

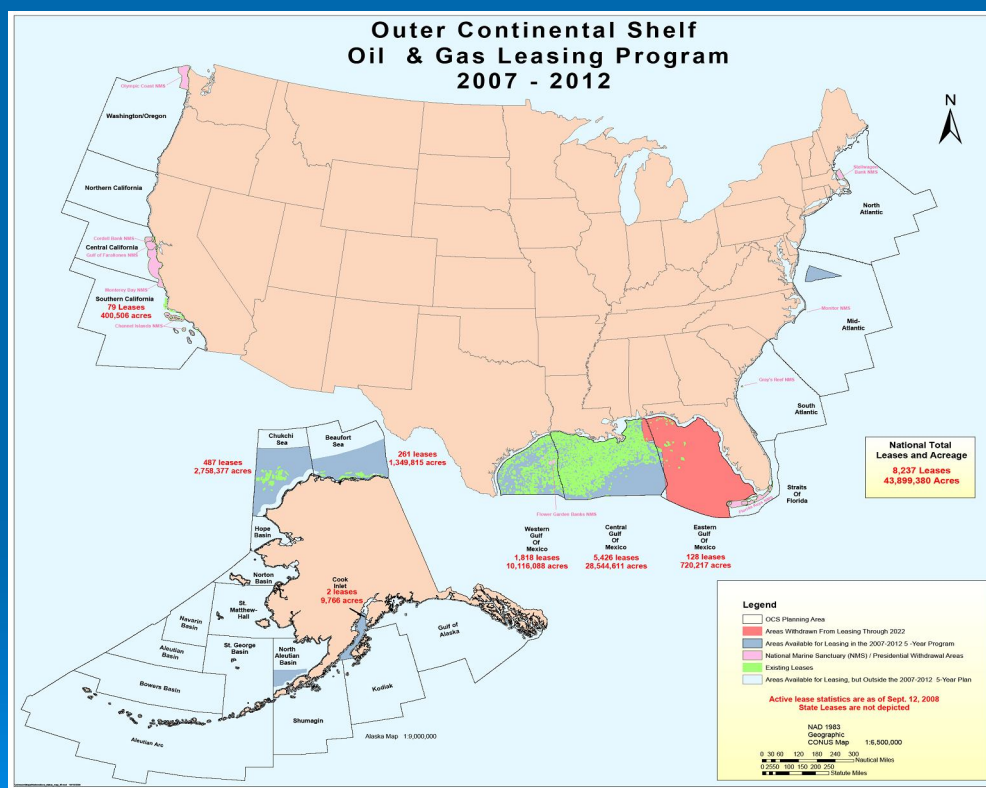
OCS Oil & Gas Onshore / Coastal Infrastructure

Presentation to the North Carolina
Advisory Subcommittee on
Offshore Energy Exploration

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Minerals Management Service – Gulf of Mexico Region
Fred Jacobs – Chief, Production Measurement Section
Kristen Strellec – Economist, Social Science Unit

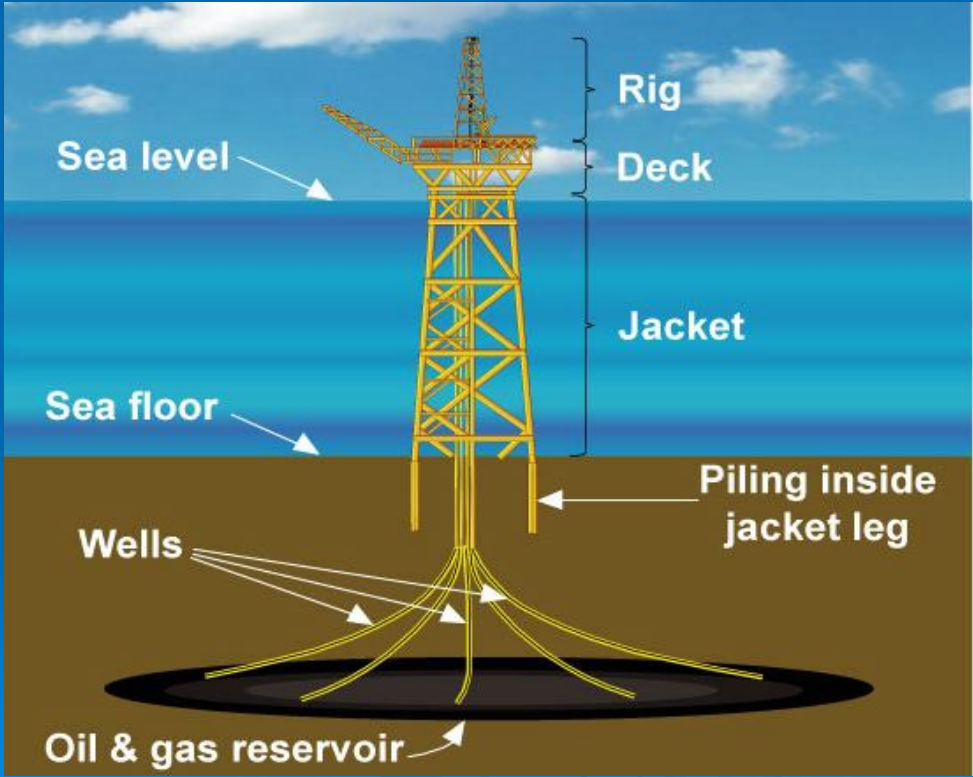
Outer Continental Shelf



MMS regulates oil & gas activity on Federal OCS.

