Supply Chain Security and Resilience

Moderator: Bill Anderson, TISP/SAME

Speakers:

• Kevin Clement, Strategic Planner, State of Texas Office of Homeland Security

• Maria Burns, Director, Center for Logistics & Transportation Policy, University of Houston
DHS PILOT PROGRAM:
CRITICAL SUPPLY CHAIN RESILIENCY WORKSHOPS

May 2015
To provide information on the concept, planning and conduct of the DHS pilot of Critical Supply Chain Resilience Workshops for Oil and Gas
CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS

OVERVIEW

- Initial DHS Concept
- Revised Concept
- Goals and Objectives
- Sequential and Progressive
- Pilot - Oil and Gas Supply Chain
- Proposed Agenda
- Participating Agencies
CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS
DHS INITIAL CONCEPT

PURPOSE: To build strong public-private sector partnerships and develop deeper understanding of issues and concerns along the supply chain

CONCEPT:
- One day workshop on supply chain security & resiliency
- Local development and coordination
- Intended for public and private sector stakeholders

AGENDA
- Key Note Speaker
- Game
- Training (120 page Power Point pack)
- Simulation
CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS
REVISED CONCEPT

PURPOSE: Identify and begin process to develop operational solutions to supply chain issues and concerns

CONCEPT:

- Intended for public and private sector stakeholders
- Focus on a single supply chain – not all 16 sectors
  - Pilot examines the Oil and Gas Supply Chain
- Sequential and Progressive series of one-day workshops
  - Workshops conducted in sequence along the supply chain
  - Source to refinery; refinery to distribution centers; distribution centers to consumers
  - Best Practices, Operational Concerns, Proposed Solutions
CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS
REVISED CONCEPT

- Detailed Advance Planning
  - If it doesn’t show value added – cut it out
- Tailor presentations to one supply chain
  - Recognize the audience
  - Eliminate “Show and Tell” and “One Size Fits All”
- Clearly specified roles at Federal, State, and local levels
- Pre-Workshop Survey to focus presentations
  - Conducted 2-3 months in advance
  - Survey operational concerns and priorities
- An exercise in “active listening” by Federal and state government representatives
- Take pro-active measures to ensure information is shared
- The Workshop is the beginning of a process – not the end
  - Use the workshop to initiate private-public partnership in efforts to resolve issues and concerns
CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS

OBJECTIVES

- Improve the resilience of the supply chain to natural, technological hazards and human-caused threats;
- Identify and begin to address operational security and resilience concerns to the supply chain as voiced by private and public sector stakeholders;
- Clearly define the industry supply chain to establish a threshold of knowledge and understanding between industry and government representatives;
- Facilitate joint planning and communication amongst local and regional owners/operators, and state and local EMCs relevant to the supply chain;
- Build relationships at local/regional level; and
- Develop resources that build training; promote standards; and support local Subject Matter Experts.
CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS
ENVISIONED ROLES

- Department of Homeland Security
  - Coordinate selection of critical supply chain (post-pilot)
  - Solicit involvement Nationwide
  - Facilitate sharing of information between parallel supply chains

- State Agency Sponsor (Texas Office of Homeland Security)
  - Sponsor the initiative
  - Coordinate site selection and scheduling of host venues
  - Solicit private sector professional organization as co-sponsor
  - Solicit involvement of private and public sector stakeholders
  - Facilitate sharing of information between workshops

- Local Jurisdiction
  - Host the workshop
  - Input to invited guests, participants and key note speaker(s)
SUPPLY CHAIN RESILIENCE WORKSHOPS
OIL AND GAS SUPPLY CHAINS IN TEXAS
SUPPLY CHAIN RESILIENCE WORKSHOPS
SEQUENTIAL AND PROGRESSIVE

