Recent NIIMS ICS Enhancements for U.S. Spill Response

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Abstract

In 1994, a Task Force called STORMS (STandard Oil Response Management System) was formed by representatives from U.S. Coast Guard, California Department of Fish & Game/Office of Spill Prevention and Response, the petroleum industry, oil spill response organizations and local governments. This Task Force agreed upon a standardized ICS format and developed a Field Operations Guide (FOG) which forms the basis of a unified government-industry approach to ICS for oil spill response. Importantly, the Task Force adopted the ICS of the National Interagency Incident Management System (NIIMS), the primary response management system used in the United States today. This paper focuses on the ICS being used by the U.S. Coast Guard, describes enhancements to the system specific for oil spills, and discusses forthcoming activities related to nationwide training for the U.S. Coast Guard and the public.

1.1 Introduction

The February 1996 adoption of the Incident Command System (ICS) by the U.S. Coast Guard as the management system to be used for oil spill response has lead to a resurgence of interest in the application of ICS as an emergency management tool among government and industry. This paper reviews the key elements of the oil spill Incident Command System as developed by a government/industry task force and which, by being utilized by the U.S. Coast Guard, is likely to become the *de facto* standard for managing oil spills and other marine-related emergencies in the United States. Oil and gas companies currently using ICS are likely to review the developed organizational structure to determine if changes within their ICS or other response-management system are necessary to ensure conformity. Although industry has been a leader in accepting ICS, the reluctance of the U.S. Coast Guard, as the primary federal agency

with authority over coastal zone and marine spills, to accept ICS within their organization has before now been a hindrance to its full acceptance across industry and other government agencies.

1.2 What is the Incident Command System?

The Incident Command System is a management system which has embodied a number of key features important to emergency response, including a modular organization, common terminology, integrated communications, a unified command structure, a manageable span of control, the designation of incident facilities, and the means for comprehensive resource management. The ICS has broad application for managing both planned events, such as celebrations and parades, and emergency incidents. It has been successfully used during a variety of emergency responses, including the extensive western wildfires occurring in late summer 1996, the 1994 Northridge, CA earthquake, the 1993 midwestern floods, the urban search and rescue efforts following the 1995 Oklahoma City bombing, and a number of recent major oil spill responses.

The ICS developed out of requirements described in the early 1970's to fight large forest fires that could extend over thousands of acres and cross several western state boundaries. In these cases, various fire departments having no prior experience of working together would be called upon to respond. As at most emergencies, as responders arrived onscene it became obvious that experience, training, job titles, and managerial responsibilities differed substantially among organizations. Recognizing the need for coordination and integration of these resources, an interagency task force called FIRESCOPE (FIrefighting RESources of California Organized for Potential Emergencies) was formed in 1976 and through which the Incident Command System was developed. In 1980, ICS became part of a national program called the National Interagency Incident Management System (NIIMS), which guides federal agencies having wildland fire management responsibilities. NIIMS added other features to ICS to give it a national utility, including the development of standardized qualification and training programs, control and management of ICS publications, and the mechanism to review and integrate supporting technology.

During the development of ICS, four essential requirements for such a system were recognized.

1. The system must be organizationally flexible to meet the needs of incidents that could vary by size and type.
2. Agencies must be able to use the system on a day-to-day basis for routine situations as well as for major emergencies to ensure a working knowledge of the response system.
3. The system must be sufficiently standardized to enable personnel from various backgrounds, positions, and locations to rapidly meld into a common management structure.
4. The system must be cost effective.

While ICS was first utilized to combat large forest fires in the 1970's, it took many years for it to be actively applied to oil spill response. The catalyst in the United States was clearly the *T/V Exxon Valdez* event of 1989, which involved over 10,000 responders, various state, local, and national agencies, as well as numerous private contractors in addition to Exxon. Lacking such a systemic method to integrate responders, separate government and industry command posts were set up causing numerous instances of overlapping responsibilities and a duplication of field activities. As a result, conflicts between organizations, oftentimes aired in public, erupted over the handling of the spill. Clearly there was a better way.

Following *Exxon Valdez,* many companies embraced ICS, developing so-called "hybrid" versions which utilized ICS elements and nomenclature as appropriate to the particular company. Standard ICS organizational titles and responsibilities were altered depending on company requirements**.** The U.S. Coast Guard also recognized the value of ICS. In its development of the National Preparedness for Response Exercise Program (PREP), the U.S. Coast Guard set evaluation criteria for exercise participants in forming an ICS organization and a Unified Command Structure having state and federal representation in addition to industry. During responses following the August 1993 Tampa Bay spill, the 1994 *T/B Morris J. Berman* grounding and the October 1994 San Jacinto River spill, the predesignated Federal On Scene Coordinators all used ICS and formed effective Unified Command Structures. However, the agency was reluctant to adopt ICS across the organization, leaving it to individual Coast Guard Districts and field units to decide on the level and brand of ICS to adopt or not adopt, as desired.

In 1994, a Task Force called STORMS (STandard Oil Response Management System)

was formed by representatives from U.S. Coast Guard, California Department of Fish & Game/Office of Spill Prevention and Response, the petroleum industry, oil spill response organizations and local governments. This Task Force agreed upon a standardized ICS format and developed a Field Operations Guide (FOG) which forms the basis of a unified government-industry approach to ICS for oil spill response (STORMS Task Force, 1996). Importantly, the Task Force adopted the ICS of the National Interagency Incident Management System (NIIMS), the primary response management system used in the United States today. NIIMS is consistent with the U.S. National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and is the system that was subsequently adopted by the U.S. Coast Guard as it's national oil spill response management system. The adoption of NIIMS for oil spill response provides an extensive source of pre-prepared and low-cost manuals, documentation, standardized forms, and training programs.

2.0 The ICS Organizational Structure

The ICS organizational structure is modular, flexible and can be expanded to meet complex situations or reduced for minor incidents. The objective of the organizational structure is to obtain and then maintain an appropriate span of control over all incident personnel.

The organizational structure developed for oil spills by the STORMS Task Force is presented in Figure 1. It differs slightly from the Standard NIIMS structure in that it contains several positions specific to oil spills. These new positions are indicated by shading in Figure 1. Although the functions need to be addressed in spills of any size, callout of specific personnel to fill each position indicated in this structure would, of course, occur only during very large spill events. For each position, written oil spill responsibilities are available in the FOG, and NIIMS has available additional training and other supporting material. Several positions are new and training require-ments have yet to be developed, although they are likely to be already contained in many industry response plans that were designed using "hybrid" ICS structures.

The Incident Command System is organized around five major management activities or functions that must be performed during every incident: Command, Planning, Operations, Logistics, and Finance/Administration. Command has overall responsibility for the incident, determines objectives and establishes priorities based on the nature of the incident, available resources and company/agency policy. Planning develops an Incident Action Plan to accomplish

the objectives, collects and evaluates information, and maintains the status of assigned resources. Operations develops the tactical organization and directs all resources to carry out the Incident Action Plan. Logistics provides the resources and all other services needed to support the organization. Finance/Administration monitors costs related to the incident, provides accounting, procurement, time recording, cost analysis, and overall fiscal guidance.

On small incidents, these five activities may be managed by a single individual. Large incidents usually require each of these activities to be established as separate sections within the organization.