OCS: submerged lands lying beyond the seaward extent of the States jurisdiction out to Federal boundary

Offshore Platform Schematic



Moored floating structures are typically used in water depths greater than 1000 ft.

Introduction

Types of Infrastructure

- Every offshore oil & gas producing basin in the world requires an extensive amount of onshore support infrastructure to ensure safe & economic ED&P activities
- Infrastructure is usually specialized, but can leverage other onshore marine infrastructure such as ports & shipyards
- Examples of infrastructure include:
 - Oil & gas transportation & processing systems (pipelines, gas processing plants) as well as the facilities that maintain & protect those assets (pipe coating and milling facilities)
 - Ports & service bases required to move personnel & equipment back & forth from offshore structures to coastal areas and can also serve as onshore maintenance hubs for certain equipment which may be too specialized to repair in the field
 - Waste management facilities that are used to handle different types of waste generated by offshore oil and gas activities

Introduction Offshore Operations

Offshore oil & gas operations differ considerably from most onshore activities

- Equipment more expensive to install since it has to be transported over water or through the air; also operates in a more hostile environment.
- Costs for repair and maintenance considerably higher due to the transportation costs to the offshore facility; also additional costs for the transportation of waste.
- Workers tend to be more experienced & skilled (given the complexity of the operations & the value of the equipment). Thus, they command higher wages.

Introduction Current Study

- MMS routinely examines the onshore support network that supports offshore oil & gas development.
- Current study titled “Oil & Gas Infrastructure in the Mid-Atlantic (GM-09-08)” will describe each infrastructure type & inventory & will analyze capacities; review industry trends, outlooks, & potential issues for each infrastructure type; & analyze what new infrastructure is likely to be needed as well as potential changes to existing infrastructure to adapt to new development needs. The final report expected in June 2011.
- This presentation provides background information on many of these infrastructure types. Many pictures are of facilities/assets that support the extensive O&G development in the GOM. Thus, the scope & size of many of these assets are significant & may not approximate the scale of onshore assets that may be developed to support a single Atlantic lease sale, or limited Atlantic development.
- MMS has no permitting authority for any onshore infrastructure. Individual states will make their own permitting and siting decisions.

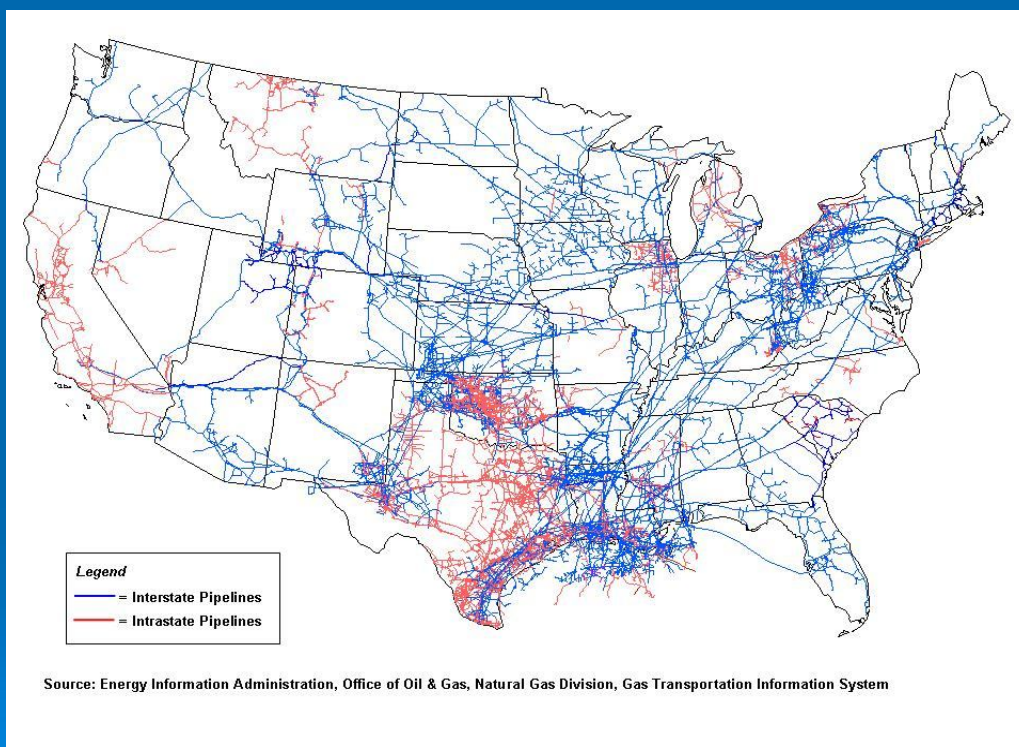
Pipelines

Pipelines Natural Gas

- Roughly 305,000 miles of interstate & intrastate transmission pipelines in the U.S.
- Highly integrated transmission & distribution grid can transport natural gas to & from nearly any location in the lower 48 States
- Interstate network comprised of long-distance, wide-diameter (20-42 inch), high-capacity trunklines; carries most of the natural gas transported
- Intrastate natural gas pipelines operate within State borders & link natural gas producers to local markets and to the interstate pipeline network
- Smaller diameter pipelines are used to by local distribution companies (LDC's) to deliver natural gas to commercial and residential end-users

