



# **A Disaster-Recovery Plan For Local Municipalities Using Communication Satellite Facilities and Services**



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**Leslie A. Taylor  
Sidney M. Skjei, P.E.**



# Leslie A. Taylor

President, LTA, a consulting firm specializing in  
satellite and wireless regulation and strategies

*Contact Info:*

Leslie Taylor Associates, Inc.

6800 Carlynn Court

Bethesda, MD 20817-4302

Ltaylor@lta.com

[WWW.LTA.COM](http://WWW.LTA.COM)

Tel: (301) 229-9410

Fax: (301) 229-3148



# Sidney M. Skjei, P.E.

President, Skjei Telecom, a technical services firm specializing in satellite, wireless and broadcast engineering and operations.

Skjei Telecom, Inc.

7777 Leesburg Pike, Suite 315N

Falls Church, VA, 22043

[www.SkjeiTelecom.com](http://www.SkjeiTelecom.com)

Tel: (703) 917-9167

Fax: (703) 917-0098



# This Paper Addresses:

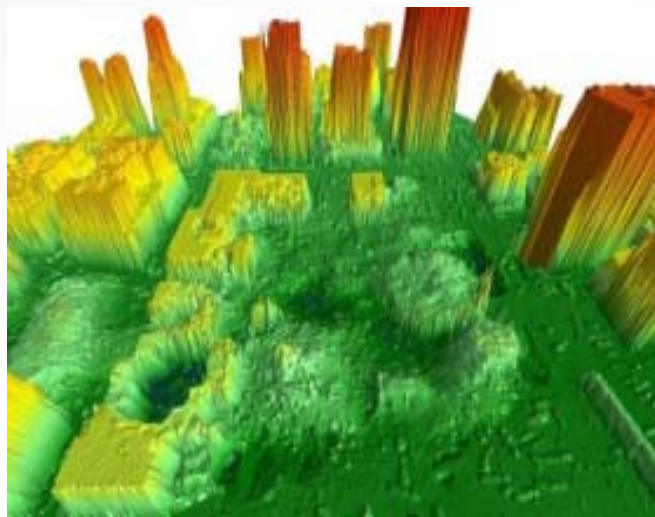
- Role of Satellites on September 11
- Communication Needs During Emergencies
- Satellite Systems Applicable to Disaster and Emergency Communications
- Satellite Assets and Services that Should be Included for Communications Backup



# How Satellites Were Used on September 11, 2001

- Mobile Satellite Systems such as Globalstar and Iridium provided backup to terrestrial cellular and mobile systems
- On-site satellite uplinks ensured that news could be transmitted
- Satellites transmitted news to cable headends and directly to end users
- Satellite VSAT networks supported FEMA and commercial organizations

# Remote Sensing Satellites Documented the Damage





# Communications Vital During Emergency Situations

- Within emergency response community: police, fire, rescue, local government
- With State and local government and emergency management officials
- News and information to emergency community and the public



# Review of Satellite Communications Capabilities

- Transmission of broadcasting: backhaul to cable headends; direct transmission such as DTH and satellite radio
- Satellite newsgathering and truck-mounted antennas
- VSAT networks
- Point-to-point Systems as Backup to Terrestrial Infrastructure