The Incident Commander leads the Command function. In the United States, Incident Command is jointly shared by at least three Incident Commanders, representing the federal and state governments and the responsible party. (If more than one state or responsible party are involved, each will provide an Incident Commander.) Together, they form a Unified Command Structure to ensure an integrated industry/government response. However, as is well-known, the responsible party is mandated to take the lead in responding to the spill, with state and federal representatives providing support as needed to effectively handle the incident. The federal Incident Commander (Federal On Scene Coordinator) is required by statute to "direct" the cleanup operations and exercises a "51% vote" on those occasions where consensus cannot be reached within the Unified Command. Among the command and general staff are the members of Unified Command's key support staff: the Safety Officer, Liaison Officer, Information Officer, and four Section Chiefs (Operations, Planning, Logistics, and Finance/Administration). Under a Unified Command Structure, each position in the organization is filled by most qualified individual for either industry or government.

Note that Figure 1 shows three positions linked to the Liaison Officer: Agency Representative, Investigation Representative, and the NRDA (Natural Resources Damage Assessment) Representative. Locating the position of NRDA Representative, whose role is to determine spill-related damages which often result in financial assessments against the responsible party, has been somewhat controversial. Previously, it was placed as part of the scientific functions associated with the Planning Section's Situation Unit which has the responsibility of guiding efforts to prevent and reduce damages. The present location may alleviate some of the prior conflicts and serve to better fit this legally mandated position into the ICS structure.

During the response to a major oil spill, the coordination of resources and support between agencies and jurisdictions can be complex. To facilitate this function, ICS has established a Multi-Agency Coordination System (MACS). Within MACS, a MAC Group, comprised of agency administrators or designees from the agencies involved or heavily committed to the incident, is formed to provide high level support to the Unified Command Structure. The MAC Group meets at a location away from the Incident Command Post or confers by tele-conferencing to coordinate such strategic issues as incident priority determination, critical resource use priorities, communications systems integration, information exchange and inter-governmental decisions. The MACS functions in much the same manner as do Regional Response Teams (RRT), so designated in the National Contingency Plan. This apparent overlap between the MACS and the RRT is not yet fully clarified. As indicated by the dashed line leading to the Unified Command triangle in Figure 1, the MAC Group provides a coordination and support mechanism to the members of Unified Command, but does not exercise command authority over them.

Within Sections are Branches, Groups, and Units, dependent on the nature and complexity of the spill incident and the number of personnel involved. In the Planning Section, the Standard NIIMS ICS designates the following Units: Situation, Resources, Documentation, Demobilization, and Technical Specialists. For oil spills, several Technical Specialists are specifically defined; these include Disposal Specialist, Scientific Support Coordinator, Alternative Response Technology Specialist (e.g. in-situ burning and dispersants), and Legal Specialist. Technical Specialists are initially assigned to the Planning Section, but may be reassigned anywhere in the organization where they are needed. The Legal Specialist, for instance, is often reassigned and reports directly to the Incident Commander. The Task Force also added several positions to the Situation Unit including Display Processor, Field Observer, Trajectory Analysis Specialist, Geographic Information Specialist, and Resources at Risk Specialist.

For oil spills occurring in the coastal zone where the U.S. Coast Guard provides the Federal On Scene Coordinator, the Scientific Support Coordinator is designated by the National Contingency Plan as being a NOAA (National Oceanic and Atmospheric Administration) representative. Industry response plans have also included several other Technical Specialists and may show an entire Environmental Unit under Planning, completely separate from the

Situation Unit. However, these differences are relatively minor and integration with this new format should be straight-forward.

Conflicts, however, can arise in cases of conflicting allegiances, particularly in cases where state or federal agency personnel fill ICS positions. Under ICS, the organizational command structure takes precedence over agency or industry responsibilities; for example, the Planning Section Chief provides direction for all personnel occupying positions within that section. However, state or federal personnel, for example, associated with wildlife collection/rehabilitation may have the dual (and conflicting) role of filling agency responsibilities while still trying to support the ICS organization. These conflicts can be avoided through ICS training, spill drills with industry and government participating, and other forms of education related to use of the ICS management procedures.

In the Operations Section, Standard NIIMS ICS designates by name the Air Operations Branch with its supporting supervisors and coordinators. Other Branch/Group positions are left untitled, to be filled in depending on the kind of incident and type of tactical operations required. In their development of the ICS for oil spill response, the petroleum industry has historically been more explicit in naming these positions. The STORMS Task Force followed this tradition and designated three Branches (Recovery and Protection, Emergency Response, and Wildlife) in addition to Air Operations. As illustrated in Figure 1, there are now various Groups designated below each Branch (e.g., the Recovery & Protection Branch contains Protection, On Water Recovery, Shoreside Recovery, Disposal, and Decontamination Groups). Corporate response plans may include other Branches and supporting Groups, but generally show entities having similar functions. Otherwise these positions are already fairly well-accepted designations across the response industry.

The Logistics Section is almost Standard NIIMS ICS, comprised of two Branches: Services and Support. Services has three units: Communications, Medical, and Food, while the Support Branch has Supply, Facilities, and Ground Support. Specific to oil spill response, a Vessel Support Unit and two subdivisions of the Supply Unit (Personnel and Equipment/Materials) have been added.

Lastly, the Finance Section consists of four units: Time, Procurement, Compensation/Claims, and Cost. This is the same under both Standard ICS and that adopted by the STORMS Task Force.

3.0 The Use of Standardized Forms

The management system used in the oil spill ICS provides the means to quickly transition the response from the initial "emergency" phase to a more methodical "project" phase. As with most emergencies, the magnitude of impact is unknown and resources are limited during the initial stages of a spill. Application of the ICS management process enables the appropriate resources to be effectively brought onscene and utilized such that the reactionary nature of the event, becomes routine, predictable, and therefore manageable.

To reduce the startup time during emergencies, the STORMS Task Force developed and tested a series of standardized, non-proprietary forms (National Wildfire Coordinating Group, 1995). These forms, listed in Table 1, assist with spill management and the creation of Incident Action Plans (IAP) which are prepared for defined operational periods and govern the entire response effort. These forms, able to be copied or computer-based, do much to focus the effort externally on combating the incident rather than internally on worrying about form format and distribution procedures. As experience from exercises and actual responses is gained, the STORMS Task Force will continue to modify the forms and develop additional forms as necessary.

4.0 The Planning Cycle

A primary management tool of ICS is use of a planning cycle. As it involves all personnel, it is tightly coordinated between the members of Unified Command, the Command Staff and the four Sections. The planning process begins with gaining an understanding of the situation and establishing incident objectives and strategies. The members of Unified Command are solely responsible for setting the objectives. Designated staff then develop the tactical direction to attain the objectives and strategies and assign the incident resources as needed. Once collated, the incident objectives, organization assignments, tactical work assignments plus other supporting forms become the Incident Action Plan to be approved by the members of Unified Command. The plan is then implemented and evaluated during the next operational period to determine it's effectiveness and the cycle repeats itself through successive operational periods until the response is complete.

The duration of the planning cycle is determined by the particular requirements of the

incident. The cycle may be 6 hours, 12 hours, 48 hours, etc., although a 4-6 hour planning cycle is common at the onset or "emergency" phase of a oil spill response. The duration of the planning cycle is likely to change as the incident progresses from the emergency phase to the "project" phase. In the early stages of the project phase, 24 hours is a typical length. In later stages, it may increase to several days or even a week. The length of the planning cycle is determined solely by the particular character and needs of each incident.