Pipelines

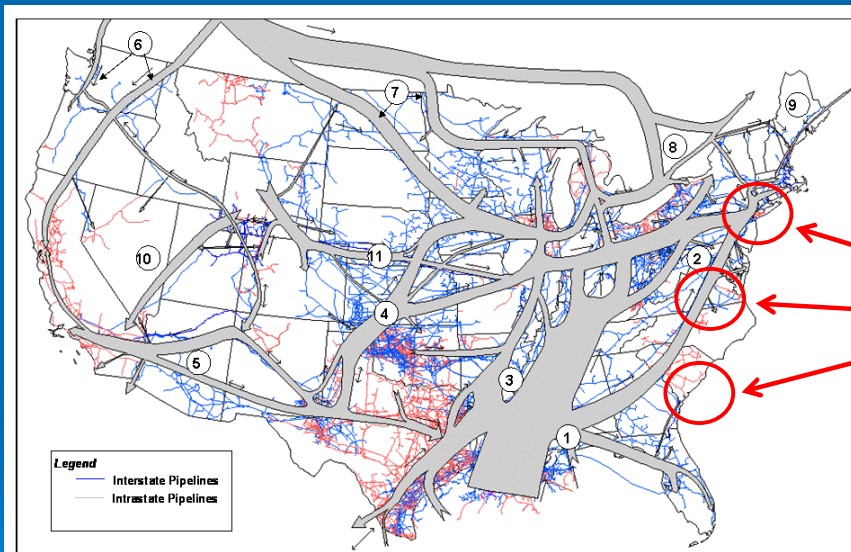
U.S. Natural Gas Pipeline Network



Highest concentration in high-producing areas of Gulf coast, Mid-continent, and Appalachian.
Interstate transmission lines are regulated by FERC; intrastate are typically regulated by the states.

Pipelines Transportation Corridors

Most of the major transportation routes can be categorized into 11 distinct corridors or flow patterns. Five major routes extend from the producing areas of the South; four enter the U.S. from Canada; and two start in the Rocky Mountain area.



Examples of
potential access
points for Atlantic
offshore production

Source: Energy Information Administration, Office of Oil and Gas, Natural Gas Division, GasTran Gas Transportation Information System.

The EIA has determined that the informational map displays here do not raise security concerns, based on the application of the Federal Geographic Data Committee's *Guidelines for Providing Appropriate Access to Geospatial Data in Response to Security Concerns*.

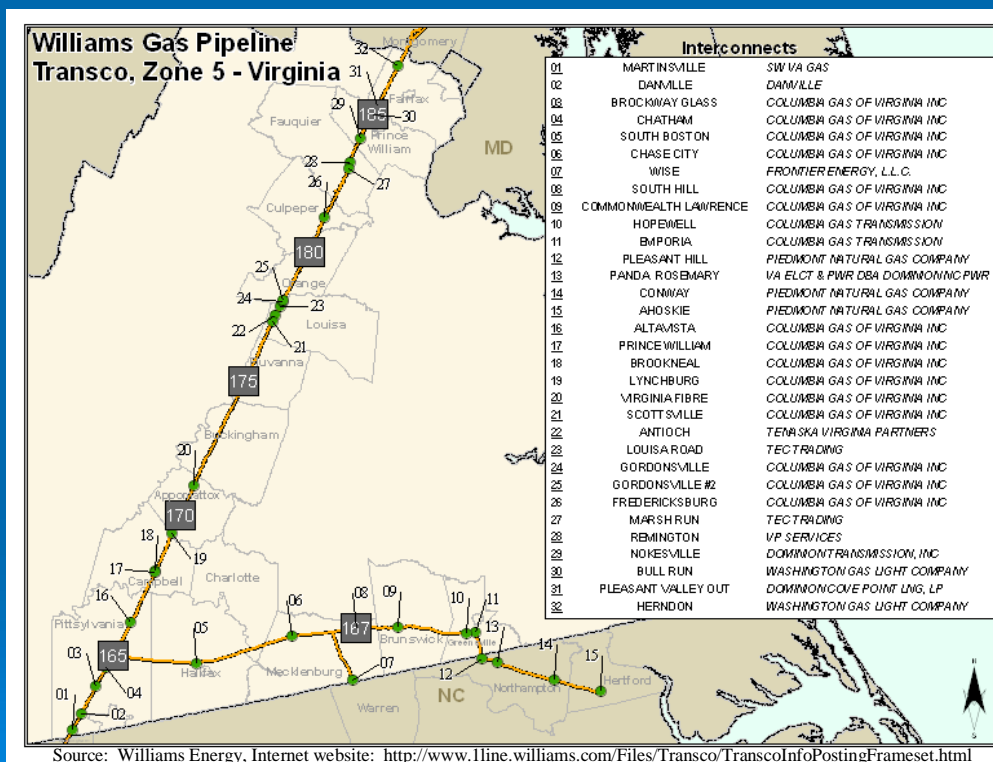
Natural Gas Pipelines Major Mid-Atlantic Transco Pipeline

Williams' Transco Pipeline has a system design capacity of 8.1 Bcf per day and serves markets in the Southeast, Mid-Atlantic, and Northeast



Source: Williams Energy, Internet website: http://www.williams.com/gas_pipeline/gp_assetMap.aspx