Source to Refinery to Distribution
FOCUS

IDENTIFY & ADDRESS OPERATIONAL CONCERNS

- What are the hazards and threats to the supply chain?
  “What keeps you awake at night?”
- What hinders resilience
- List and prioritize your operational concerns
- Where can the government help resolve issues?
- Recommendations to address Operational Concerns?
Welcome and Introductions (Texas Oil & Gas Association)
Overview (Texas Office of Homeland Security)
The Oil and Gas Supply Chain (Texas Oil & Gas Association)
Survey Analysis (Society of American Military Engineers)
The Threat (Critical Infrastructure Protection)
Results of Previous Workshop(s) (To be determined)
Lunch with Keynote Speaker (To be determined)
Industry Best Practices and Lessons Learned (U of Houston)
DHS Training (DHS)
Simulation (National Defense University)
Next Steps (Texas Office of Homeland Security)
CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS

PARTICIPATING AGENCIES

- Department of Homeland Security
- Texas Office of Homeland Security
- Texas Oil and Gas Association
- Office of Critical Infrastructure Protection (Texas)
- Delaware Department of Transportation
- DHS Regional Resilience Assessment Program
- Center for Logistics and Transportation Policy (University of Houston)
- The Infrastructure Security Partnership (TISP)
- Society of American Military Engineers (SAME)
- Rio Grande Council of Governments, TX
- Permian Basin Regional Planning Commission, TX
- Nueces County, TX
CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS
FOLLOW-ON PROJECTS

- Develop cooperative arrangements with key suppliers and customers that address security and resilience needs for supply chains

- Improve methodologies and approaches for organization vulnerabilities and risk assessments that take into account interdependencies

- Develop processes and tools to identify and assess supply chain vulnerabilities, interdependencies and disruption impacts; also risk assessment and decision support systems to determine optimal mitigation measures
CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS FOLLOW-ON PROJECTS

- Identify challenges regarding confidentiality and legal constraints to collaborations with supply chain organizations and ways to address these issues.
- Undertake outreach and education of key suppliers on interdependencies and conduct on-site total system assessments.
- Develop supply chain mitigation measures to work around transportation disruptions.
- Develop and enhance existing transportation management models to enable decision-making on alternative routing to deal with all-hazards transportation emergencies.
Provide facility to conduct workshop
  • Size - 100 personnel
  • Audio Visual
  • Registration assistance

Issue invitations jointly with professional association

Input to suitable Keynote Speaker

Assist in coordination of coffee, water, sodas (?)

Lunch
  • No-host, “Jason’s Deli” model
CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS

COMMENTS AND DISCUSSION
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"SUPPLY CHAIN RESILIENCE WORKSHOPS"
Prof. Maria G. Burns
Director, Center for Logistics & Transportation Policy
College of Technology, University of Houston
Contents

1. Supply Chain Resilience: An Overview
   Economic Impact of the Energy Industry
2. Identify the Offshore Oil Critical Supply Chain from resource to distribution
3. Supply Chain Disruption Issues
4. Best Practices and Lessons Learned
5. Critical Supply Chain Resilience Workshops
   Center for Logistics & Transportation Policy
DHS Strategic Plan, 2012-2016

VISION: A homeland that is safe, secure, and resilient against terrorism and other hazards.

MISSION: We will lead efforts to achieve a safe, secure, and resilient homeland... protect cyber networks and critical infrastructure

Table: Energy as key Critical Infrastructure Sector in global security plans.

<table>
<thead>
<tr>
<th>USA (16)</th>
<th>CANADA (10)</th>
<th>EUROPEAN UNION (11)</th>
<th>AUSTRALIA (7)</th>
<th>JAPAN (10)</th>
<th>SOUTH KOREA (7)</th>
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<td>-Electricity, -Gas</td>
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Oil and gas production:
$49 billion in annual sales
$180 billion in economic impacts
642,000 American jobs.
7.7% of US GDP
$86 million to the federal treasury through royalties, exploration contracts and income tax payments.
The industry’s tax rate is 44.3%, exceeding the 35% rate of general corporate tax.

The Gulf of Mexico is the nation’s greatest oil & gas producing region:
25% of US Oil
15% of US Natural Gas.

