



**APERC Workshop**  
**The 49<sup>th</sup> APEC Energy Working Group and Associated Meetings**  
**Gyeongju, Republic of Korea, 22 June, 2015**

## **4. APEC Oil and Gas Security Initiative**

### **4-2. Oil and Gas Security Exercise Model Procedure**

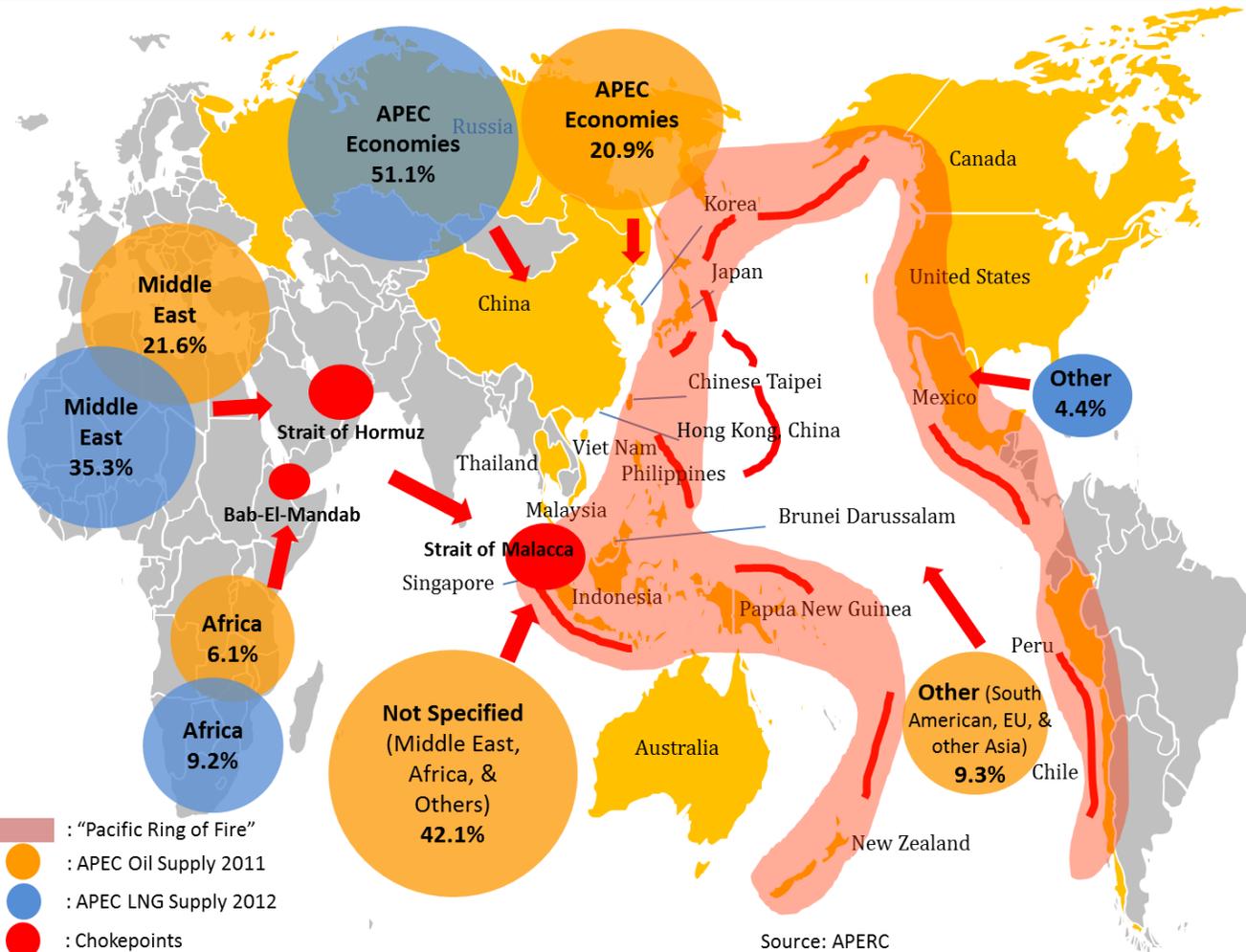
**Chrisnawan ANDITYA**  
**Senior Researcher, APERC**



**Asia-Pacific  
Economic Cooperation**



# Main Facts on Oil and Gas Security in the APEC Region



- The APEC region aligns with the “Pacific Ring of Fire” where volcanoes and earthquakes are common.
- APEC’s demand for oil and natural gas significantly exceeds internal production and APEC relies highly on outside sources.
- APEC oil and LNG imports are highly dependent on maritime routes through extremely busy straits.
- Oil and natural gas are shipped over long distances, typically from the politically unstable Middle East and Africa.