Natural Gas Pipelines Transco Pipeline into VA & NC

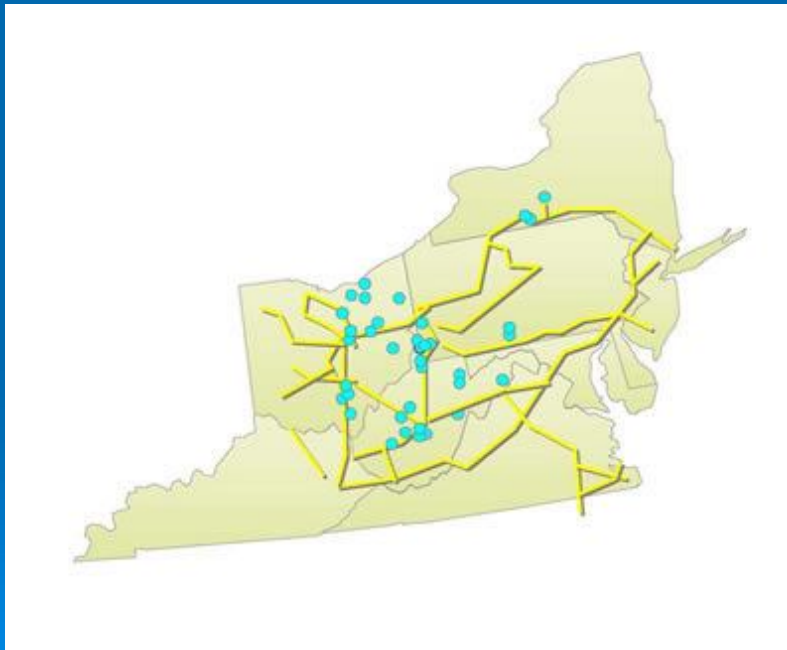


Interconnection points which drop off gas supplies to LDC's such as Piedmont Natural Gas.

If Atlantic production were to occur, it may tie-in to this type of established system.

Natural Gas Pipelines Major Mid-Atlantic Columbia Gas P/L

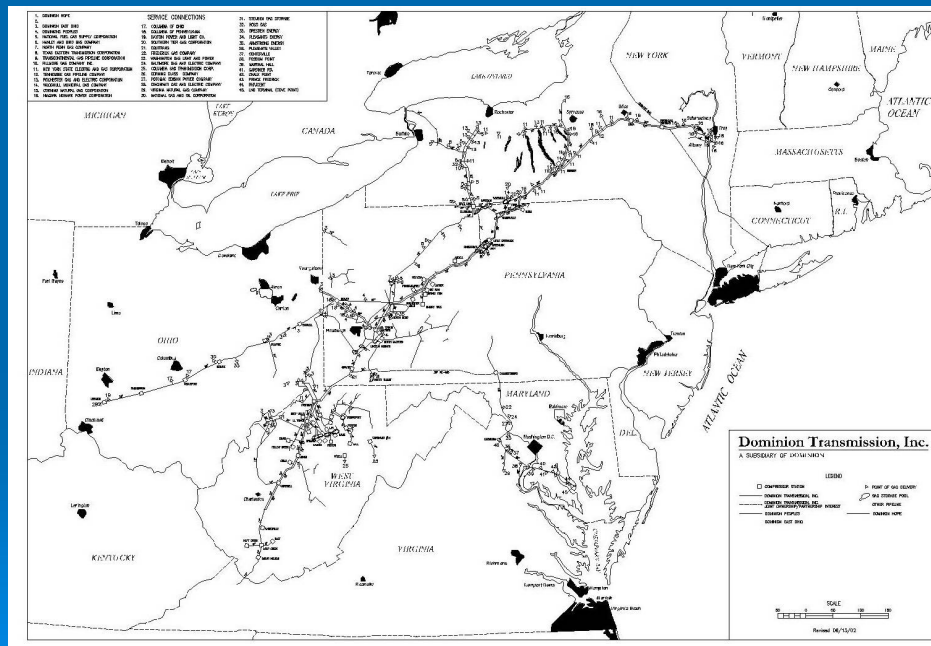
Columbia Gas Transmission averages 3 Bcf per day through a 12,000-mile pipeline network in 10 states. It also owns and operates 37 storage fields in four states with almost 600 Bcf of total capacity.



Source: NiSource, Internet website: <http://www.ngts.com/company/columbia-gas.asp>

Natural Gas Pipelines Major Mid-Atlantic Dominion P/L

Dominion Transmission maintains 7,800 miles of pipeline in six states: OH, WV, PA, NY, MD, and VA. Dominion also operates one of the largest underground storage systems in the U.S. with links to other major pipelines and markets in the Midwest, Mid-Atlantic and Northeast regions.



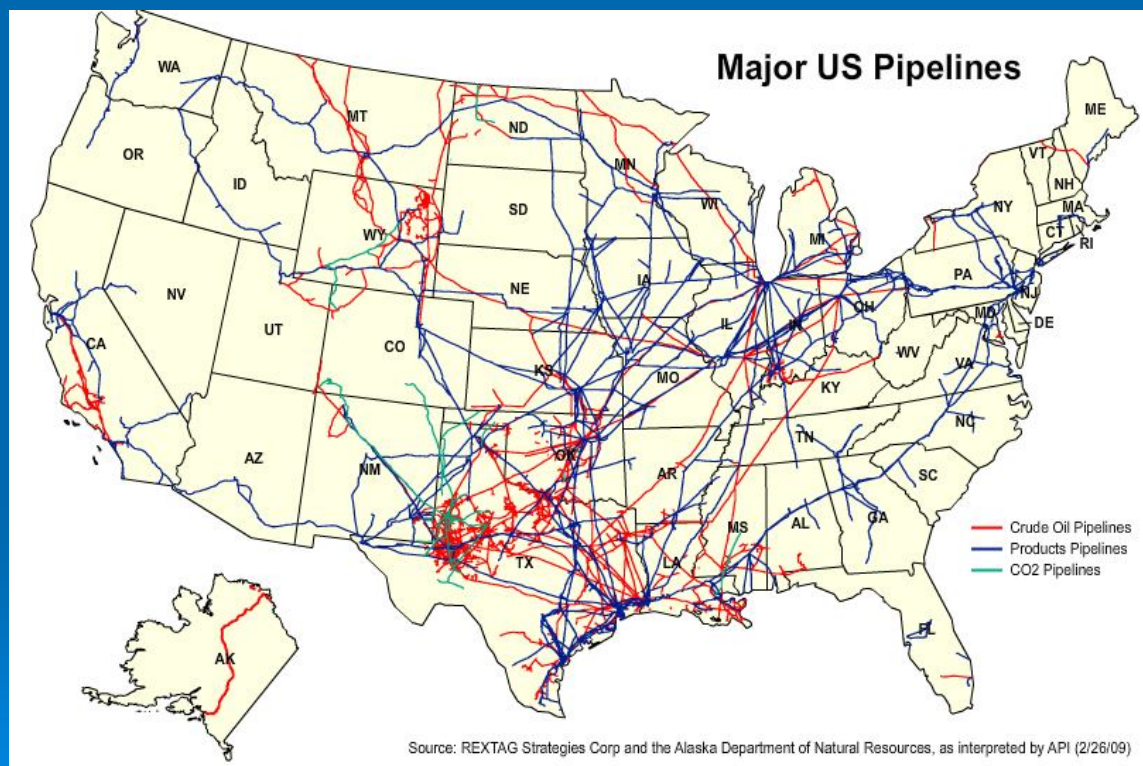
Source: Dominion Transmission; Internet website: http://escript.dom.com/jsp/info_post.jsp?company=dti.

