

# **SURFACE TRANSPORTATION: INHERENTLY RESILIENT AND ESSENTIAL TO RESILIENCY**

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# **SURFACE TRANSPORTATION IS INHERENTLY RESILIENT TO TERRORISM AND SABOTAGE**

- **Terrorist attacks on bus may be deadly but service continues**
- **Attacks on rail are quickly repaired, in days if not hours--and the system is a resilient network**
- **Lengthy interruptions require destroying a difficult to by pass bridge or tunnel, but these are hard targets**
- **Or a massive attack on the scale of a major natural disaster--a nuclear explosion in a port**
- **Or a continuing campaign of sabotage which is hard to sustain**

# **THE HISTORICAL RECORD - 1**

- **Terrorists have considered, reconnoitered, detonated symbolic bombs, but rarely have attempted to destroy major transportation infrastructure**
- **And none have succeeded**
- **Guerrillas have destroyed smaller bridges, rails, and roads in rural as part of economic warfare campaigns**
- **Major bridges mostly assessed to be too big**
- **Some vulnerabilities to explosives in underwater tunnels, and intense fires can cause serious damage**

## **THE HISTORICAL RECORD - 2**

- **Wartime sabotage provides examples of large-scale sustained campaigns to disrupt supply lines**
- **Soviet partisans waged a large-scale rail sabotage campaign against the invading German army**
- **By 1943, German forces faced 1,000 incidents of rail sabotage a month--rising on occasion to 10,000 demolition actions in a single night**
- **Although a drain on forces, Germans were able to keep the trains running**

# **IN THE 9/11 ATTACKS, PUBLIC TRANSPORTATION BECAME THE CITY'S LIFELINES**

- **All passengers safely evacuated from under the World Trade Center**
- **Buses loaded passengers and headed north**
- **Ferries evacuated thousands across the river**
- **Trains evacuated people from Manhattan and brought firemen and police to the city**
- **Transit's heavy equipment assisted at "Ground Zero"**

# **THE 9/11 ATTACKS WERE THE LARGEST SCALE DISASTER CAUSED BY TERRORISTS - RESTORATION OF SERVICE**

- **Bus service continued**
- **Transit system shut down for security inspection, but started to resume service in less than three hours:**
  - **By end of day, at 65 percent**
  - **Within two days, at 72 percent**
  - **By September 17, restored to 84 percent**

# **SOME LESSONS LEARNED FROM 9/11 EXPERIENCE**

- **Public surface transportation was essential to evacuation, emergency response, rapid recovery, restoration of normal life and commercial activity**
- **Crisis planning, tabletop simulations, and field exercises proved essential**
- **Contingency plans were fungible**
- **Recovery planning had to be compressed into days, sometimes hours**

# **SOME LESSONS LEARNED FROM 9/11 EXPERIENCE (cont'd)**

- **Rapid restoration required flattening and streamlining contracting procedures**
- **Response and recovery planning should be conducted on a regional basis**

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**See Jenkins and Edwards, *Saving City Lifelines: Lessons Learned in the 9-11 Terrorist Attacks***

# **RESILIENCY DOES NOT MEAN RECONSTRUCTION**

- **Resiliency means restoring vital services**
- **Reconstruction is a long-term, often contentious issue**
  - **New York still arguing about WTC construction**
  - **New Orleans not yet rebuilt**

# **SECURITY CONSIDERATIONS, WHILE ESSENTIAL, CAN IMPEDE RECOVERY**

- **A major terrorist attack will demand increased security**
- **But security responses can shut down transportation systems**
- **The key to resiliency will be figuring out how to appropriately increase security without seriously impairing operations**
- **Prevention is an unrealistic goal in wartime circumstances**
- **Some risk must be accepted**

# **OBSTACLES TO RAPID RECOVERY MAY BE MORE INSTITUTIONAL THAN PHYSICAL**

- **Lack of COOP planning and disorganization**
- **Budget limitations and disputes about who pays**
- **Demands for absolute security, despite realities of a “war”--a “no risks” mindset**

# **RESILIENT SYSTEMS - BRITTLE RESPONSES**

- **In scenarios depicting large-scale terrorist attacks, it is terror and demand for security that shut down transportation systems**
- **Security shutdowns of even short duration have cascading economic effects**
- **Even modest incremental increases in security can prove costly in the long term**
- **Governments currently measure capital investment and operating costs, not long-term cumulative effects on the economy**
- **Transportation is resilient, but a frightened society and government can be brittle**