## Incidents in Oil and Gas Facilities



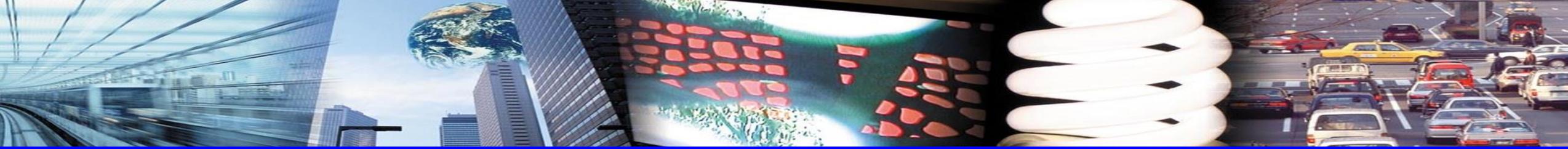
Illustration by Kong Yink Heay;  
<http://magazine.scientificmalaysian.com/issue-6-2013/enhancing-safety-sustainability-malaysian-refineries/>

- No one knows when it will be come or occurred.
- It might trigger disruptions of oil/gas supply.
- It might affect the continuation of other related sector services.
- It might lead to serious economic impact.



Effective implementation of measures, response and recovery strategies need to be ensured.

- System (e.g. policies, plans, procedures, and communication protocols); and
- Personnel.



# Oil and Gas Security Exercise Model Procedure (OGS-EMP)

## OIL AND GAS SECURITY EXERCISE MODEL PROCEDURE

*A Step-by-Step  
Approach for  
Planning, Conducting  
and Evaluating Emergency Exercise*



- The OGS-EMP will serve as a guidebook for the economies to conduct their respective supply emergency exercises.
- It provides a step-by-step approach to developing and implementing supply emergency exercises.
- It has been developed based on the APERC experiences in the conduct of two security exercises and the approaches recommended by the International Organization for Standardization (ISO) and other exercise guidelines from other organizations or associations.
- Some alternative emergency response measures are provided by the OGS-EMP that could be considered by the economy or the government organization to cope with supply disruptions of oil and gas.



## What is an Exercise?

Exercise is the process used to train for, assess, practice, and improve performance and capacity in an organization.

- Through a simulated situation;
- To evaluate the performance and capacity of system and personnel.

*Note:*

- *Capacity refers to the quantity, ability, and suitability of tasks or outputs that can be produced to respond to something*
- *Performance refers to the action or process of performing a task or function.*
- *Personnel are people employed by an organization or engaged in an organized undertaking, especially in an energy crisis or emergency*
- *System refers to a set of things created to carry out a specific activity, perform a duty, or solve a problem; such things can include policies, plans, procedures, protocols, technologies, machines, equipment among others.*



Source: APERC, 2013



## Why Exercise?



- Validating and testing the system;
- Clarifying and training personnel on their roles and responsibilities;
- Improving institutional framework for better inter-organizational coordination and communication;
- Identifying gaps in resources;
- Identifying opportunities to improve the system and personnel; and,
- Finding the best solution and strategy to cope with oil and gas supply disruptions.

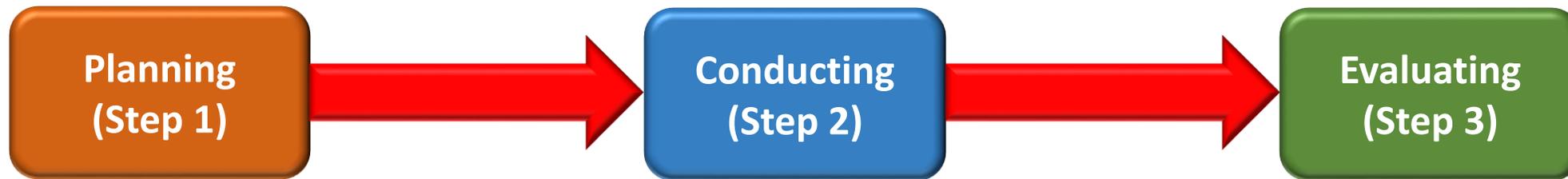


## Elements that Need to be Considered

- **Analyzing Needs.**
  - Review current emergency management condition; examine performance and capacity of the system and personnel; identify the performance and capacity of the system and personnel; and determine needs.
- **Obtaining Commitment and Support from the Top Management.**
  - The economy or the government organization; those who have responsibility for an exercise; and other relevant organization.
- **Establishing the Exercise Organization.**
  - Exercise program manager; exercise project team leader; members of the planning team; and exercise project team.
- **Securing the Budget.**
  - Allocated based on an analysis of the appropriate exercise type an method; and costs sharing with other organizations can be considered in a joint exercise program and/or project.
- **Handling Confidential Data and Information.**
  - “Confidentiality Clause”; “Return All Materials containing Confidential Data and Information”, and “Non-Real Name or Generic Name”.