Pipelines Crude Oil and Petroleum Products

- There are approximately 200,000 miles of oil pipelines in the U.S.
- Oil pipelines operate in all 50 states
- A medium-sized oil pipeline might transport 150,000 barrels per day - the equivalent of 750 tanker truck loads per day
- About 60% of the petroleum transported via pipeline is crude oil; remainder is in the form of refined petroleum products such as gasoline, diesel, jet fuel, kerosene, and propane
- Like natural gas, the oil market infrastructure moves crude oil & products from the producing regions of the U.S. to consuming regions

Pipelines

U.S. Crude Oil and Products Pipeline Network



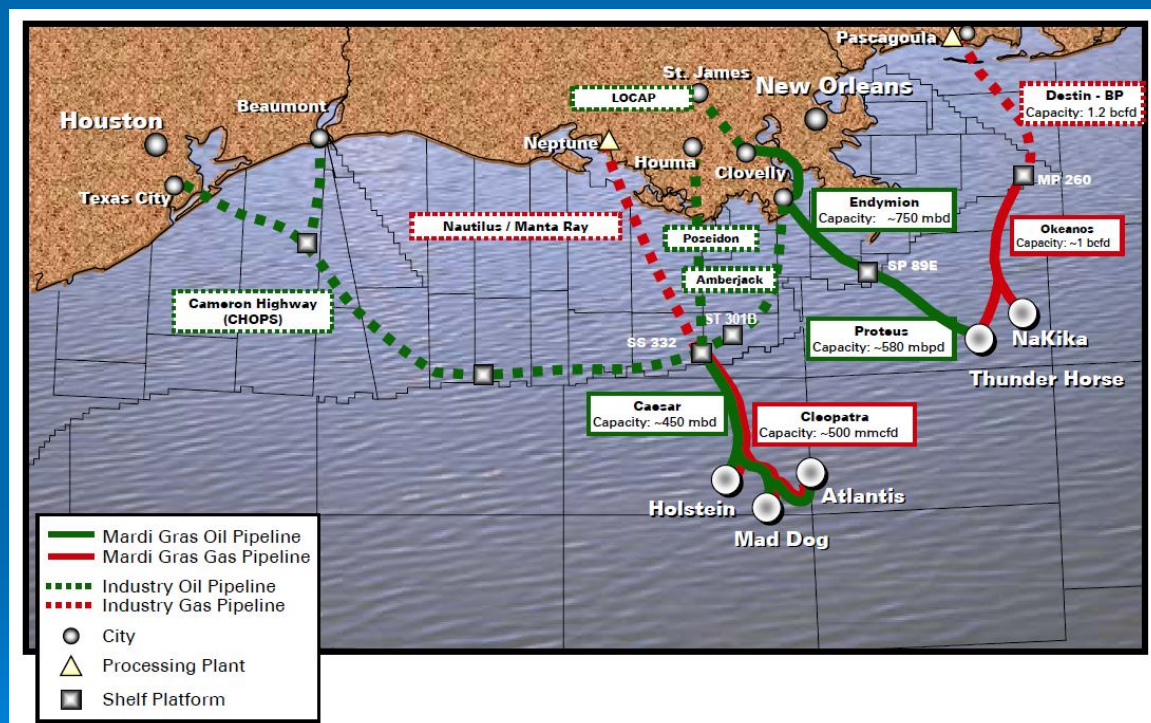
The GOM also serves as a major import hub for foreign oil.
Product pipelines deliver refined products from refineries along the Gulf Coast and Mid-west.

