How NOVACES combined project management with ICS disaster planning to improve coordination, control and cleanup of the world's largest oil disaster

A case study in emergency management process improvement

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Advancing Process Improvement.

Abstract: The size and longevity of the Deepwater Horizon oil spill in the Gulf of Mexico taxed the long-term logistical capabilities of ICS disaster response. When it became clear that traditional ICS process was not meeting the needs of Incident Command to plan logistical requirements that would span years, NOVACES integrated lean project management processes to create a hybrid disaster-response planning tool capable of managing week-to-week operations and planning long-term logistical needs.

CASE STUDY

THE SITUATION

"On the evening of April 20, 2010, a well control event allowed hydrocarbons to escape from the Macondo well into the Transocean's Deepwater Horizon, resulting in explosions and fire on the rig. Eleven people lost their lives and 17 others were injured. The fire, which was fed by the hydrocarbons from the well, continued for 36 hours until the rig sank. Hydrocarbons continued to flow from the reservoir through the well bore and the blowout preventer (BOP) for 87 days, causing a spill of national significance."
— BP Deepwater Horizon Accident Investigation Report dated September 8, 2010.

As a consequence of the uncontrolled flow of oil and gas from the Macondo well beginning on April 20, 2010 and until it was capped on July 15, 2010, the nation faced an immeasurable task of containing millions of gallons of crude oil and preventing it, if possible, from reaching shorelines across the entire United States Gulf of Mexico shoreline. Texas, Louisiana, Mississippi, Alabama and Florida were threatened and concern rose that the Gulf currents could even bring the oil to the Atlantic east coast states as well.

THE RESPONSE

The national response to this catastrophic event, spearheaded by the United States Coast Guard, taxed all levels and resources of this country's emergency response industry. An unprecedented number of responders, equipment and materials were mobilized in an amazingly short period of time to cap the well and contain the released oil. At the time of publishing, one year on from the disaster, shoreline cleanup efforts are still underway along over 500 miles of the Gulf Coast.

As a spill of "national significance", virtually every resource of the US response industry was called into action. Reserves of oil containment boom were depleted and boom manufacturers were booked for round-the-clock production. The response contractor community hired thousands of responders, trained them and put them to work. At its peak, over 45,000 personnel were involved in the response. Every community leader and every governmental response agency (federal, state and local) along the Gulf Coast was involved. The President of the United States received a daily briefing on the status of the response.

President Obama was not exaggerating when he announced in June, "This is the largest response to an environmental disaster of this kind in the history of our country."
Read more http://www.newyorker.com/reporting/2011/03/14/110314fa_fact_khatchadourian#ixzz26qa5Ey3Q

THE ICS PLANNING CYCLE

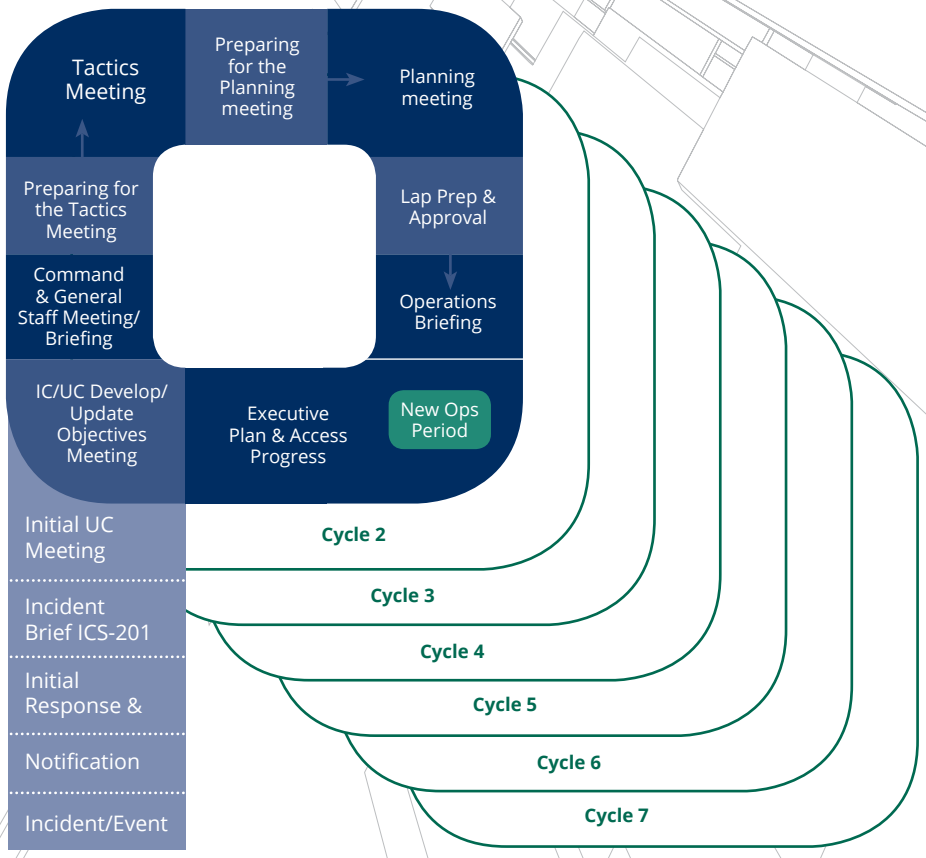
The Incident Command System (ICS) structures the response organization, situational reporting and resource acquisition and allocation, among other issues. The systems that support the ICS typically focus on the short term needs of the organization and are highly effective at managing and documenting those needs.

