Gaming an Energy Crisis:

Energy Preparedness and DoE's Emergency Exercises

By: Edward V. Badolato,
Deputy Assistant Secretary for Energy Emergencies

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Gaming Energy Emergencies

Introduction:

Effective energy emergency planning is based on three essential elements: first, an understanding of potential future crises; second, a specifically designed objective; and third, an emergency response system with a clear set of in-place procedures which are periodically tested. These tests, exercises or games provide the means to compare tomorrow's emergencies with today's capabilities which results in better planning and preparedness.

One of the most impressive statements on gaming for emergency planning was made after the war by Admiral E. Chester Nimitz in describing the efforts of the U.S. Navy prior to WW II. "The war with Japan had been reenacted in the game rooms at the Naval War College by so many people, and in so many different ways, that nothing happened during the war which was a surprise absolutely nothing except the kamikaze tactics toward the end of the war; we had not visualized these."

Gaming energy emergencies is essentially a form of analysis. It shares many similarities with other analytical tools, but has its primary strength in its ability to illustrate how uncertainty and human decisions affect the course of events. The essence of activities is on developing DoE crisis management leadership skills and training the energy emergency staff to deal with crises. These games allow DoE to illuminate specific energy situations. Assess current energy crisis management procedures, encourage government-industry cooperative efforts. And exercise the emergency staff's specialized knowledge and experience.

There are definite benefits to be gained from exercising emergency preparedness procedures under the aegis of a game. Specifically, gaming familiarizes staff with

procedures they will use in an actual emergency provides an opportunity to practice responses to extraordinary energy emergency events; allows the players to network with each other under crisis conditions; helps identify data and information requirements; tests communications; forces players to appreciate time/space requirements of various major emergency tasks; allows assessment of the administrative requirements of the crisis management team reveals potential conflicts and policy differences; and finally, gaming allows a review of the way we (DoE) interact with the states, industry, the public, the media and the congress.

Effective gaming results in the improvement of plans and an increased readiness in the event of an actual emergency. It allows us to prepare for the unexpected. Extensive exercising results in a set of well established routines applicable across the board with checklists, guidelines, and standard operating procedures, thus making the crisis management process more efficient. Additionally, through the use of computers, the pre-planning process can be made more effective. For example, computer assistance and expert systems can lessen the impact of surprise as various elements of the specific emergency can be rapidly broken down and understood. Extensive gaming allows the people who will deal with actual crisis to develop a significant degree of coordination in working within the emergency framework along with dealing with the tremendous amount of energy data and information which must be processed.

In summary, gaming is important because normal everyday activities differ from crisis actions. Therefore, an effective emergency management team work must be created through emergency training -- it will not result simply from a group working together under normal conditions and drawing up plans.

Wide Use Of Energy Gaming:

Tests, exercises and games are used throughout the U.S. Government and the international arena (e.g. NATO and IEA) to practice and refine plans for various contingencies. DoE has participated in many of these large-scale events, both to practice procedures within the appropriate intergovernmental context and to ensure that its energy concerns are included in the international exercises. For example, 25 personnel from the office of energy emergencies participated during 1987 in the United States' global war game. Held at the Naval War College in Newport, "Global" is the largest war game played in the free world, and it serves as a test bed for current national strategic thinking. DoE's involvement introduced considerations into the game of adequate energy, fuel and nuclear material for war plans. Similarly, DoE played an important role in the NATO readiness-preparedness exercise, Rex-88 alpha, highlighting consideration of energy supplies critical to mobilization requirements. Important functional interrelationships of organizations, understanding of procedural linkages, and the application of external support capabilities are also determined and tested through these exercises, as well as in DoE's internal exercises.

Variety Of Games And Tests Used In DoE:

OEE has conducted a wide spectrum of tests ranging from small, seminar-type simulations are oriented toward the consideration of high level strategic issues by senior officials. Other simulations are routinely conducted by energy emergency staff members as "tabletop" games to familiarize themselves with energy emergency procedures and issues. The following describes various types of simulations.