Pipelines Offshore Gulf of Mexico Overview

- The GOM pipeline system is comprised of approximately 33,000 miles of pipeline that link the roughly 3,200 operating platforms to facilities onshore
- System includes surface-level piping, valves, metering points, compressors, and dehydration and separation facilities, as well as sub-sea piping and valves
- Secondary lines (typically less than 20 inches in diameter) feed natural gas into the main trunklines (typically greater than 20 inches) that transport the natural gas directly to points onshore



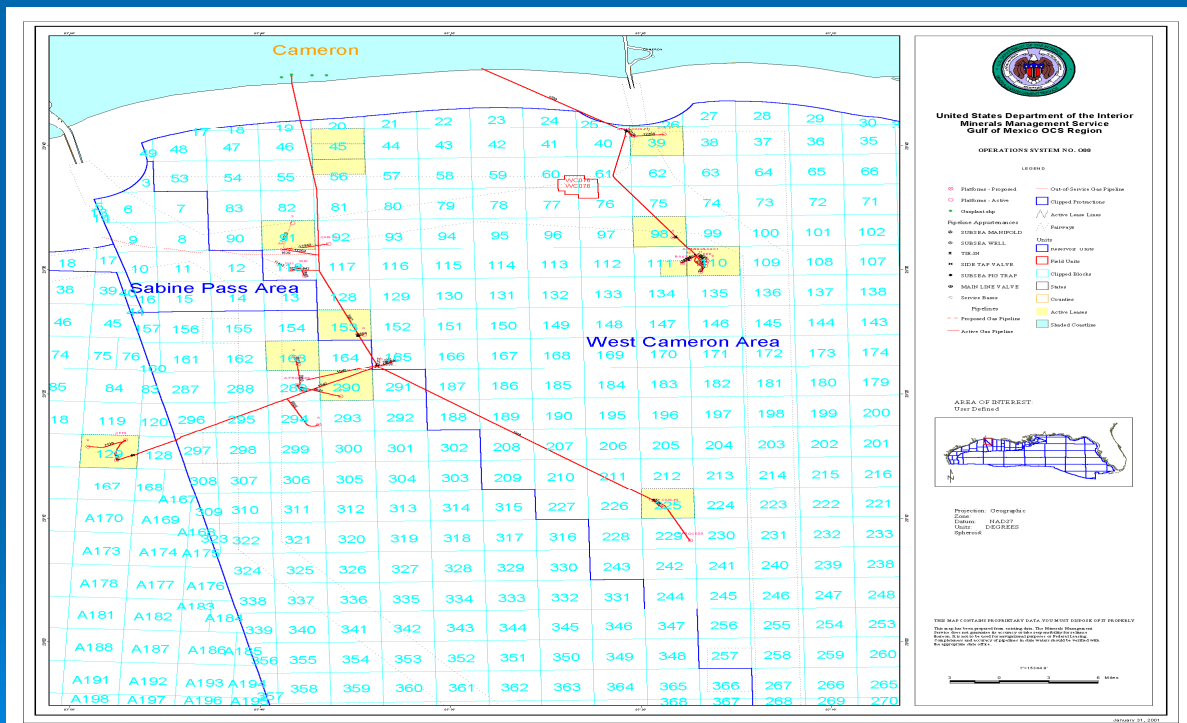
Pipelines GOM, BP Mardi Gras System



Source: BP, http://www.bppipelines.com/assets_home.html

Example of recent pipeline expansions in the GOM developed to support significant deepwater production.

Pipelines GOM, Pelican Gas Gathering System



Pipelines Employment – Annual Operations

Employment levels & staffing will be a function of pipeline development levels and activities. Below are some of the potential positions that may support limited field operations.

Position Description	Salary Range
Business/Marketing	\$75,000 to \$110,00
Engineers (C.E., M.E)	\$100,000 to \$120,000
Technicians/Operations	\$75,000 to \$95,000
Support/Maintenance	\$45,000 to \$75,000
Misc. Local Contract Support	Varies by Trade/Craft but averages around \$90,000

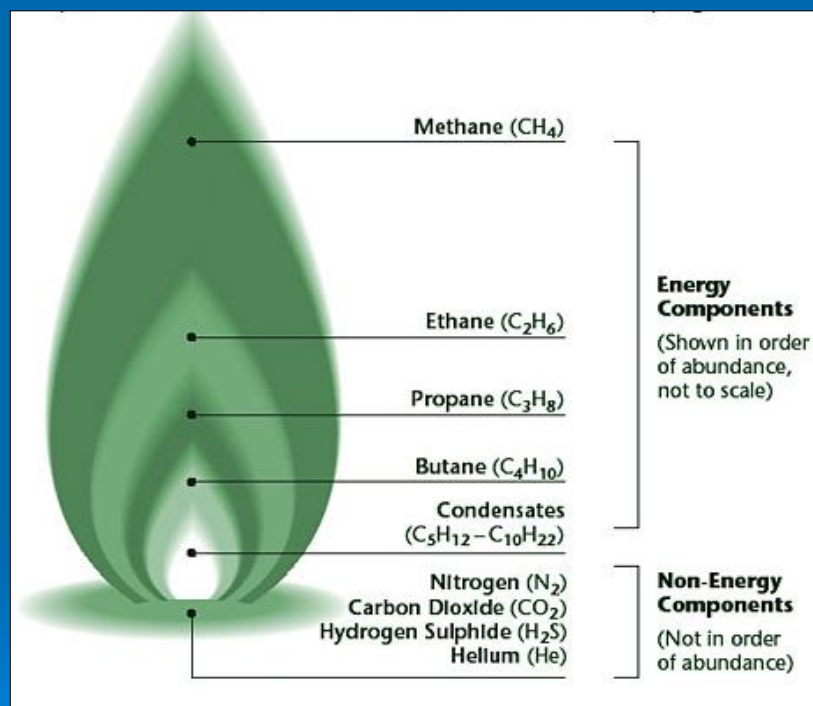
Significant offshore Atlantic development could give rise to a larger regional presence by a major pipeline company. A regional operations center could lead to significant payroll across numerous business, marketing, management, engineering and operations positions.

