



M/V NEW CARISSA INCIDENT

IN-SITU BURNING *SMART* MONITORING PLAN

1. BACKGROUND

The M/V New Carissa, is hard aground 2.7 miles north of the entrance to Coos Bay. The structural integrity of the ship has been compromised, and oil had been leaking out of the freighter, impacting the shoreline. A storm system is predicted for the next few days, likely causing further damage to the ship, and possibly causing some or all of the remaining oil to spill from the ship. In-situ burning of the fuel on the ship was selected as a response method, and monitoring for in-situ burning operations was initiated for this incident, based on the Special Monitoring of Advanced Response Technologies (SMART) guidelines.

2. MONITORING PROCEDURES

2.1 Goal

To provide real-time ground level monitoring data on particulate concentration trends at selected locations, to assist the Unified Command with decision-making during the situ burning operations.

2.2 General Considerations

In general, SMART is conducted when there is a concern that the general public may be exposed to smoke from the burning oil. It follows that monitoring should be conducted when the predicted trajectory of the smoke plume indicates that the smoke may reach population centers, and the concentrations of smoke particulates at ground level may exceed safe levels. Monitoring is not required, however, when impacts are not anticipated.

2.3 Sampling and Reporting

Monitoring operations deploy one or more monitoring teams. Each team uses a real-time particulate monitor (such as the DataRAM) capable of detecting the small particulates emitted by the burn (ten microns in diameter or smaller) and other equipment required for collecting and documenting the data. Each monitoring instrument provides an instantaneous particulate concentration as well as the time-weighted average over the duration of the burn. The readings are displayed on the instrument's screen and stored in its data logger. In addition, particulate concentrations are logged manually at fixed intervals by the monitoring team in the recorder data log.

The monitoring teams are deployed at designated areas of concern to determine ambient concentrations of particulates before the burn starts. During the burn sampling continues and readings are recorded both in the data logger of the instrument and manually in the recorder data log. After the burn has ended and the smoke plume has dissipated, the teams remain in place for some time (15-30 minutes) and again sample for and record ambient particulate concentrations.

During the course of the sampling, it is expected that the instantaneous readings will vary widely. However, the calculated time-weighted average readings are less variable, since they represent the average of the readings collected over the sampling duration, and hence are a better indicator of particulate concentration trend. When the time-weighted average readings approach or exceed the Level of Concern (LOC), the team leader conveys this information to the Burn Coordinator and the Scientific Support Team, which reviews and interprets the data and passes it, with appropriate recommendations, to the Unified Command.

2.4 Monitoring Locations

Monitoring locations are dictated by the potential for smoke exposure to human and environmentally sensitive areas. Taking into account the prevailing winds and atmospheric conditions, the location and magnitude of the burn, modeling output and the location of population centers, the monitoring teams are deployed where the potential exposure to the smoke may be most substantial. Precise monitoring locations should be flexible and determined on a case-by-case basis, depending on weather conditions and specific needs at the time of the burns. Possible location of the monitoring teams are provided in the map attached. These locations may change to best serve the goals of the monitoring operation.

It should be emphasized that, while visual monitoring is conducted continuously as long as the burn takes place, air sampling using SMART is not required if there is no potential for human exposure to the smoke.

2.5 Level of Concern

The Level of Concern for SMART operations follows the National Response Team (NRT) guidelines. Currently (February 1999), NRT recommends a conservative upper limit of 150 micrograms of PM-10 per cubic meter of air, averaged over one hour. Furthermore, NRT emphasizes that this LOC does not constitute a fine line between safe and unsafe conditions, but should instead be used as an action level: If it is exceeded substantially, human exposure to particulates may be elevated to a degree that justifies further considerations for human protection. However, if particulate levels remain generally below the recommended limit with few or no transitory excursions above it, there is no reason to believe that the population is being exposed to particulate concentrations above the EPA's National Ambient Air Quality Standard (NAAQS).

It is important to keep in mind that real-time particulate monitoring is one factor amongst several, including smoke modeling and trajectory analysis, visual observations, and behavior of the smoke plume.

When addressing particulate monitoring for in situ burning, NRT emphasizes that concentration trends, rather than individual readings, should be used to determine whether to continue or terminate the burn. For SMART operations, the time-weighted average (TWA) generated by the particulate monitors should be used to ascertain the trend. The NRT recommends that burning should not take place if the air quality in the region already exceeds the NAAQS and if burning the oil will add to the particulate exposure concentration. SMART can be used to take background readings to provide an *indication* of whether the region is within the NAAQS, before the burn operation takes place. The monitoring teams should report ambient readings to the Unified Command, especially if these readings approach or exceed the NAAQS.

2.6 SMART as Part of the ICS Organization

SMART monitoring forms a group in the ICS organization. The head of this group is the Monitoring Group Supervisor. Under the group there are monitoring teams. Each monitoring team consists of a trained monitor and all the equipment and recording items needed to conduct rapid and efficient monitoring. The teams report to the Monitoring Group Supervisor who directs and coordinates team operations, under the control of the Operations Section Chief, and in full coordination with the Planning section.

2.7 Information Flow and Data Handling

Communication of monitoring results should flow from the field (Monitoring Group Supervisor) to those persons in the Unified Command who have knowledge in interpreting the results and using the data. Typically, this falls under the responsibility of a Technical

Specialist on in-situ burning in the Planning Section of the command structure. For the U.S. Coast Guard, the Technical Specialist is the Scientific Support Coordinator.

The observation and monitoring data will flow from the Monitoring Teams to the Monitoring Group Supervisor. The Group Supervisor forwards the data to the Technical Specialist. The Technical Specialist or his/her representative reviews the data and, most importantly, formulates recommendations based on the data. The Technical Specialist communicates these recommendations to the Unified Command.

Quality assurance and control should be applied to the data at all levels. The Technical Specialist is the custodian of the data during the operation, but ultimately the data belongs to the Unified Command. The Unified Command should ensure that the data is properly archived, presentable, and accessible for the benefit of future monitoring operations.