Table 1. ICS Forms for Oil Spills (modified from National Wildfire Coordinating Group, 1996). The Preparer and Addressees are Indicated. Figures 2 - 6 Indicate the Schedule of Form Input and Output with Respect to the Planning Cycle.

ICS FORM NO.	FORM TITLE	PREPARED BY	PRIMARY ADDRESSEE	INFO ADDRESSEE
201 #	Incident Briefing	Initial Respondee Incident Command	Relieving Incident Command/Unified Command, General Staff	Command Staff, Appropriate Supervisory Staff
202 #	Response Objectives *	Planning Section Chief	Incident Action Plan	All Supervisory Personnel
203 #	Organization Assignment List *	Resources Unit Leader	Incident Action Plan	--
204 #	Division Assignment List *	Operations Section Chief & Resources Unit Leader	Incident Action Plan	--
205	Incident Radio Communications Plan	Communications Unit Leader	Incident Action Plan, Communications Center Manager	--
206	Medical Plan *	Medical Unit Leader	Incident Action Plan, (or incorporated into 202/204)	--
207	Organization Chart	Resources Unit Leader	Incident Command Post	--
OS-209 +	Incident Status Summary	Situation Unit Leader	General Staff	Incident Commander, Command Staff, Incident Command Post, Joint Information Center, Planning Section Unit Leaders
210	Status Change Card	Communications Center	Resources Unit Leader	Communications Unit Leader

ICS form has been slightly modified for oil spills, either version can be used; ** No ICS form equivalent; * Commonly used in written Incident Action Plans (IAP); + Form is significantly changed from the original ICS version.

Table 1. ICS Forms for Oil Spills (Cont.).

ICS FORM NO.	FORM TITLE	PREPARED BY	PRIMARY ADDRESSEE	INFO ADDRESSEE
211	Check-in List	Resources Unit at Multiple Locations	Resources Unit Leader, Finance/ Administration Section Chief	--
213	General Message Form	Any Message Originator	Message Addressee	--
214	Unit Log	All Positions	Documentation Unit Leader	--
215	Operational Planning Worksheet	Operations Section Chief & Planning Section Chief	Resources Unit Leader	--
216	Radio Re-quirements Worksheet	Communica-tions Unit Leader	Communications Unit Leader	--
217	Radio Frequency Assignment	Communica-tions Unit Leader	Communications Unit Leader	--
218	Support Vehicle Inventory	Ground Support Unit Leader	Resources Unit Leader	--
219	Resources Status Card	Resources Unit Leader	Resources Unit Leader	Documentation Unit Leader (at demobilization)
220 #	Air Operations Summary	Operations Section Chief	Air Operations Personnel	Resources Unit Leader
221	Demobilization Checkout	Demobilization Unit Leader	Individual Resources	Demobilization Unit Leader
OS-230 **	Daily Meeting Schedule	Situation Unit Leader	Incident Command Post	All Supervisory Personnel
OS-231 **	Meeting Description	Meeting Facilitator	Incident Command Post	Appropriate Meeting Attendees

ICS form has been slightly modified for oil spills, either version can be used;
** No ICS form equivalent;
* Commonly used in written Incident Action Plans (IAP);
+ Form is significantly changed from the original ICS version.

Table 1. ICS Forms for Oil Spills (Cont.)

ICS FORM NO.	FORM TITLE	PREPARED BY	PRIMARY ADDRESSEE	INFO ADDRESSEE
OS-232 **	Resources at Risk Summary *	Situation Unit Leader	Incident Action Plan	Scientific Support Coordinator
**	General Plan	Planning Section Chief	Appropriate Division/Group/ Unit Personnel	---
**	Executive Summary	Planning Section Chief	Incident Command Post	Command & General Staff, Joint Information Center
**	ICS Incident Action Plan Cover *	Situation Unit Leader	Incident Action Plan	--
**	ACP Site Index/ Response Actions	Situation Unit Leader	Incident Command Post	--
**	Initial Notification Sheet/ Incident Information (ACP, Annex 1, Tab A)	Person receiving initial report. Updated by Situation Unit Leader	Incident Commander	Command & General Staff, Incident Command Post, Joint Information Center

ICS form has been slightly modified for oil spills, either version can be used;
** No ICS form equivalent; * Commonly used in written Incident Action Plans (IAP);
+ Form is significantly changed from the original ICS version.

Several meetings are prescribed and are necessary to sustain an effective planning cycle. Each meeting is specific in purpose and will remain short providing attendees come prepared and maintain a focus on the meeting's specific objective. Other meetings are called only as needed. As the incident matures into its project phase, the planning cycle and meetings fall into a predictable pattern. As other particular response issues arise, the management system is able to effectively deal with each.

Even though tactical operations often cease at night for safety reasons, the planning cycle continues over a 24 hour period. The evening and nighttime hours provide an excellent opportunity to catch up on the previous day's events and complete the planning for the next

day's activities. Shift changes are often staggered among Sections and Incident Command to maintain continuity and avoid excessive confusion caused by a complete change in personnel at one time.

4.1 Integrating ICS Forms and Meetings into the Planning Cycle

The integration of the planning cycle, meetings, and forms is summarized in planning cycle guides developed for the Command and General Staff and for each Section in Figures 2 through 6. These guides contain the sequence of form input and output, and when used in conjunction with Table 1, indicate the respective preparer and receiver(s). They were developed by first completing a planning cycle for the entire process, and then repositioning the meetings, forms and activities of importance to each organizational component onto its own individual planning cycle guide. All planning cycle guides are integrated so that common events occur at the same positions on each diagram. Since the Command and General Staff and Planning Section are more involved in planning cycle actions, the diagrams for these groups contain more information.

The planning cycle guides indicate a sequence but not a time clock because the duration of a planning cycle may vary. The circle can be entered at any point to initiate a cycle. Numbers "0", "3", "6" and "9" around the circles in Figures 2 through 6 indicate the sequence based on a 12 hour operational period. All guides contain the following general format. Entry into any of the five cycle guides at the "0" position indicates the meetings to be held and forms needed in preparation for upcoming Planning Meetings. At the "3" position, all attend Planning Meetings to set the course for the next operational period. Moving clockwise, assigned staff members complete the detailed planning and the necessary forms that make up the Incident Action Plan. The plan is completed and submitted to the Incident Commander at the "10" position, and approved, promulgated and briefed during an Operations Briefing at the "11" position. The cycle then begins anew.

As an example of how the planning cycle guides and the ICS forms of Table 1 interact, consider the Planning Section Planning Cycle Guide in Figure 4. A double-headed arrow labeled "OS-231 Planning Meeting (PSC)" is shown at the "3" position (the OS signifies a specially-developed Oil Spill form). Note that for these forms, the ICS position listed within parentheses associated with arrows exiting the circle indicates the form's preparer. If a meeting is involved,

it illustrates the facilitator. In the example above, the double-headed arrow indicates that the Planning Meeting is facilitated by the Planning Section Chief (PSC) and that other positions within the Planning Section also attend.