Natural Gas Processing

Natural Gas Processing Overview

- Natural gas is processed to:
 1. Prepare gas for residential and commercial use by removing impurities and separating the gas into useful components
 2. Obtain an uplift in value in the gas stream
- Impurities can include water, hydrogen sulfide, carbon dioxide, nitrogen and helium
- There are 535 natural gas processing plants in the U.S.
- Most of the existing processing capacity is located in 6 states: Texas, Louisiana, Oklahoma, Colorado, Wyoming, & California

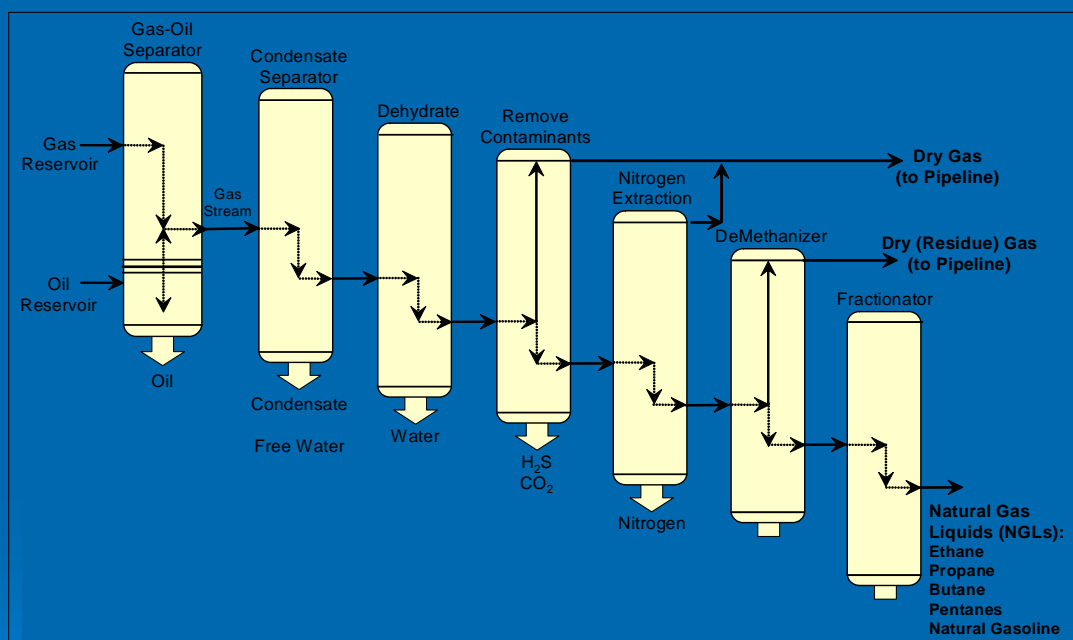
Natural Gas Processing Common Components of Natural Gas



Source: Canadian Centre for Energy Information. What is natural gas? Internet website: <http://www.centreforenergy.com>

Primary component of natural gas is methane which is used for retail customer use.
Other components which are processed out of the stream are referred to as natural gas liquids.

Natural Gas Processing General Natural Gas Processing Schematic

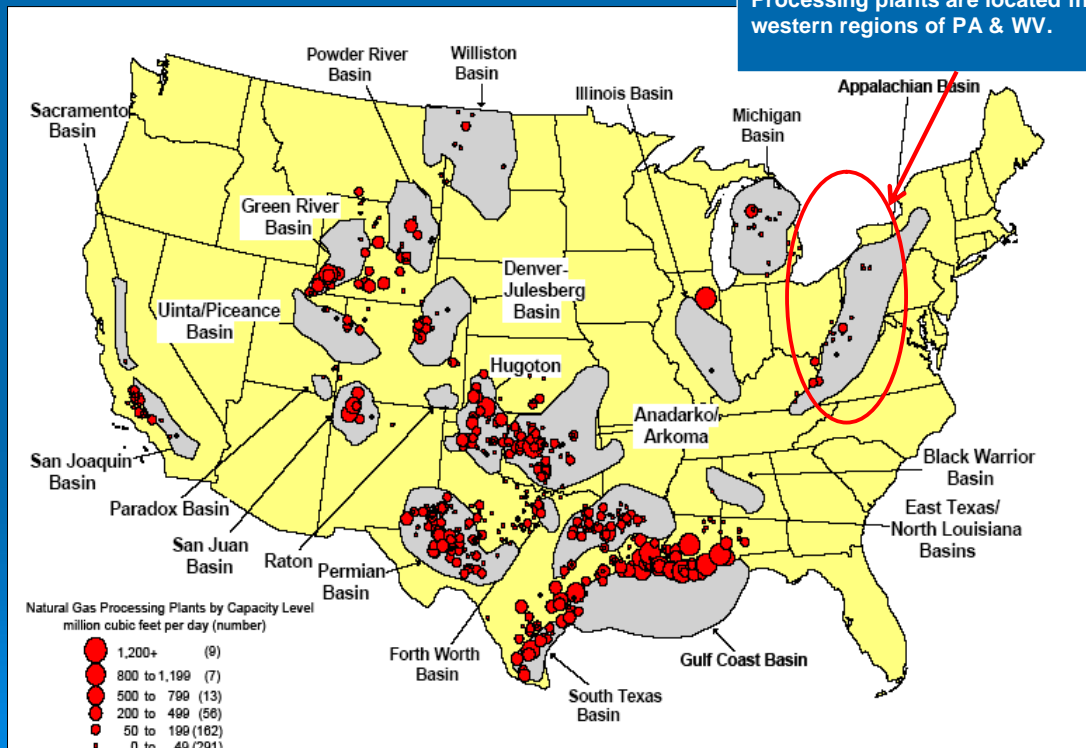


Source: U.S. Dept. of Energy. Energy Information Administration (EIA). Natural gas processing: the crucial link between natural gas production and its transportation to market. Washington D.C., January 2006.