## Exercise Program



- Secure the elements of the exercise; and
- Establish the objectives of the exercise program.

- Establish the management of the exercise project team;
- Establish communication;
- Establish the timeline and schedule of the exercise program; and,
- Provide support and assistance for the activities of the exercise project team

- Evaluate the entire exercise program including individual exercise activity;
- Report the entire exercise program and/or project to the top management



## Exercise Project

### Planning (Step 1)

- Secure the elements of the exercise;
- Design:
  - Establish the objectives and scope;
  - Select the exercise methods and types;
  - Establish the timeline and schedule;
  - Select the exercise participants;
  - Institute communication; and,
  - Identify logistical needs.
- Develop:
  - Develop exercise scenario; and,
  - Develop exercise document.

### Conducting (Step 2)

- Set up;
- Brief participants;
- Start the exercise;
- Maintain the exercise;
- Evaluate activities; and
- End the exercise.

### Evaluating (Step 3)

- Evaluate through debrief;
- The exercise final report; and
- Exercise follow-ups.



# Characteristics of Exercises (1)

## A. Discussion-Based Exercises

Types of Exercises	Seminar	Workshop	Tabletop Exercise	Discussion-Based Game
Use/Purpose	Familiarizing staff with existing systems or changes/developments in the existing system.	Increasing performance & capacity of staff in achieving or building new or revised the systems. Writing exercise objectives and scenarios.	Assessing the performance & capacity of the system & personnel to respond to an emergency situation.	Assessing the performance & capacity of the system & personnel to respond to an emergency situation.
Format	<ul style="list-style-type: none"> <li>• Informal discussion.</li> <li>• An experienced facilitator needs to be assigned.</li> </ul>	<ul style="list-style-type: none"> <li>• Informal discussion.</li> <li>• An experienced facilitator needs to be assigned.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion of simulated scenarios in an informal setting.</li> <li>• An experienced facilitator needs to be assigned.</li> <li>• Involve many people and organizations.</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion of simulated scenarios in an informal setting by two or more teams.</li> <li>• An experienced facilitator needs to be assigned.</li> <li>• Involve many people and organizations.</li> </ul>
Time for the event	1-2 hours	1-2 hours	2-4 hours or longer up to 3 days.	2-4 hours or longer up to 3 days.
Time for preparation	1 week	1 week	1-3 months	1-3 months



## Characteristics of Exercises (2)

### B. Operation-Based Exercises

Types of Exercises	Drills	Functional Exercise	Full-Scale Exercise
Use/Purpose	Testing the single, specific performance & capacity of system & personnel in a single organization.	Validating or evaluating performance & capacity of the system & personnel to respond to an emergency situation, especially those involved in the chain of command and control system.	Evaluating the operational performance & capacity of the system & personnel to respond to an emergency situation as real as possible.
Format	<ul style="list-style-type: none"> <li>Conducted by a single organization for one specific task.</li> <li>Coordination with other organizations is not necessary.</li> <li>A manager, supervisor, or exercise coordinator needs to be chosen as a lead.</li> </ul>	<ul style="list-style-type: none"> <li>Coordinated response to a scenario in a time-pressured and realistic simulation.</li> <li>Lead by an exercise coordinator.</li> </ul>	<ul style="list-style-type: none"> <li>Simulating the actual response conditions in a highly stressful environment.</li> <li>Requires the mobilization and actual movement of emergency system, personnel, and resources.</li> <li>Lead by an exercise coordinator.</li> </ul>
Time for the event	4-8 hours.	4-8 hours or longer up to 1 or more days.	4-8 hours or longer up to 1 or more days.
Time for preparation	1-2 weeks.	6-18 months.	6-18 months.

Source: ISO 22398:2013, IOC Manuals and Guides No. 58 and IPIECA-OGP Report Number 515



# Develop Exercise Scenario

**The Scenario:**

- It should not be too complicated; and
- It should describe credible threats/hazards that could occur;

**The Scenario Narrative:**

- It should not be long (5-7 paragraphs);
- It should be specific and not overlay complicated in its details;
- It should describe a plausible threat/hazard that could occur or an actual oil/gas supply incident from the past with adjustments for degree or scale
- Events should be outlined in chronological order;
- It should be written in a clear language; and
- It should end with the current known situation.