# FEMA Satellite Truck

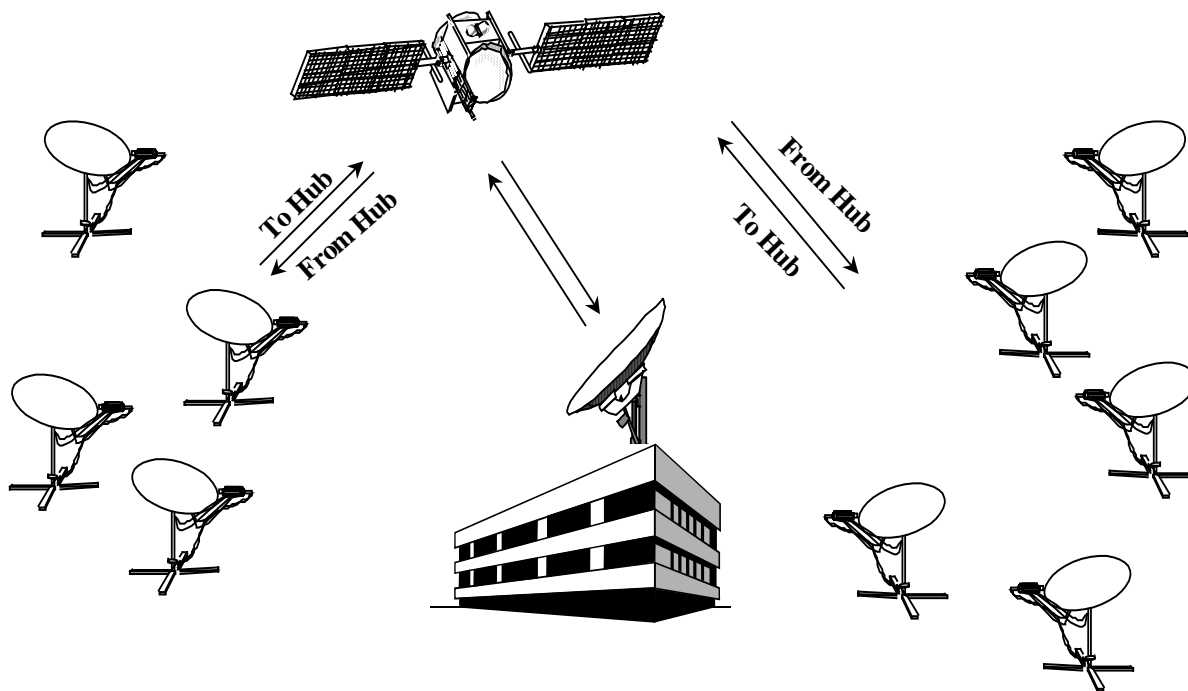




# VSAT Networks: the organization's needs must be evaluated

- Permanently mounted or transportable
- Network topology: star versus mesh
- Fixed or demand assignment of resources
- Type of communications: voice, data, video
- Bandwidth required
- Capital and operating cost
- User needs
- Security requirements

# VSAT Networks – Interactive Star Network





# Point-to-Point VSAT Systems

- Provide internet connections to disaster areas, bypassing failed terrestrial connections
- Support paging and mobile networks
- Telemedicine links
- Video and audio conferencing with off-site experts

# Mobile Satellite Systems

- Satellite-only
- Satellite/cellular
- Position-location capability
- Providers: Globalstar, Iridium, Inmarsat





# Some Mobile Satellite Suppliers

<i>Supplier</i>	<i>Website</i>	<i>Equipment/Service Offered</i>
Globalstar	<a href="http://www.globalstar.com">www.globalstar.com</a>	Globalstar phones and services
Iridium	<a href="http://www.iridium.com">www.iridium.com</a>	Iridium phones and services
Inmarsat	<a href="http://www.inmarsat.com">www.inmarsat.com</a>	Inmarsat terminals and services
Globalstar USA	<a href="http://www.globalstarusa.com">www.globalstarusa.com</a>	Globalstar phones and service
Roadpost	<a href="http://www.roadpost.com">www.roadpost.com</a>	
Stratos	<a href="http://www.stratos.ca">www.stratos.ca</a>	Inmarsat primarily



# Basic Set of Satellite Services for Emergency Backup

- Satellite Radio (XM or Sirius) receivers and DBS receiver(s) (EchoStar or DirecTV)
- VSAT/transportable back-up facilities or network
- Backup mobile communications systems: Globalstar, Iridium and/or Inmarsat phones



## Leslie Taylor Associates

- (301)229-9410
- [ltaylor@lta.com](mailto:ltaylor@lta.com)
- <http://www.lta.com/>

## Skjei Telecom

- (703) 917-9167
- [sid@skjeitelecom.com](mailto:sid@skjeitelecom.com)
- [www.skjeitelecom.com](http://www.skjeitelecom.com)