Continuing with the Planning Section Planning Cycle Guide in Figure 4, the double-headed arrow past the "6" position contains the label "202 (PSC), 203 (R.U.L.), 204 [R.U.L. (Assist by OPS)], OS-232 [S.U.L. (Assist by SSC & RAR)] and Incident Maps (S.U.L.)". These notations used in conjunction with Table 1 indicate that:

- Form 202, Response Objectives, is prepared by the Planning Section Chief and is used by the Planning Section as part of the Incident Action Plan;
- Form 203, Organization Assignment List, is prepared by the Resource Unit Leader (Planning Section) and is used by the Planning Section as a part of the Incident Action Plan;
- Form 204, Division Assignment List, is prepared by the Resource Unit Leader (Planning Section) with the help of the Operations Section Chief and is used by the Planning Section as a part of the Incident Action Plan;
- Form OS-232, Resources at Risk, is prepared by the Situation Unit Leader (Planning Section) with assistance from the Scientific Support Coordinator and Resources at Risk Specialist and is used by the Planning Section as a part of the Incident Action Plan; and the
- Incident Maps are assembled by the Situation Unit Leader (Planning Section) and are used by the Planning Section as a part of the Incident Action Plan.

Using these examples, the planning cycle guides can be interpreted and utilized for incident planning to illustrate the timing of planning events, form completion and distribution, and the development and approval of the Incident Action Plan. Their use will also serve to assist in transitioning the response to the "project" phase and to increase overall response efficiency.

5.0 ICS Training

As with all response plans, training programs and simulation exercises provide the means to become efficient in the application of Incident Command System. Fortunately, as ICS has been in practice for over a decade, the procedures and levels of training are well defined and supported by specially designed curricula and training materials. As illustrated in Table 2, the training program is divided into four categories, each having a series of related modules. Table 2 also provides the estimated number of classroom hours associated with each program.

The first level (I-100) is a general introduction to ICS designed for those who may be assigned to a response but have minimal requirements for knowing system details. The second level (I-200) covers the principals of ICS in greater detail and includes special instruction on organization, facilities, resource terminology, and assigned responsibilities. This program level is designed for those that can reasonably be expected to actively participate in the response, both supervisory and technical personnel, and will need to know the basics of ICS to adequately perform their response task. The I-100 course takes on the order of 2 hours while 12 hours is minimally necessary to sufficiently cover the I-200 series. Many U.S. petroleum companies present the I-200 series prior to conducting a day-and-a half simulation exercise which then reinforces the material learned.

The next level of training, designated as I-300 Intermediate ICS, includes several more advanced modules on organization, resource management, planning, and air operations. It also covers the steps in organizing the response as the incident develops. Designated personnel filling the response leadership roles, including Command and General Staff and Unit Leaders, would take this series. Additional modules are available as part of the series for several intermediate level positions, e.g. Documentation Unit Leader, Situation Unit Leader, etc. The last level, I-400 Advanced ICS, covers the development of large-scale response organizations, the role of Command and General Staff in such organizations, and planning, logistical, operational, and financial considerations. This level would assist the petroleum company's response managers in preparing for major events. Additional training is available on coordinating with government, and the I-400 series also includes training modules specific for positions within the Command and General Staff. The usual time allotments for the base I-300 and I-400 series are 27 and 22 hours, respectively.

Simulation exercises are an integral part of the training program and vary greatly in size and complexity. There are regulations that designated facilities conduct a tabletop spill management team exercise on a annual basis. At the other end of the spectrum are the Area PREP exercises conducted on a regional level that commonly involve several hundred persons from the sponsoring petroleum company, government, and affected stakeholders. These exercises do much to improve internal response coordination and offer an excellent means of acquainting the interested public with the company's response capabilities.

Table 2. Summary of the ICS training program and associated modules.

MODULE	COURSE TITLE	EST. HOURS
I-100	**INTRODUCTION TO ICS**	*(2 total)*
1	ICS Orientation	2
I-200	**BASIC ICS**	*(12 total)*
2	Principles and Features of ICS	2
3	Organizational Overview	4
4	Incident Facilities	2
5	Incident Resources	2
6	Common Responsibilities	2
+	Additional courses for lower ICS positions (manager)	
I-300	**INTERMEDIATE ICS**	*(27 Total)*
7	Organization and Staffing	6
8	Organizing for Incidents or Events	5
9	Incident Resources Management	4
10	Air Operations	4
11	Incident and Event Planning	8
+	Additional courses for Unit Leaders/Supervisors	
I-400	**ADVANCED ICS**	*(22 Total)*
12	Command and General Staff	6
13	Unified Command	6
14	Major Incident Management	4
15	Area Command	6
+	Additional courses for Command and General Staff positions	
++	Special courses for Multi-Agency Coordination and ICS for Executives	

6.0 What's Next?

The STORMS Task Force Field Operations Guide and the ICS Forms Catalog for oil spills published by the U.S. Coast Guard are being widely requested by both government and industry, and are being distributed free-of-charge via the internet

(http://www.dot.gov/dotinfo/uscg/hq/g-m/gmhome.htm). The STORMS Task Force remains active and will continue to improve the tools needed for ICS implementation, particularly the Field Operations Guide. Port Area Committees across the U.S. are modifying their Area Contingency Plans to include ICS as the structure to be used in the formation of Unified Commands in their local areas.

ICS training, known as MATES (Multi-Agency Team-building Enhancement Systems), is being provided for government and industry spill management personnel and, in several port areas, government and industry are being trained together to facilitate the formation of a Unified Command organization during major responses. Building on a successful pilot program conducted by the U. S. Coast Guard Research and Development Center at selected port areas during 1995-1996, MATES is being expanded throughout the United States. Key representatives of federal, state and local government agencies and potential responsible parties are invited by the U.S. Coast Guard Captain of the Port to participate in the 5-day sub-team training program that strives to improve the development of "shared mental models" and team problem-solving skills among the potentially diverse members of the individual ICS sections.

The first day of the MATES program provides ICS refresher training for all trainees. On the following 4 days, training is provided to members of Command and Section personnel, focusing on a different group each day. Port areas scheduled for MATES training during the federal 1997 fiscal year (FY) include: Providence, RI; Savanna, GA; Jacksonville, FL; Detroit, MI; Corpus Christi, TX; Juneau, AK; Hampton Roads, VA; San Francisco, CA; and Portland, OR. Port areas scheduled for training during FY 1998 include: New Orleans, LA; Guam; San Diego, CA; Baltimore, MD; New Haven, CT; Wilmington, NC; and Sault Ste. Marie, MI. Additional port areas scheduled for FY 1999 include: Morgan City, LA; Los Angles/Long Beach, CA; Valdez, AK; Boston, MA; Buffalo, NY; Anchorage, AK; and New York, NY.

Additionally, six government-led Area PREP exercises are held each year to continue the focusing of attention on the principles of ICS and the ability of participants to form effective Unified Command Structures.

In the support area, forms, diagrams, and position responsibilities have been computerized in word processing and spreadsheet programs to enable more rapid computer-based data entry. On a grander scale, the ICS for oil spills is now reaching a sufficient level of standardization within industry and government to enable further development of more

sophisticated, more-effective computer-based, response-support systems. While one or more commercial applications have previously been available, the lack of a standardized format for data display and organization has partially inhibited broad-based acceptance of these systems. The U.S. Coast Guard has recently reviewed potential requirements for such a computer-based system (Gundlach and Kendziorek, 1996) and the U.S. Coast Guard R&D Center in Groton, CT, is currently in the process of supporting development of such a system. The many advantages offered by the Incident Command System show that it can be applied with equal effectiveness to other emergencies, petroleum or non-petroleum related, in North America and elsewhere.