High Level Simulation Exercises (SIMEX):

Some games go well beyond practice and refinement of the mechanics of emergency response. For example, in high level simulations, players representing the government and the private sector are brought together to:

- Grapple with policy, strategy and the "larger issues".
- Practice decision-making and form "top down" networks.
- Gain an understanding of the dynamics of crisis.
- Focus the staff's attention on the really important energy modeling techniques, assumptions, methodologies, and projections.
- Provide a vehicle for crisis management training.

Less tangible, perhaps, is the experience of dealing with a sense of urgency while developing options and making decisions under the press of time as well as understanding how to deal with risk during a crisis - which is not an intuitive skill, but one which must be practiced. Consider that training allows us to do all of the foregoing with the luxury of not having to pay the price of a wrong decision during a real crisis.

DoE's energy emergency high level simulations involve players representing state and federal government as well as the industry perspective who address "larger issues", industry executives play a particularly important role because they will provide the technical expertise during an actual emergency. In a typical SIMEX, the players are formed into functional teams rather than as individual players and then briefed on the environment in which the game is to be played with descriptions of relevant current and historical factors. A starting scenario is injected into the play and a specific charge is given to each team in terms of questions to be addressed and issues to be assessed. Each team specifies its goals in separate sessions and tries to achieve them through a series of well-thought-out actions. The teams then meet in plenary session, debrief one another, and given their moves and countermoves I agree on an expected outcome with underlying

reasons why the particular outcome is expected. A second "move" is posited and each team is given a set of specific charges to consider in separate session. The teams specify their separate goals and again attempt to achieve them. The teams again meet in plenary session to debrief each other, and, in light of the moves and countermoves I reach a conclusion on the expected result of the "energy emergency" condition.

DoE's experience with these simulations has shown that the resulting consensus of the teams and players provides extremely useful insights into the dynamics of and reactions to the specified scenario energy emergency.

Other Energy Emergency Exercises:

In addition to high level simulations, the Office of Energy Emergencies conducts various other gaming exercises to ensure the operational readiness of its crisis response staff and procedures. These exercises can be designed to contend with both strategic and operational issues. For example, one of the Office of Energy Emergencies' most important responsibilities involves the drawdown and distribution of the Strategic Petroleum Reserve (SPR). One of the most effective ways to maintain DoE's operational readiness in this area is to conduct SPR drawdown exercises which can highlight relevant issues.

Drawdown procedures must deal with strategic level questions of when and how to use the reserve, what price to charge, and how much crude oil to drawdown in any particular situation. These decisions would initially affect the petroleum industry and ultimately our entire economy. The strategic choices set the framework for the overall operation, which includes the specific logistical, legal, and financial aspects. While the planning process need not be complicated, it deals with a complex set of issues that must be broken down into their most simple components. Exercises that test the ability of DoE and the oil industry to actually use the SPR provide essential background information for preparing sound policy. Experience shows that SPR exercises can test our ability to analyze international energy market circumstances with their resultant us domestic reactions and help to develop effective energy emergency response options. Gaming can also test DoE's ability to construct an administrative process that expeditiously puts SPR oil onto the market, including the design for an efficient selling process that would not create logistical bottlenecks.

Such periodic exercises do much to improve DoE’s internal emergency response procedures as well as the oil industry's understanding of the SPR's capabilities, thereby increasing the SPR's operational readiness.

Gaming International Energy Activities:

DoE has the responsibility to establish and maintain, in consultation with the Department of State and FEMA, essential liaison with foreign nations and international agencies on us energy related emergency activities. The two organizations with which we conduct international energy simulations are the International Energy Agency and NATO. Simulations and tests have been important to the process of building a crisis response system that works well in the international environment. Because of the complexity of international activities, smooth effective operations cannot be achieved without extensive preplanning and practice.

International Energy Agency Test Programs:

- Coordinated Emergency Response Measures (CERM) test:

The first test of the IEA's coordinated emergency response measures was conducted during January 13 through February 12, 1988. The main objectives of the CERM test were to: test the IEA emergency coordination procedures, give hands on exercise experience to each staff member of an IEA nation that would be involved in emergency responsibilities, provide energy emergency data to the IEA, and have a forum for identifying areas for improvement. The test was an outstanding opportunity to test the crisis mechanisms for the U.S. and other IEA member countries.