For weeks and then months, the response was managed under the guidelines and processes of the Incident Command System (ICS). Those processes are applicable for events from oil spills to natural disasters. In most cases, however, the response time frame does not extend to years as is the case of the Deepwater Horizon Incident.

As it became obvious that the response would last months, not weeks, the need for a planning tool that could forecast the long range work with its many constraints and yet perform as an adjunct to, not substitute for, the ICS system became equally clear. After five months of managing the response with traditional weekly planning cycles, Unified Command introduced a paradigm shift in the ICS process – take the planning cycle to levels that reflect the enormity and longevity of the response.

INNOVATION

The worst environmental disaster on the US Gulf Coast required innovative solutions to processes such as supply chain management, resource management and logistics. The amount of oil to be recovered inspired the invention of new equipment to handle beach cleanup. The decontamination of vessels and equipment drove applications of old technologies to new services. Because of the duration and complexity of the response, long-range and detailed shoreline cleanup required a fresh approach to the planning process.



AEM adds foresight to the traditional ICS Planning cycle.

At this point, NOVACES was invited to provide processes to extend the planning cycle and predicted scope of effort while still maintaining ICS process compliant response protocol.

NOVACES joined the response team in November, 2010 to provide the systems and process improvements required to bring long range planning to the multiple operational arms of the cleanup effort. By uniquely applying lean project management processes to the response, the planning cycle moved from weeks to quarters and resource forecasting became task driven - all the while supporting the ICS structure and protocol.

ENHANCING THE ICS PLANNING PROCESS

Step one for NOVACES was establishing current status, methodology, metrics and process for work execution and progress measurement. Process constraints were identified: federal, state, and local requirements; physical shoreline attributes; political issues; local economic impacts; environmental issues; archeological and historic concerns; storm impacts; response capability and more.

Although the constraints seemed to outweigh the response capability, it was clear to NOVACES that a lean project management approach to the ongoing response activities could address and mitigate the then current ICS process constraints. With the application of their project management protocol and with support from Unified Command, the NOVACES team developed standardized work breakdown structures, measures of progress, reporting formats, and processes to achieve the more accurate short term plans, progress reporting and, very importantly, accurate forecasts of long term the resources required for future shoreline cleanup tasks.

RESULTS

NOVACES transformed the short term (typically weekly) planning cycle format in ICS to a long term (currently eight quarter) outlook on planned response activities. The forecast is task-driven, resource-loaded and bounded by whatever constraints may exist for any given segment of the 500 mile shoreline of response. Contingency plans for re-oiling due to storm or tide events are included in the long range outlook.

Unified Command now had a tool to plan and execute response activities beyond the typical weekly planning cycle.

IMPLEMENTATION

However, a very fundamental problem still existed: the “project” approach did not resonate with the responder community accustomed to weekly (versus longer term) projections of required tasks and resource needs. The “top down” command approach met traditional ICS process adherence and the new process stalled. The paradigm shift in planning processes needed a more proactive training initiative.