From the perspective of providing environmental support during a spill incident, several companies are first verifying their environmental support function will conform to the NIIMS ICS structure, and secondly, developing a series of Assignment Sheets indicating specific field teams, operational area, and equipment requirements. Upon arrival on-scene the pre-developed Assignment Sheet can be modified and copied (or downloaded and printed) as personnel/equipment requests and for direct entry into the Incident Action Plan. Many of the basic requirements of environmental support are well-recognized and standard (e.g. SCAT surveys - Shoreline Cleanup Assessment Team, aerial surveillance, field sampling, modeling/mass balance), and therefore can be prepared before the event. An example of such a form is provided in Figure 7.

7.0 Sources for ICS Material

The following sources provide guidance documents and training materials related to the Incident Command System.

- Coast Guard Headquarters home page: (http://www.dot.gov/dotinfo/uscg/hq/g-m/gmhome.htm) - Field Operations Guide and ICS Forms for Oil Spills.
- National Interagency Fire Center, Attn: Supply, 3833 S Development Avenue, Boise, ID 83705. For ICS publications and materials. Phone (208) 387-5542, Fax (208) 387-5573.
- California Office of Emergency Services, Operations Coordination Center, P.O. Box 55157, Riverside CA 92517. For Firescope ICS publication and materials. Phone (909) 782-4174, Fax (909) 782-4239.
- Fire Protection Publications, IFSTA Headquarters, Attn: Customer Service, Oklahoma State University, Stillwater, OK 74078-0118. For commercial ICS publications and manuals.

Phone (800) 654-4055, Fax (405) 744-8204.

8.0 Acknowledgments

We gratefully acknowledge the assistance and guidance provided by reviewers Mr. Tim McKinna, McKinna's Emergency Spill Support, Austin, Texas; Cdr. Mark Johnson, USCG, Chief, Response Operations Division, Office of Response, USCG Headquarters; Lt. Rick Johnson, USCG, Chief, Port Operations Department, USCG MSO Corpus Christi, Corpus Christi, Texas; Tina Burke, Operations Division, USCG National Strike Force Coordination Center, Elizabeth City, NC; and Mr. Jim Gynther, USCG Research & Development Center, Groton, Connecticut. Mr. Jim Gynther is particularly acknowledged for providing the idea and support to develop the modified planning cycle guides that appear in this paper. Mike Ammann of Chevron Research & Technology Co. is acknowledged for enabling presentation of their SCAT Assignment Sheet in Figure 7.

9.0 References Cited

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Authors

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Figures Follow:

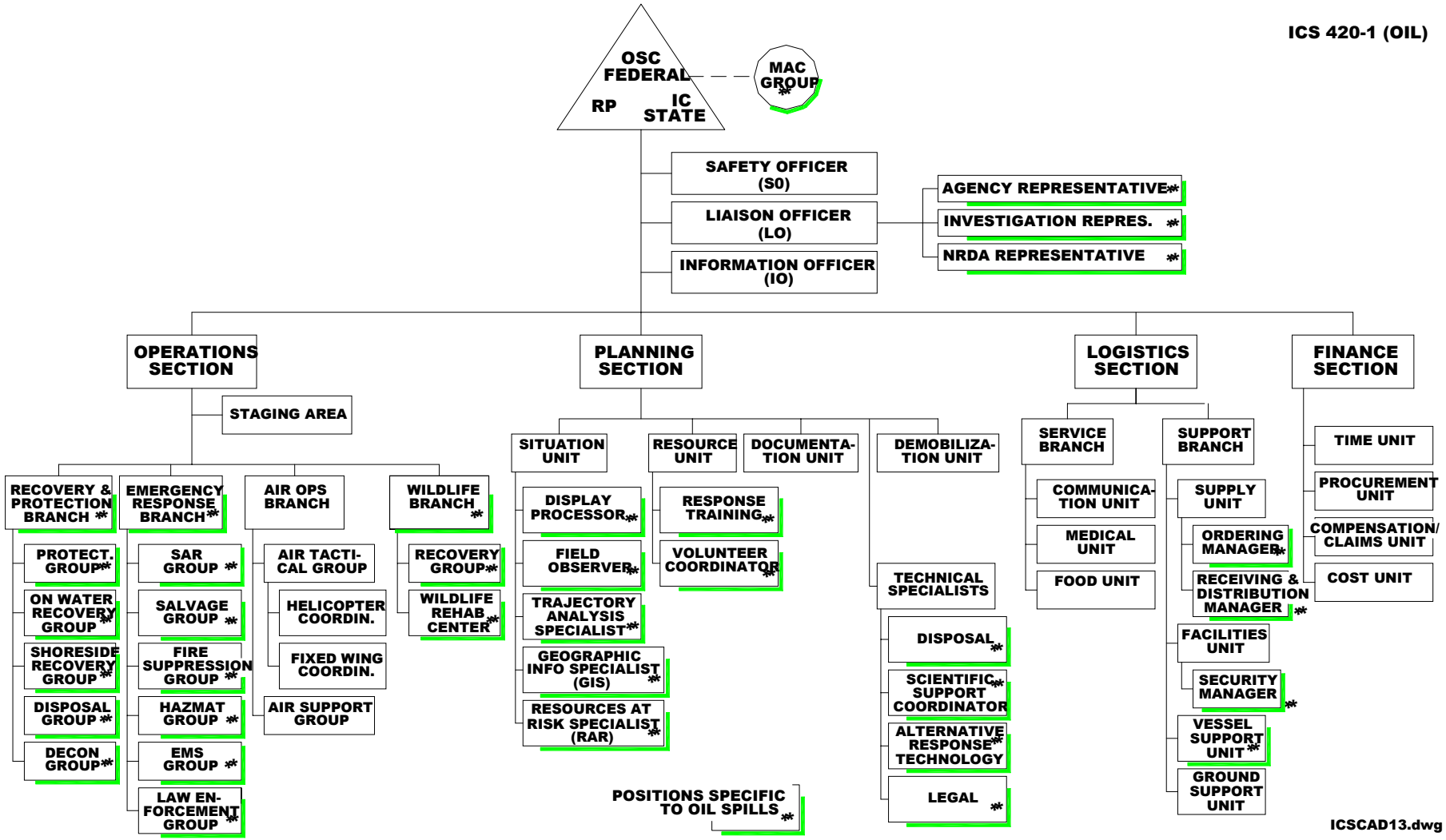
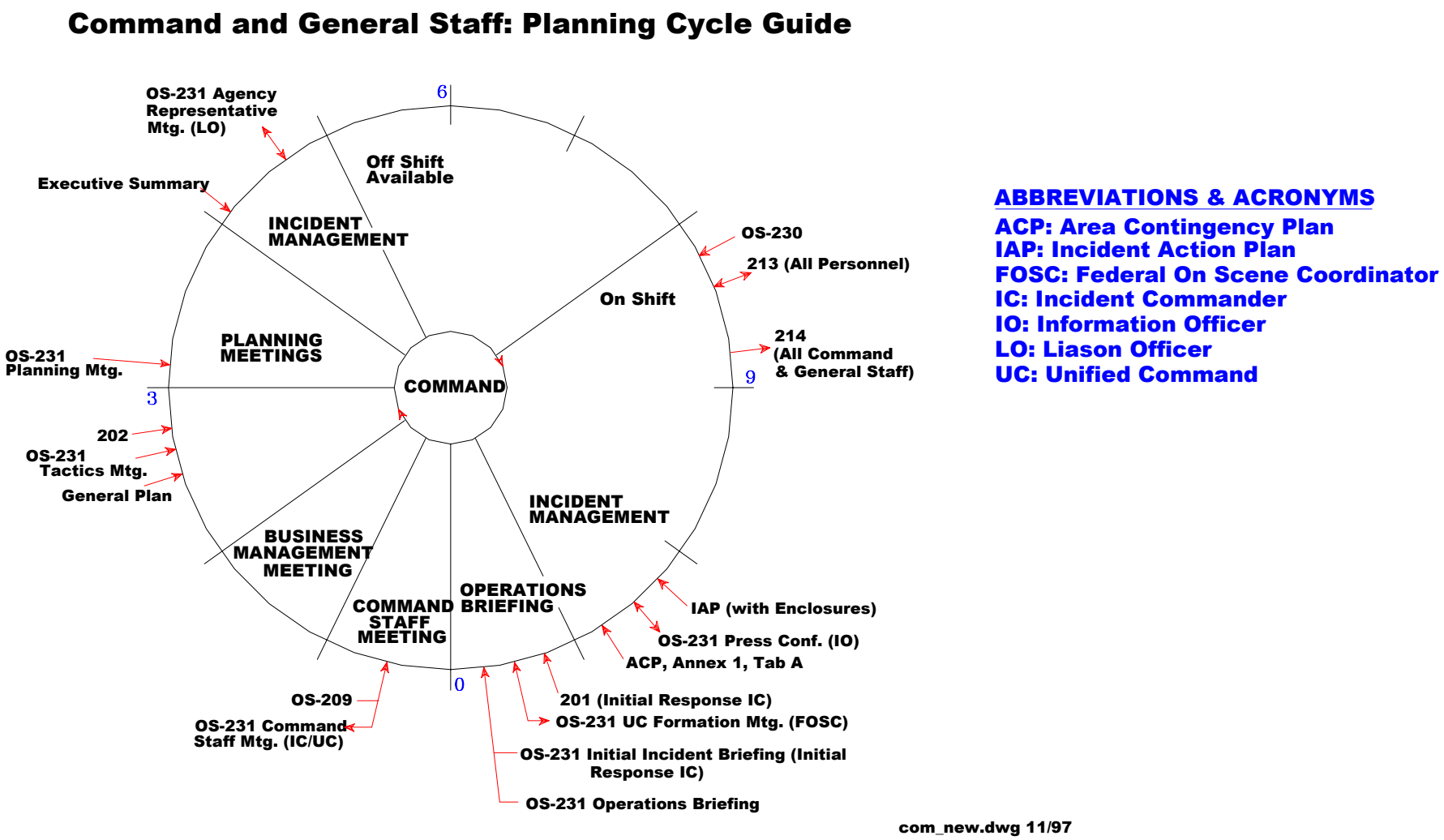