Sources: M.Burns (2015) DHS Workshop
2. Identify the Offshore Oil Critical Supply Chain from resource to distribution

**SUPPLY CHAIN FOR OIL & GAS**

<table>
<thead>
<tr>
<th>DRILLING</th>
<th>LAND RIGS; JACKUP RIGS; DRILLING BARGES; SUBMERSIBLE RIGS; SEMISUBMERSIBLE RIGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCTION &amp; STORAGE</td>
<td>FPSO, FLNG, SPAR PLATFORMS; FIXED PLATFORMS; GAS PROCESSING CNG, LPG, GTL</td>
</tr>
<tr>
<td>TRANSPORT</td>
<td>ULCCs, VLCCs, SHUTTLE TANKERS, OIL &amp; GAS PIPELINES, TANKERS &amp; GAS CARRIERS</td>
</tr>
<tr>
<td>RECEIVING; REFINERIES; STORAGE</td>
<td>ULCCs, VLCCs, SHUTTLE TANKERS, OIL &amp; GAS PIPELINES, TANKERS &amp; GAS CARRIERS</td>
</tr>
<tr>
<td>OVERLAND PIPELINES, TRANSPORT/DISTRIBUTION</td>
<td>ULCCs, VLCCs, SHUTTLE TANKERS, OIL &amp; GAS PIPELINES, PRODUCT TANKERS &amp; GAS CARRIERS, LNG, LPG, TRUCKS, RAIL.</td>
</tr>
</tbody>
</table>

Drilling rig activities: Economic impact

ECONOMY → Drilling rig activity

- 1316: USA 65%
- 601: CANADA
- 1253: Rest of the world 35%
- 3603 RIGS GLOBALLY

Drilling rigs:
- 429+ for GAS
- 1316+ for OIL
- 51 deep offshore & specialized
- 1796+ Rigs in US Territory

Compiled by M. Burns based on www.data.bsee.gov, 2014
2. Identify the Offshore Oil Critical Supply Chain from resource to distribution

A) GEOGRAPHY-BASED SECURITY RISKS IN THE US

SHALE GAS RESERVES

OIL & GAS RESERVES

MAJOR PIPELINES & COMPRESSOR STATIONS

2. Identify the Offshore Oil Critical Supply Chain from resource to distribution

ACTIVITY-BASED SECURITY RISKS

- Exploration
- Production
- Processing
- Transportation
- Marketing

Upstream E&P

Crude Oil

Midstream

Refining

Downstream R&M
2. Identify the Offshore Oil Critical Supply Chain from resource to distribution

**ENERGY & NETWORK CONFIGURATIONS**

**Type 1: Point-To-Point Network:** Even distribution of power.

RAW MATERIALS → PORT → LAND + LABOR → PORT → MANUFACTURING

PORT → WAREHOUSES → LAND → VALUE-ADDED SERVICES → PORT → GLOBAL DISTRIBUTION CENTERS

**Type 2: Hub-And-Spoke Network:** The hub has increased bargaining power over the spokes.

RAW MATERIALS → HUB PORT → GLOBAL DISTRIBUTION CENTERS

GLOBAL DISTRIBUTION CENTERS → LAND & LABOR → MANUFACTURING

VALUE-ADDED SERVICES → WAREHOUSES

**Type 3: Interactive Hub-And-Spoke Networks:** Terminal Operators, Shippers and Manufacturers merge, and coordinate multiple networks.