To meet this need NOVACES began a series of training exercises to introduce project management concepts to key personnel in response planning and execution. Surprisingly, the Operations personnel most involved in executing the response tasks were first to recognize the value of detailed task planning and scheduling of response activities. In the "ICS world" these are the direct responder supervisors and are the equivalent of a construction contractor on a project. In that respect, it is actually not at all surprising that they first recognized the value of a task driven, resource loaded schedule.

Leadership and training from NOVACES continues to expand the role of lean project management in the Deepwater Horizon emergency response. The innovative ICS planning process, developed by NOVACES, has become an integral part of the planning cycle.

With support from Operations and Planning, direction from Unified Command, and the efforts of the NOVACES personnel involved in the spill response, NOVACES has transformed the Incident Command System process from a weekly planning cycle approach for an event to a longer term, more effective and measurable incident response.

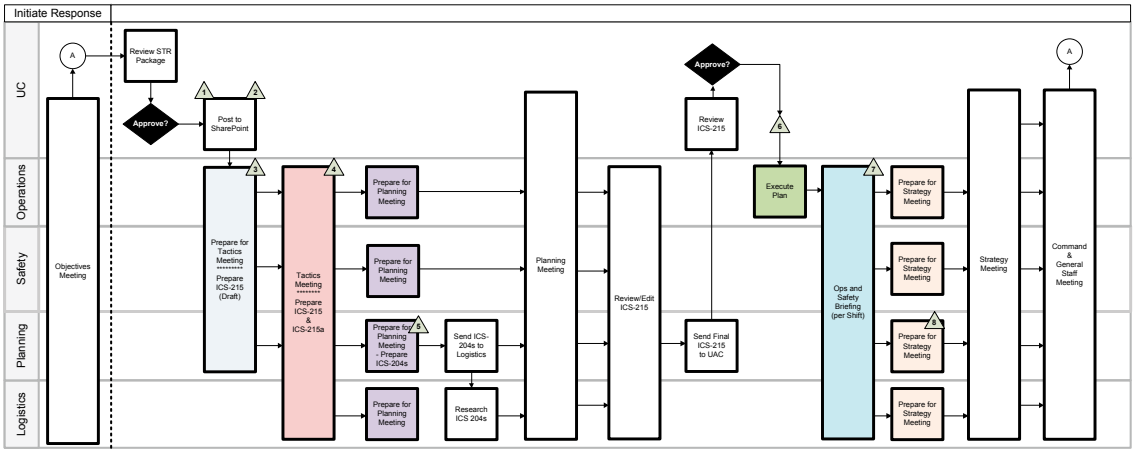
PROCESS ELEMENTS

Some fundamentals of the NOVACES approach:

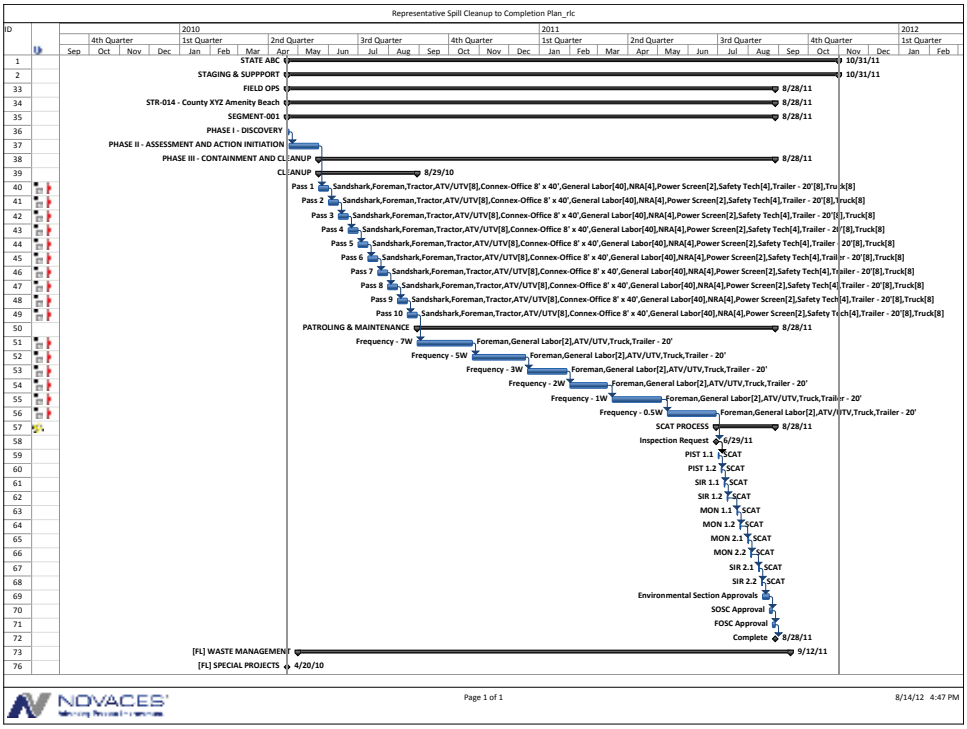
1. Although each planning cycle generates its own project schedule, the work breakdown structure remains consistent and is therefore measurable from one cycle to the next.