Some Potential Threats/Hazards to the Oil and Gas Supply Security

Source	Type of Threats/Hazard	Example
From Inside	Weather Event	Typhoon, Hurricane, Flooding
	Geographic Condition	Earthquake, Volcanic Eruption, Landslide, Tsunami
	Terrorists Attack	Bombing, Piracy, Hijacking, Cyber-Attack
	Sociocultural Instability	Labour Issues, Social Unrest, Sectarian Differences, Sabotage
	Accident in Supply Chain	Fire, Oil/Gas Leakage, System Malfunction
	Disease Epidemic	MERS, SARS, bird flu
From Outside	Instability in the Middle East, Africa or Other Exporting Oil & Gas Economies	War, Terrorism, Sectarian Differences, Sabotage, Changes in the Government Decision
	Insecurity in Oil and Gas Chokepoint	War, Terrorism, Piracy, Hijacking

Source: Tanaka 2013, with some modification



# Alternative Emergency Response Measures (1)

*(These measures were collected based on responses from the economies or government organizations that participated in the “APEC Oil and Gas Security Exercise”)*

## **A1. Oil Emergency Response Measures (Supply Side)**

- Drawdown Oil Stock (*short-term*);
- Utilize Spare Capacity (*short- to medium-term*);
- Secure Crude Processing Deals (CPD) (*short- to medium-term*);
- Seek Assistance from Other Economies (*short- to medium-term*);
- Secure Oil Imports (*short- to medium-term*);
- Utilize more Biofuels (*medium-to long-term*);
- Develop Oil Stockpile (*long-term*).

## **A2. Oil Emergency Response Measures (Demand Side)**

- Introduce Car Pooling (*short-term*);
- Conduct Oil Rationing (*short- to medium-term*);
- Implement Energy Efficiency and Conservation for Power Consumption (Electricity-Saving Campaigns) (*short- to medium-term*);
- Shift to Alternative Fuel for Power Generation (*medium-to long-term*).



## Alternative Emergency Response Measures (2)

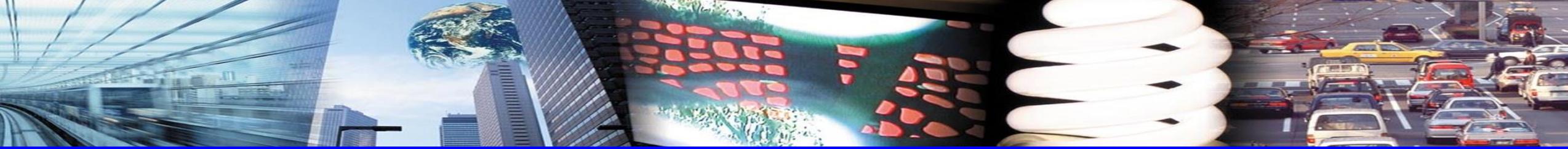
*(These measures were collected based on responses from the economies or government organizations that participated in the “APEC Oil and Gas Security Exercise”)*

### **B1. Gas Emergency Response Measures (Supply Side)**

- Drawdown Liquefied Natural Gas (LNG) from Storage (*short-term*);
- Utilize Spare Capacity (*short- to medium-term*);
- Seek Assistance from Other Economies (*short- to medium-term*);
- Secure LNG Imports (*short- to medium-term*);
- Develop LNG Storage Tank Facility (*long-term*).

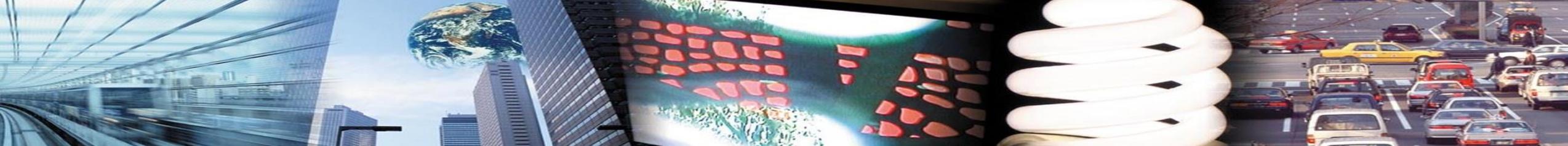
### **B2. Gas Emergency Response Measures (Demand Side)**

- Conduct LNG Rationing (*short-term*);
- Implement Energy Efficiency and Conservation for Power Consumption (Electricity-Saving Campaigns) (*short- to medium-term*);
- Shift to Alternative Fuel for Power Generation (*medium-to long-term*).



## Conclusions

- The threat/hazards on oil and gas security in the APEC member economy could be come at any time, either from inside or outside, and it should be anticipated.
- Conducting the exercise in oil/gas is important to be carried out in order to improve performance and capacity of system and personnel to be more effective in dealing with oil and gas supply disruptions.
- Based on two APEC exercises and two Fora that have been successfully conducted, many aspects need to be prepared and enhanced by the government for meeting with the real emergency situations.
- APERC has drafted “OGS-EMP” to promote and guide economies in the development and implementation of emergency exercise, which is a step-by-step approach on oil and gas emergency exercises.



**Thank you for your kind attention**

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