- Sixth Allocation System Test (AST-6)

AST-6 is scheduled tentatively for October - November 1988. The main objective of AST-6 is the training of the IEA secretariat, member governments and oil company personnel in the use of the essential procedures and mechanisms of the emergency oil sharing system. The purpose of the system is to achieve equitable sharing of petroleum supply among IEA member countries during a serious international oil supply disruption.

NATO Test Program:

The Department of Energy participates in a NATO-wide exercise, entitled WINTEX-CIMEX every other year. The most recent WINTEX-CIMEX was held in 1987. The exercise tested various wartime responsibilities of NATO civil and military authorities which included applying operational and logistical plans, management procedures, and communications protocols for mobilization for war by simulating actions to respond to a hypothetical scenario. Participation occurs at NATO headquarters, U.S. Department of Energy headquarters and at a relocation site. All capitals are invited to participate along with the various military commands. The exercise is structured around a world-wide disruption of oil, compounded with a loss of oil facilities in Europe.

The Department of Energy is an active participant in the development of both NATO and U.S. objectives prior to the start of the exercise. In addition, DoE uses this opportunity to test certain aspects of its emergency preparedness program.

International simulations generally suffer from the same three major faults as exist with most U.S. government sponsored games, i.e. getting key government officials to participate, focusing on procedures rather than decision-making, and using narrow scenarios that restrict innovative free play. It is particularly important to involve key decision makers in international gaming for the following benefits:

- They actively participate in the international decision-making process and crisis management procedures.
- They interact and coordinate with senior players from other countries.
- They become familiar with international policy and operational guidelines.
- They understand how to receive international energy emergency data and reports and analyze events from a national perspective.
- They think through various courses of international actions and consider the need for consensus in responses.

In a real international energy crisis, fully-prepared Washington-level crisis management representatives will be needed -- that is, individuals who can manage the crisis while interacting with our foreign allies, Congress, the White House, media, the public, and other agencies. These key officials must be well versed in the fundamental international energy relationships so that they don't have to be tutored at every step by their staff during an emergency. It would be unfortunate if an official were suddenly thrust into an international, or even a domestic emergency and forced to make decisions without the benefit of at least a working knowledge of the issues involved; or if they were unaware of how to use existing crisis management support systems. Thus, it is paramount that our key decision makers feel comfortable with the emergency procedures and understand the analysis that supports the recommended options.

In this regard, reading staff papers is no substitute for participation in games where responsible officials need to be prepared to cope with crises. The experience of being bombarded with information while being forced to make decisions under pressure is what a staff paper lacks. Reading a paper may give some familiarity with the issues but it gives no familiarity with the time-oriented dynamics and pressure of decision-making during a crisis.

Crisis Management Leadership Begins At The Top:

Senior officials must be an integral part of the energy crisis gaming process because the essence of crisis management at the highest level is leadership, not management. The one clear lesson that all of our gaming in DoE has shown is that what is needed throughout the emergency gaming process is a clear understanding and articulation of objectives. This has to come from the top officials; they must be able to define objectives with clarity so that staffs can rapidly prepare and demonstrate their problem-solving courses of action to support the decision-making process. Unless top management regularly exercises its crisis management responsibilities they probably won't be able to play an effective role under the press of time to develop views options and make decisions as part of the organization during an actual emergency. Thus the total emergency staff must be trained with a sense of mission goals and objectives -- and reinforced through the active participation of senior officials in the gaming process.

Summary:

At the Department of Energy, simulations, tests and exercises are the tools which tie all energy emergency preparedness activities together including our field operations and activities, both foreign and domestic. The extensive time and resources devoted to exercising or gaming our energy emergency systems provide maximum preparedness benefits at minimal cost.

Through exercising, it is possible to organizationally instill a means with which to practice the crisis decision-making process supported by well prepared responses, clearly defined objectives, and a trained staff capable of implementing those decisions.

Gaming allows refinement of emergency procedures and provides practice in crisis decision-making. In the long term, games create an institutional memory of "lessons learned" which can be studied and used to improve the system. This means that in a variety of emergencies, the staff can operate with confidence because, to paraphrase Admiral Nimitz, "There will be nothing that can happen that will be a surprise." We in DoE are convinced that a strong, well planned series of gaming exercises helps to build a strong professional staff, skilled in working together in emergency management.