HUB PORT → RAW MATERIALS → GLOBAL DISTRIBUTION CENTERS → LAND & LABOR

VALUE-ADDED SERVICES → WAREHOUSES

**Type 4: Modern, Complex Networks**

**Conglomerates:**
- Cargo owners
- Shippers
- Receivers
- Terminal operators
- Carriers: sea, land and air
- Logisticians
- Global distributors

Sources:
3) DISRUPTIONS: SUPPLY CHAIN SECURITY THREATS

TERRORISM

ILLEGITIMATE TRADE OR TRAVEL
"narco-torpedoes" bolted to cargo ships

SEA PIRACY

CYBERSECURITY

NATURAL DISASTERS

HUMAN FACTOR

HUMAN ERROR
3) DISRUPTIONS: SUPPLY CHAIN SECURITY THREATS

- Expansion of All-water Route via Panama Canal
- Expansion of Mexico Routing
- Expansion of Global sea trade routes

Sources:
3) Port of Houston Authorities Interviews for the above books.
3) DISRUPTIONS: PUBLIC/PRIVATE PARTNERSHIPS: LESSONS LEARNT...

TERRORIST ATTACK
SEPTEMBER 11, 2001

United We Stand
September 11, 2001

3,152 people killed ‘000s in distress;
US$ 150-200 billion in damages

Pentagon, World Trade Center,
Federal & New York City, state
losses, damages, jobs, taxes,
loss of resources.
Direct loss of employment:
83,000
Lost wages: $17 billion

HURRICANE KATRINA
NOLA, 2005

OPERATIONS CEASED

The Gulf of Mexico: destruction
of rigs and refineries brought on
by the hurricane, over 91% of oil
production and 83% of gas
production was shut down.
6 months after Katrina 85% of
daily gas and 76% of daily oil
production were restored.

1,833 people died ‘000s in distress;
US$ 108 billion in damages

EARTHQUAKE
KOBE, JAPAN, 2005

6,400 people died,
30,000 injured,
000 in distress;
US$ 200 billion in damages

100,000 buildings destroyed
300,000 homeless
KOBE - Japan’s major port closed
for 2 months;
20,000 Toyota cars – production off-
schedule (NIST SP 901)
4) BEST PRACTICES: PARTNERSHIPS IN SUPPLY CHAIN SECURITY THREATS

Source: M. Burns. 2015. “Logistics & Transportation Security” book by CRC

THE TRIAD OF PARTNERSHIPS

PUBLIC SECTOR
- Raw Materials
- Industry
- Manufacturing
- Transport and other Service Providers

PRIVATE SECTOR
- Commercial
- Social Segment

COMMUNITY

TIMELINE OF PARTNERSHIPS

- Risk Assessment; Contingency Planning; Emergency Preparedness
- Emergency Response; Resource Management
- Recovery, Resilience, Sustainability

What you see
What you suspect

What a risk assessment should reveal
- Poor security controls
- Poor situational awareness
- Insufficient screening of people and cargoes

What a security threat reveals
- Poor supply chain visibility
- Taking procedural shortcuts
- Mis-investing
- Underinvesting
- Overinvesting
- Technologies assessment
- People training, drills &
4) BEST PRACTICES: PARTNERSHIPS IN OPERATIONAL SECURITY
4) CRITICAL SUPPLY RESILIENCE WORKSHOPS
BEST PRACTICES

PUBLIC-PRIVATE PARTNERSHIPS AND RESILIENCE

Source: M. Burns. 2015. “Logistics & Transportation Security” book by CRC, based on:
4) CRITICAL SUPPLY RESILIENCE WORKSHOPS

- PUBLIC SECTOR
- PRIVATE SECTOR
- ACADEMIA
- COMMUNITIES

CRITICAL SUPPLY CHAIN RESILIENCE WORKSHOPS

- Energy Majors
- Transportation & Logistics
- Manufacturers
- Oil & Gas Exploration
- Refineries
- Vendors
1. RESEARCH ACTIVITIES
   - Global Supply Chain Security
   - Critical Infrastructure & Resilience
   - Project Management, Feasibility Studies
   - Market Forecasts

2. TRAINING (most USCG & ASTL Approved)
   - Management and Leadership
   - Hazardous Materials
   - HSQE: Security * Safety * Quality * Environment
   - Offshore Supply Vessels (OSVs)
   - Crisis Management * Crowd Management
   - International Logistics
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Thank You.