INCIDENT RECONSTRUCTION AND ANALYSIS

HELPING GOVERNMENT LEADERS LEARN FROM REAL-WORLD INCIDENTS

Exercises are robustly implemented and evaluated by many federal, state, and local agencies. Real-world incidents, however, are not always fully incorporated into the evaluation and corrective action process. Although exercises are important preparedness tools, they are constrained by such issues as cost, staff availability, and the need to minimize disruptions to day-to-day operations. Real-world events provide a comprehensive opportunity to assess and validate capabilities.

CNA pioneered military operations analysis as a way to understand and improve operational capabilities and assess their key elements: plans, organization, training, exercises, and equipment. We have adapted this method to civilian government agencies, assessing their preparations and responses in handling events ranging from storms and earthquakes to active shooter incidents and presidential inaugurations. Examples of incidents and events we have assessed are included in Figure 1.

Figure 1. Selected real-world incidents evaluated by CNA

Law Enforcement Incidents	Natural Disasters	Special Events
Baltimore, MD, shootings (2017, 2011)	Hurricanes Harvey, Irma, Maria, Nate (2017)	Unite the Right Charlottesville Rally (2017)
Delaware shooting (2015)	Moore, OK ,Tornado (2013)	United Nations General Assembly (2017)
Las Vegas, NV, ambush (2014)	Hurricane Sandy (2012)	Presidential Inaugurations (2009, 2013, and 2017)
Tampa, FL, manhunt (2010)	Haiti Earthquake (2010)	U.S. Presidential Nominating Conventions (2004, 2008, 2012)
Oakland, CA ,shooting (2009)	Hurricanes Katrina and Rita (2005)	Ford Funeral (2007)
	Hurricanes Charlie, Frances, Ivan, Jeanne (2004)	
Storms	**Active Shooter Incidents**	**Disease/Health Incidents**
Winter Storm Grayson-VA (2018)	Congressional baseball practice in Alexandria, VA (2017)	Flint, MI, Water Crisis (2016)
Winter Storm Jonas-VA (2016)	Reynolds High School in Troutdale, OR (2014)	Zika Virus (2015-2016)
DC Blizzard (2016)	Washington Navy Yard (2013)	Ebola Virus Disease (2015)
Tropical Storm Hemine-VA (2016)		H1N1 Influenza pandemic (2009)
Chemical/Biological Incidents	**Animal Health Incidents**	**Transportation Accidents**
NAS Oceana Fuel Spill (2017)	Mad Cow (2005)	Washington, DC, Metro smoke incident (2015)
Diethylene Glycol poisonings-Panama (2006)	Pet food contamination (2007)	Washington, DC, Metro train collision (2009)
Ricin release in the Dirsken Senate Office Building (2004)	Exotic Newcastle Disease (2002-03)	

Assessing real-world incidents allows us to analyze operational performance as it occurs and compare it with predicted performance from self-assessments and exercises. We use a tested approach of observation, reconstruction, and analysis to identify potential improvements to existing capabilities. The CNA approach is outlined in Figure 2 and detailed below.

Figure 2. The CNA approach: incident reconstruction and analysis
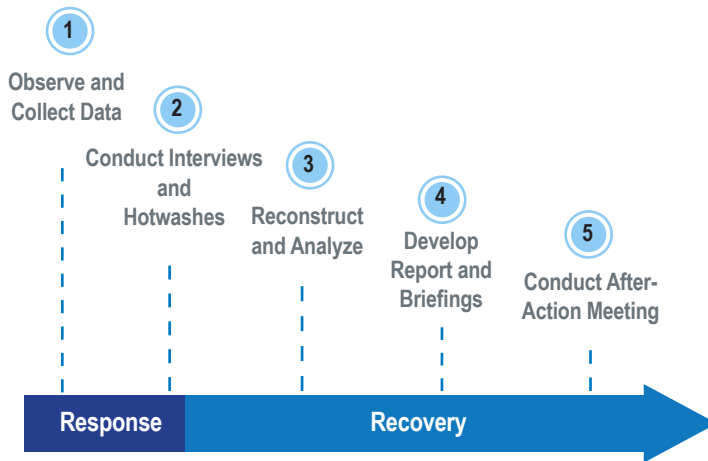
1. Observe and Collect Data

When feasible, CNA deploys analysts with response personnel during the event to collect data and document operations. They log information and decisions posted to situation boards and discussed in planning, command, and tactics meetings, documenting real-time changes to processes and procedures. For example, CNA analysts deployed to Texas, Florida, and Puerto Rico during the 2017 hurricane season for the US Department of Health and Human Services.

We also provide analytical support to response personnel when requested. This support can include a daily synthesis of lessons learned for command staff or situation assessment and planning assistance.

Following the conclusion of response operations, we collect archived data: situation reports, incident action plans, briefings, emails, maps, logs, and databases.

2. Conduct Interviews and Hotwash Meetings

We seek input directly from operators in structured hotwash meetings and one-on-one interviews to gain the operators' perspective on lessons learned and recommendations for improvements. We typically do not attribute when citing discussions with personnel to focus on evaluating specific plans, organizational structures, training, and equipment.

3. Reconstruct and Analyze Incident

Incident reconstruction synthesizes information from multiple sources to provide a big-picture perspective that operators often miss, helping identify root causes of issues. We consolidate the data, deconflict different data sources, and code each event record with references to support queries. For example, CNA reconstructed first responder communications and actions in the 2015 smoke incident at L'Enfant Plaza Metro Station to assess response times and identify barriers that impeded the response.

4. Develop Report and Briefings

We document our analysis, findings, and recommendations in a formal report, aligning with Homeland Security Exercise and Evaluation Program (HSEEP) guidance, when required. Our reports clearly synthesize our analytical findings into the knowledge that operators can use to make practical, evidence-based changes to policies and plans. We also prepare and deliver briefings, with salient takeaways for senior leaders and decision-makers. We work closely with the client to disseminate a draft report for review and incorporate feedback into a final report. When leadership needs rapid feedback—such as in the 2015 smoke incident—we develop a quick-look report highlighting critical issues requiring immediate attention.

5. Conduct After-Action Meeting

We facilitate a meeting of responsible personnel to review findings and develop corrective actions. The meeting is designed to build consensus among participants about developing the steps to make improvements. We document the output in a final report and improvement plan.

BENEFITS OF THE CNA APPROACH

In addition to supporting evaluations, our reconstructions can support the development of exercise scenarios, hazard playbooks, training modules, and other preparedness efforts. CNA's analytical approach turns real-world incidents into learning opportunities to make future responses more effective.

ABOUT CNA CORPORATION

CNA is a not-for-profit research and analysis organization with 75 years of experience providing government agencies with data-driven insights and real-world, actionable solutions grounded in our direct experience with the operational environments where these solutions are applied. CNA developed the foundational techniques for operational analysis to address complex challenges facing government programs. We have applied these techniques successfully in areas ranging from defense to aviation, education, justice, and homeland security.

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