2. At all times and in every way, the planning and reporting process met (and improved) the ICS protocol.

ICS Plan to Execution Process (Reference: Chapter 3, US Coast Guard Incident Management Handbook, August 2006)



3. The plan is activity (versus resource) driven. This allows constraints (resource and otherwise) to drive the schedule and reflects the interrelationship of activities within a response.



4. Provide a common reporting and situational status format. With over 45,000 responders and 500 miles of shoreline, it is crucial that Command receive an accurate and consistent picture of the response effectiveness.

5. The ICS structure is highly effective for emergency response. It does not, however, lend itself to cross-functional communication at any level but Command. In a long term response as is the Deepwater Horizon, timely and consistent data capture and forecasting resource needs is crucial. By incorporating planning, operations, logistics, safety, and finance information within the response schedule, tactics level information was shared with NOVACES personnel at the activity level meaning there was direct communication between Planning and Operations within ICS at the Responder Supervisor level.

6. Perhaps the most important aspect of the NOVACES approach is its ability and agility in adapting to changing scope. By treating each planning cycle as its own project schedule, changes in weather, tides, oil movement, methodology, bird migration, etc. were accommodated within the ICS process. These constraints were easily captured within each planning cycle and in the long term forecast.

7 For an event the size and scope of the Deepwater Horizon Incident, traditional response systems were stretched beyond their capacity. NOVACES provided a process solution that brought the response back to Command control.

NOVACES demonstrated the ability of lean project management processes to integrate with ICS systems and capture rapidly changing scope requirements while providing long range planning capability within an event.

FIND OUT MORE

We hope you enjoyed this paper. If you would like to learn more about the application of Agile Emergency Management to disaster response, we recommend a Best Practice Briefing.

This structured 40-minute conference call will give you a clearer idea of how AEM meshes with ICS, the clear planning advantages it offers, and how it could conceivably work for your organization.

Just call toll free 1-855-NOVACES to arrange yours today.

ABOUT THE AUTHORS

David Bindewald

Dave is a Senior Management Advisor to NOVACES; he has extensive experience in project and program management in the petrochemical industry and holds a BS in mechanical engineering. Dave introduced the application of project control principles to manage the Deepwater Horizon Oil Spill response. As Unified Command of the response recognized the value of this agile approach, the planning process was adapted to this methodology.

Robert Cheney

Rob is a Senior Project Management Consultant with NOVACES; he is a certified Project Management Professional with over 20 years of industry experience and holds a Bachelor's of Science in Mechanical Engineering. Rob served as Project Controls Lead on the 2010 Deepwater Horizon Oil Spill Response and was instrumental in development, testing and roll out of state-of-the-art agile methods used in management of this massive program. He led a team of as many as five schedulers covering four states in development and tracking of over 100,000 resource and cost-loaded tasks. He educated dozens of client and contractor personnel in use of these project management tools, and led overall program budget preparation and tracking.

THE NEXT STEP...

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Advancing Process Improvement.

Corporate Headquarters
650 Poydras Street #2320
New Orleans, LA 70130

Northeast U.S.
8 Robbins Street, Suite 101
Toms River, NJ 08753

TOLL FREE: 1-855-NOVACES
WWW.NOVACES.COM