Figure 1. ICS organizational structure for a major oil spill (modified from STORMS 1996 Field Operations Guide). (Green shading indicates positions specific to oil spills.



ABBREVIATIONS & ACRONYMS

ACP: Area Contingency Plan
IAP: Incident Action Plan
FOSC: Federal On Scene Coordinator
IC: Incident Commander
IO: Information Officer
LO: Liason Officer
UC: Unified Command

Figure 2. Command and General Staff Planning Cycle Guide Indicating Activities and Schedule of Form Input and Output (modified from STORMS Task Force, 1996). Parentheses with an Arrow Exiting the Cycle Indicate the Form Preparer or Meeting Facilitator.

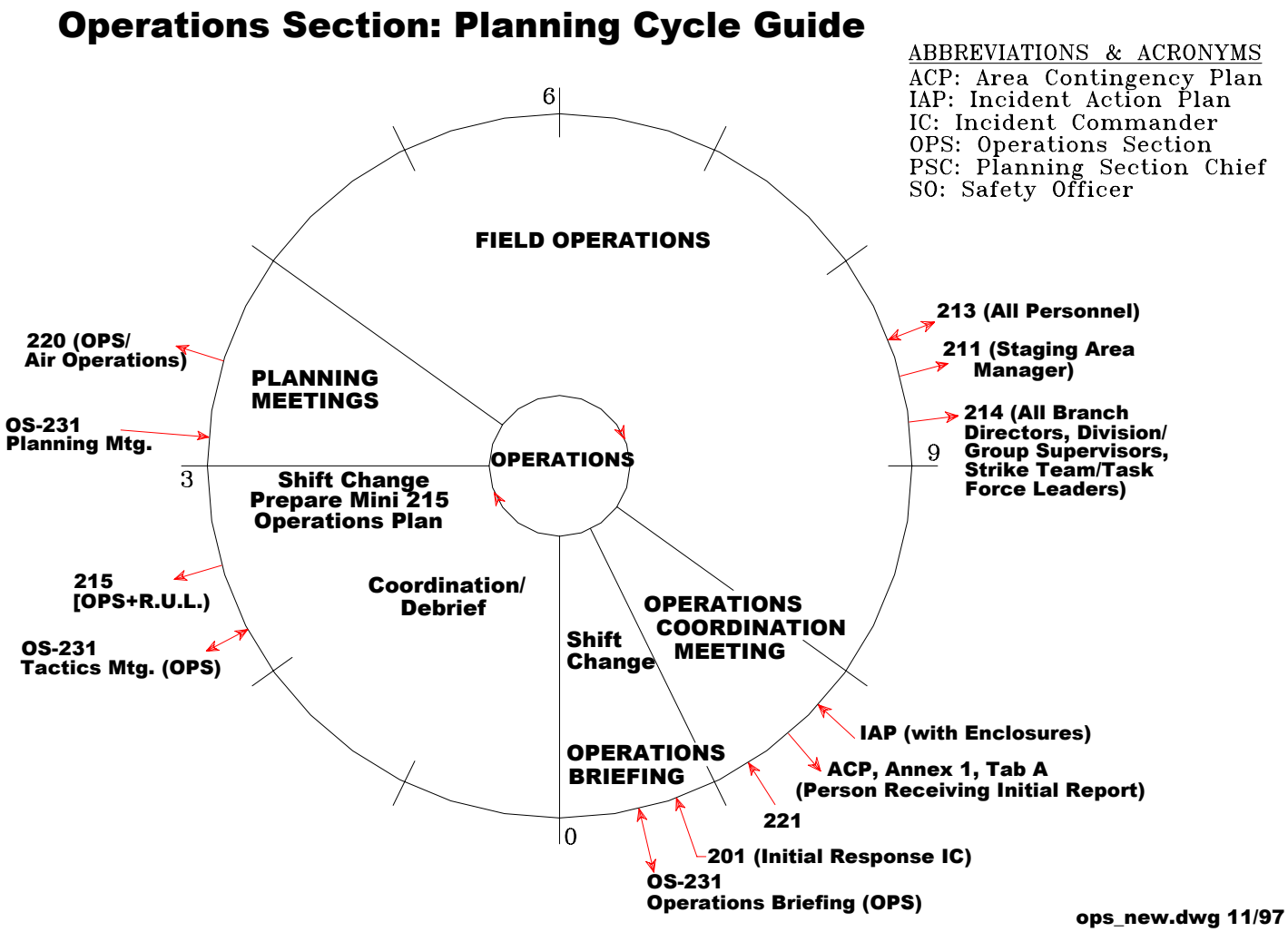


Figure 3. Operations Section Planning Cycle Guide Indicating Activities and Schedule of Form Input and Output (modified from STORMS Task Force, 1996).). Parentheses with an Arrow Exiting the Cycle Indicate the Form Preparer or Meeting Facilitator.

