chemical countermeasures is routinely or widely used; none has gained wide acceptance as having a potentially substantial impact on a massive oil discharge response. Although these technologies may have a place in a response, that place is typically in conjunction with shoreline cleanup activities when there is time to consider appropriate use and acquire needed materials. Likewise, bioremediation is seen by many as an important spill response tool in certain shoreline environments, but generally is used only as a "polishing tool" that is applied to remaining oil residue when all other response options have been exhausted. As with most chemical agents, there is time during spill response to plan for and acquire necessary bioremediation agents; therefore, there is no need to require advance stockpiling.

Another aspect of response not specifically addressed in this review is the effect of changes in the way the response community prepares for and responds to oil spill incidents:

- Since 1993, both government and industry have expended tremendous energy in preparing contingency and response plans. These deliberate planning efforts, undertaken at the local area level, have helped the response community to better define the risk of spill incidents and identify threatened environmental and economic resources. Based on that analysis, plan holders have identified response priorities (e.g., which areas to protect first) and the mix of response resources most appropriate to achieve protection. Once response strategies are established, plan holders identify and acquire response equipment and personnel necessary to implement those strategies. All these changes should result in increased response efficiency.
- Establishing Area Committees to foster government-industry communication and participation in joint development of contingency and response plans has aided planning and exercise effectiveness as well as the development of integrated response management mechanisms.
- The National Preparedness for Response Exercise Program (PREP) has established standards for exercising both government and industry plans separately and together. Under PREP, each government contingency plan and

industry response plan is exercised at least annually to test plan effectiveness and ensure that personnel required to execute the plan are familiar with the plan and their responsibilities.

- The USCG has implemented an Incident Command System (ICS) to establish a response structure with well-defined functions so that all government and industry participants know where they fit in the organization. Spill response in the United States is a complex undertaking that demands cooperation among federal agencies, affected state representatives, and the specific vessel or facility that is responsible for the discharge (Responsible Party, RP). All spill response participants have responsibilities for minimizing adverse spill impacts on the environment and the economy, and it is critical that they work together.
- The Interagency Coordinating Committee on Oil Pollution Research, a committee created by the Oil Pollution Act of 1990 (OPA 90) containing representatives from 13 federal agencies, released its revised Interagency Oil Pollution Research and Technology Development Plan in 1997. This plan provides guidance to the oil spill response community for improving the effectiveness of response technology through research and development (R&D) programs and testing.

These and other operational changes have had a positive impact on the ability to employ mechanical and high-rate removal technologies in an incident. Some areas have strong Area Committees with extensive community involvement, while others focus more on implementing a strong ICS. Some areas are focused on testing response strategies through actual exercises, while others are concentrating on logistics support and operational readiness concerns. There is evidence that local areas are learning from one another: advances in one area are being adopted in others. ICS was adopted by some USCG units in California first and ultimately spread throughout the country. Dispersant and *in situ* burn pre-approvals were adopted in Alaska in 1989 and Texas in 1994 and quickly spread throughout the rest of the United States between 1995 and 1997. In fact, even though they are not fully evolved yet, Area Committees, contingency and response plans, and incident command concepts are converging toward a standardized system of planning, exercise, and response management across the country. The positive impacts of these developments are not readily quantifiable in terms of EDRC. This review, however, assumes that the effective planning and management mechanisms in place facilitate the deployment and efficient use of any resources required by the Caps.

1.4 APPROACH TO AND ORGANIZATION OF THIS REVIEW

This review was prepared by a team of policy and technical professionals with extensive experience in oil spill preparedness and response; USCG policy and regulatory development; and technical, operational, and policy considerations affecting mechanical recovery, dispersant, and *in situ* burn equipment and use. The team examined peer-reviewed, scientific, and technical papers as well as government documents, including *Federal Registers*, government reports, the USCG spill database (Marine Safety Information System, MSIS), and comments to the docket solicited by the USCG regarding the proposed Cap increase.

This review is divided into six chapters:

Chapter 1. Introduction. This section identifies the objectives and scope of this Caps review and the approach used in completing this project.

Chapter 2. Historical Opportunities for Use. This chapter examines historical opportunities for use of mechanical recovery, dispersants, and *in situ* burning since 1993, as well as opportunities for use based on WCD scenarios from Area Contingency Plans (ACPs) throughout the United States. The chapter provides an estimate of the potential frequency of use of any or all these response techniques in U.S. waters, along with an estimate of the quantities of mechanical recovery, dispersant, and/or *in situ* burn equipment necessary for effective response in a given incident.

Chapter 3. Assessment of the Impact of Mechanical Recovery Improvements on Response Capability. This section explores advances in mechanical recovery equipment technologies and availability since 1993.

Chapter 4. Assessment of the Impact of Dispersant Use on Response Capability. This chapter focuses on advances in dispersant technology and policy/planning changes that promote greater opportunity for dispersant use in spill response since 1993. It also reports on current dispersant stockpiles and evaluates parameters for determining a practicable dispersant equipment capability.

Chapter 5. Assessment of the Impact of *In Situ* Burning on Response Capability. This chapter focuses on advances in *in situ* burn technology and policy/planning changes that promote greater opportunity for *in situ* burn use in spill response since 1993. It also reports on current *in situ* burn equipment stockpiles and evaluates parameters for determining a practicable *in situ* burn equipment capability.

Chapter 6. Conclusions and Recommendations. This chapter summarizes the findings from each chapter and recommends changes to the USCG regarding 33 CFR 155 and 33 CFR 154 relative to mechanical recovery, dispersant, *in situ* burn, and oil spill tracking technology equipment Caps.