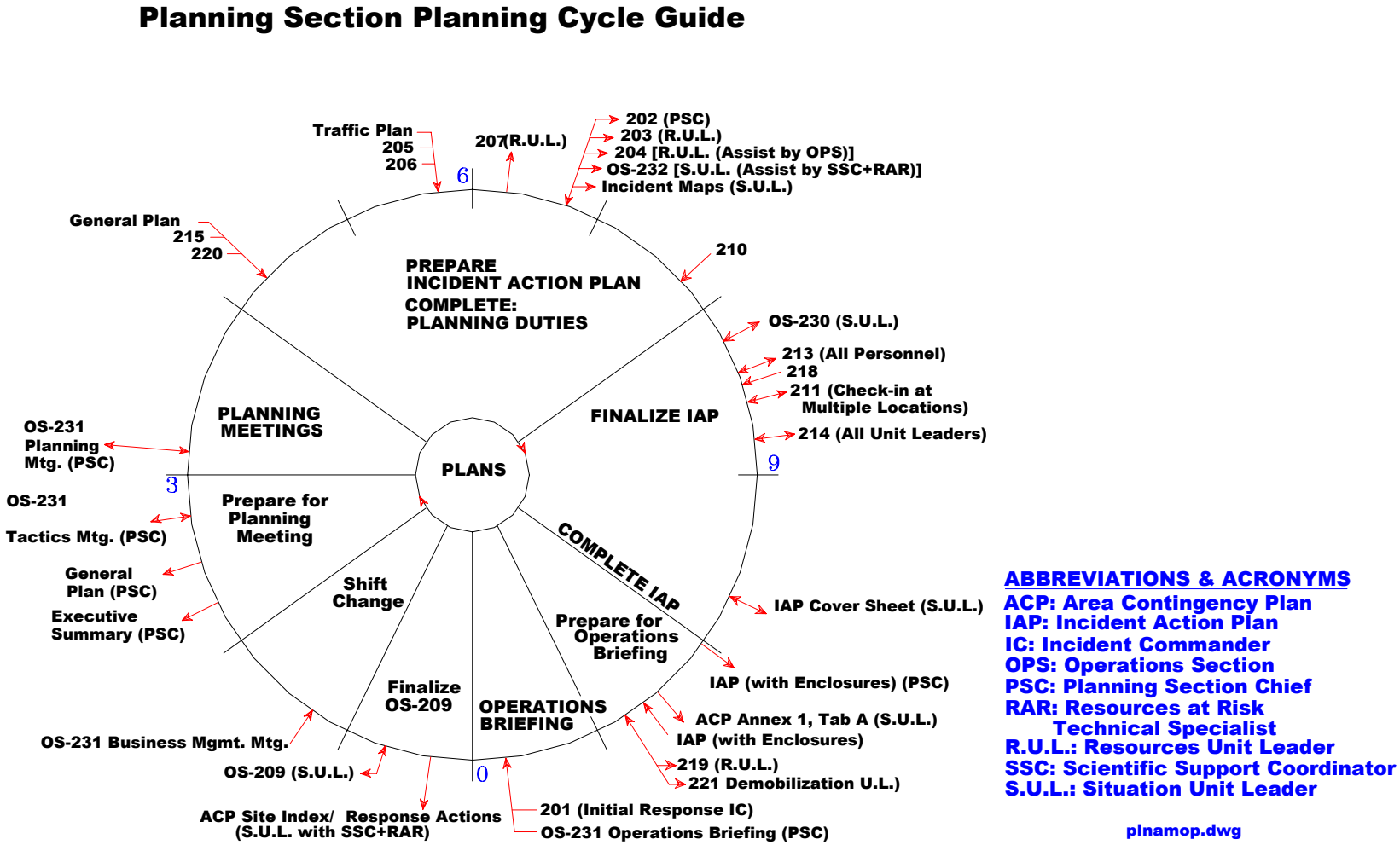


Figure 4. Planning Section Planning Cycle Guide Indicating Activities and Schedule of Form Input and Output (modified from STORMS Task Force, 1996). Parentheses with an Arrow Exiting the Cycle Indicate the Form Preparer or Meeting Facilitator.

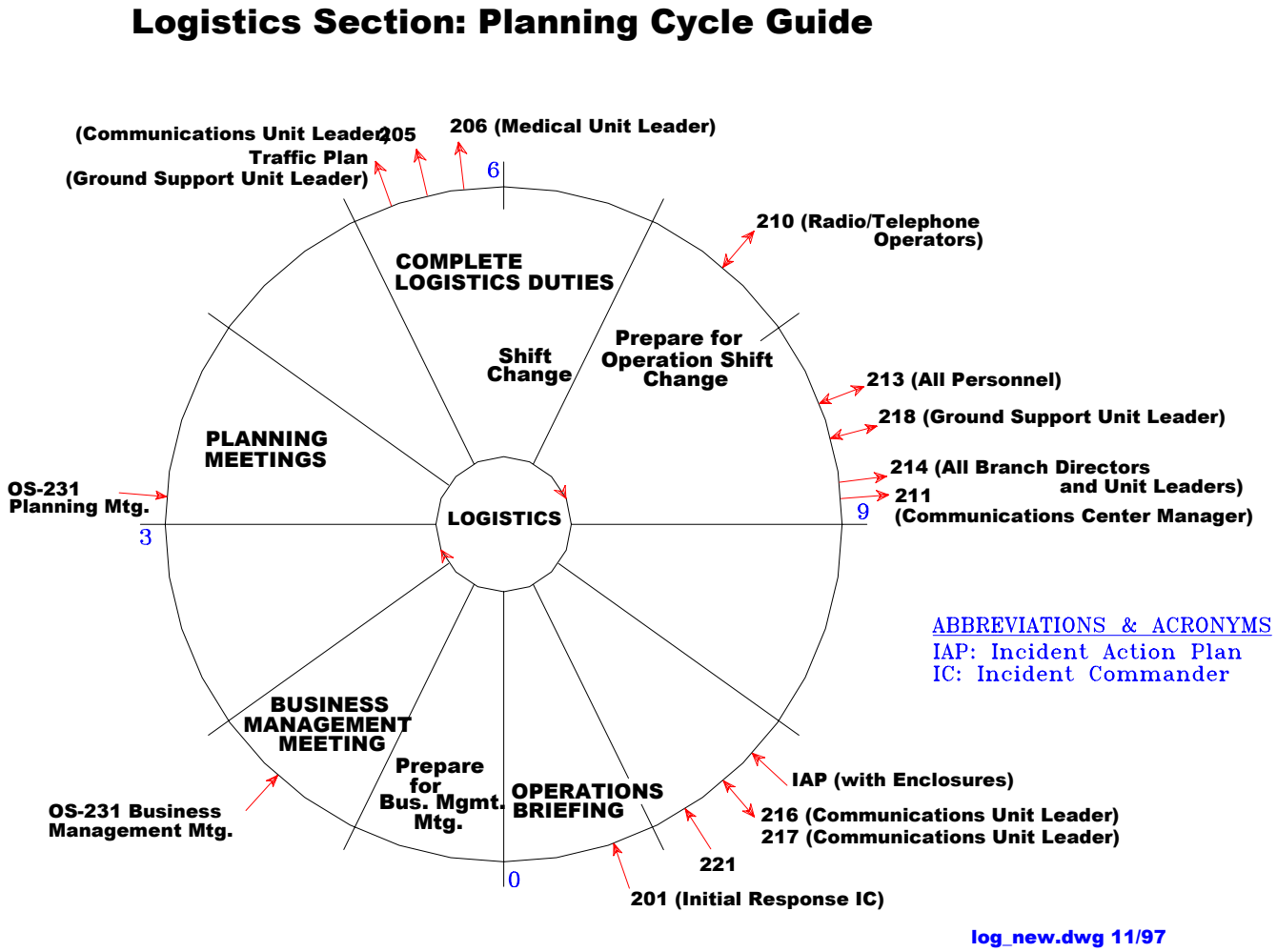


Figure 5. Logistics Section Planning Cycle Guide Indicating Activities and Schedule of Form Input and Output (modified from STORMS Task Force, 1996). Parentheses with an Arrow Exiting the Cycle Indicate the Form Preparer or Meeting Facilitator.

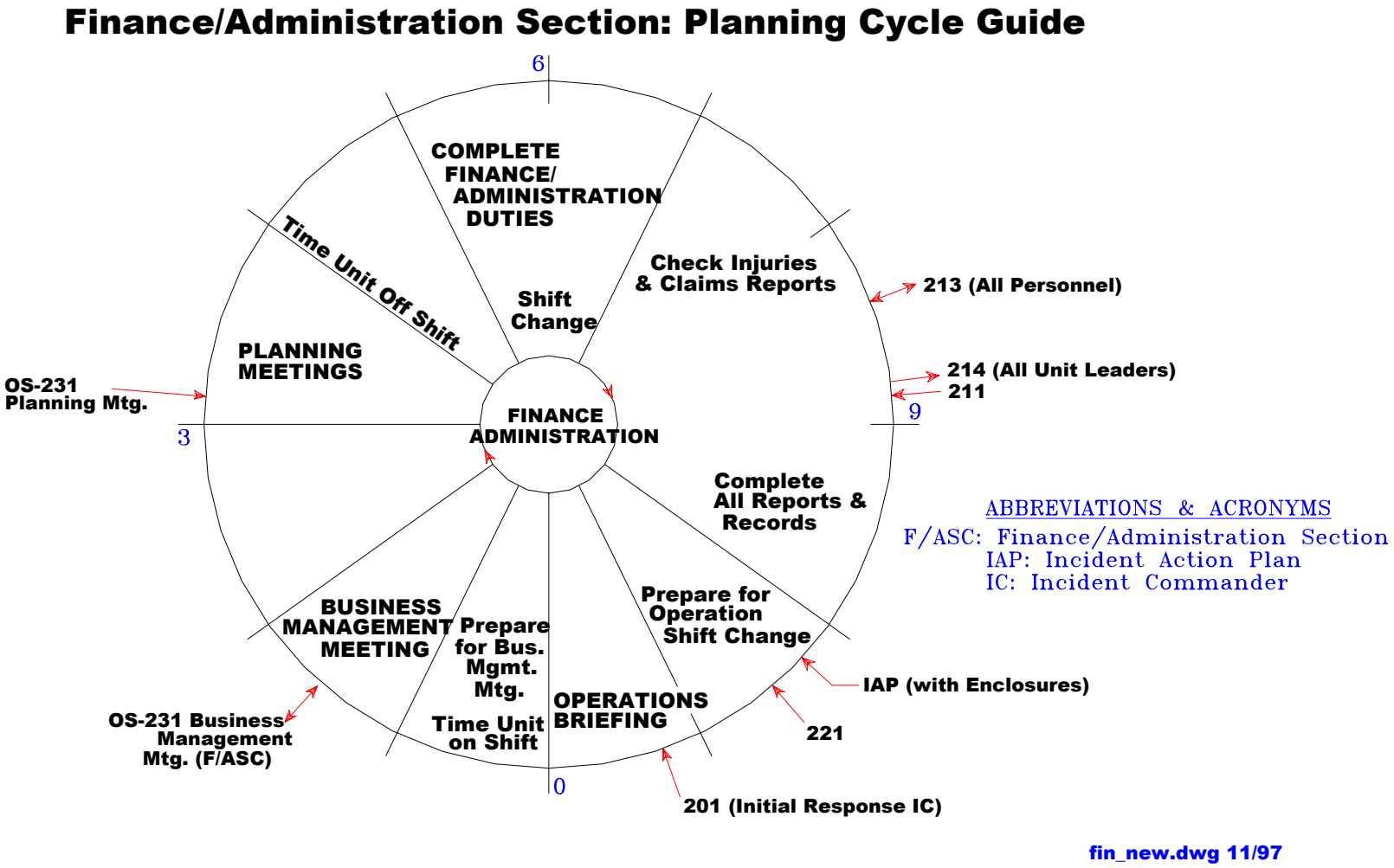


Figure 6. Finance/Administration Section Planning Cycle Guide Indicating Activities and Schedule of Form Input and Output (modified from STORMS Task Force, 1996). Parentheses with an Arrow Exiting the Cycle Indicate the Form Preparer or Meeting Facilitator.

Figure 7. Example Pre-prepared Assignment Sheet for SCAT Surveys that can be Integrated into the flexible NIIMS ICS used by the U.S. Coast Guard (compliments of the Chevron Environmental Functional Team, 1996).

ASSIGNMENT SHEET (☑ FIELD, ☐ OFFICE)					
Incident Name:					
Date:			**Time:**		
Operational Period:					
Division:			**Group:**		
Mission: *ORGANIZE AND MANAGE SCAT TEAMS.*					
Objective: To characterize the ecology, geology, cultural resources, and					
cleanup requirements of specific segments of shoreline.					
Tactical Strategy: Conduct detailed site surveys using a multi-disciplinary					
team of specialists and Agency personnel.					
Location: Specific areas within the spill site.					
RESOURCES					
Qty	EQUIPMENT	Status	Qty	PERSONNEL	Status
1	Van (transportation)		1	Co. professional	
1	Video/35mm + film		4	Consults. (ecologist,	
5	Shovels/measuring scales			geomorphologist,	
10	Field notebooks			cultural resources, &	
5	Rain gear/boots			cleanup specialist)	
5	Clip boards/plastic bags		1-4	Agency personnel, as	
5	Duct tape/Office supplies			requested	
20	Sorbent pads		1	Support (office)	
3	50 m metric tape				
STATUS KEY: 1 = ASSIGNED, 2 = REQUESTED, 3 = REASSIGNED, 4 = SURPLUS					
SCHEDULE STATUS KEY: 1 = ASSIGNED, 2 = REQUESTED, 3 = REASSIGNED, 4 = SURPLUS					
Start Time:			**Finish Time:**		
Prepared by:				**☐ Environmental Unit**	