**Each phase of separation undergoes a variety of heat and pressure differentials to extract NGL's .
Fractionation process is commonly located at alternative site.**

Natural Gas Processing Concentration of Processing Plants

Existing Mid-Atlantic gas processing is limited to the moderate levels of gas production in the Appalachian basin. Processing plants are located in the western regions of PA & WV.



Source: U.S. Dept. of Energy. Energy Information Administration (EIA). Natural gas processing: the crucial link between natural gas production and its transportation to market. U.S. Department of Energy, Energy Information Administration, Office of Oil and Gas, Washington D.C., January 2006.

Natural Gas Processing Bridgeport Processing Plant

Devon Energy's Bridgeport natural gas processing plant serves hundreds of gas wells in the Barnett Shale field in north Texas



Source: Devon Energy, Internet website: http://www.devonenergy.com/Newsroom/Pages/media_resources.aspx#terms?disclaimer=yes

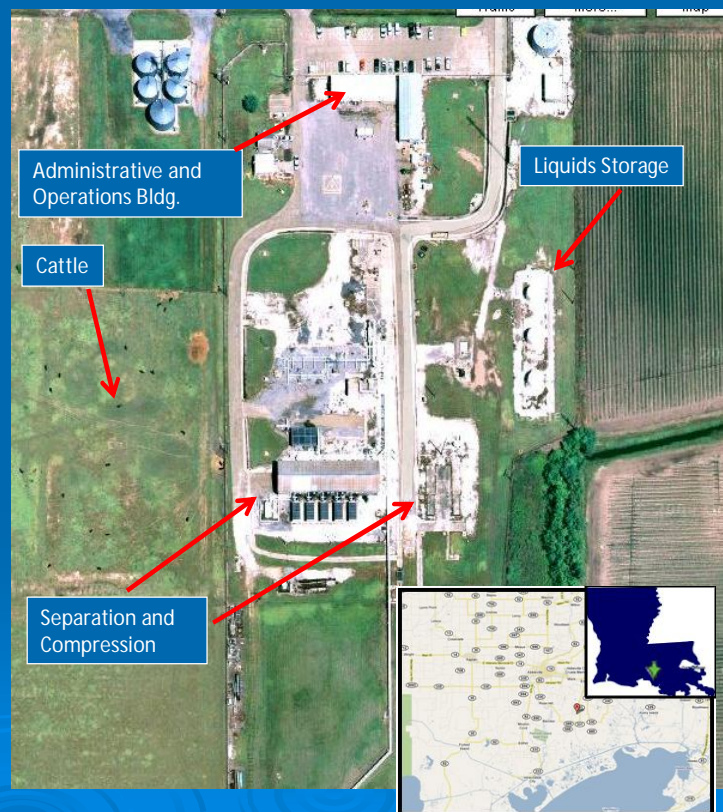
Natural Gas Processing Sea Robin Processing Plant, Erath, LA

The Sea Robin Gas Processing Plant is located in Erath, Louisiana (Vermilion Parish) on an 11-acre tract adjacent to Henry Hub. The capacity is 660 MMcf/d.

The processing plant straddles the Sea Robin Pipeline system, which includes 440 miles of offshore pipeline.

Gas that is brought onshore through the Sea Robin system is processed at this facility and then transported to end-use customers. As Sea Robin is located adjacent to Henry Hub, it has access to nine interstate and four intrastate natural gas pipelines.

Facility co-exists nicely with adjacent farming activities.



Natural Gas Processing Typical Staffing & Salaries

Staffing and salary levels are approximate and can vary with size of facility and location.

Most Company employees at gas processing facilities receive health, retirement, and other corporate benefits.

Number of Positions	Position Description	Salary Range
3 to 5	Engineers (C.E., M.E)	\$75,000 to \$110,000
7 to 12	Technicians	\$75,000 to \$95,000
5 to 10	Support and Maintenance	\$45,000 to \$75,000
Varies	Misc. Local Contract Support	Varies by Trade/Craft and location – averages around \$89,000

Pipe Coating

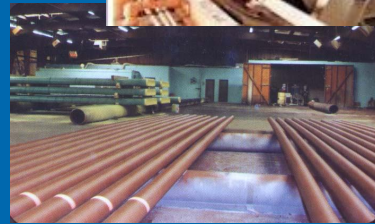


Pipe Coating Overview

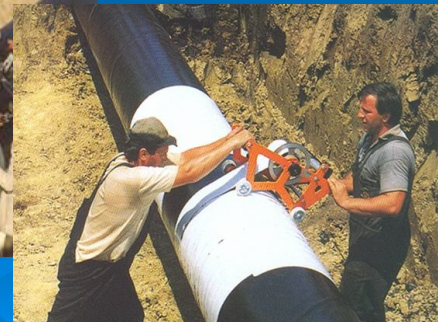
- Exterior of oil & gas pipelines are coated to protect against corrosion / other damage
- May coat inside to protect against corrosion & improve the flow of hydrocarbons
- For offshore, may be coated with a concrete layer to increase weight (ensure line stays on the seabed)
- Threats to pipeline integrity include third-party damage, geological activity & corrosion
- To be effective, coating for hydrocarbon pipelines must satisfy several properties:
 - Easy to apply
 - Adheres well to pipe
 - Resists impact
 - Flexible
 - Resists soil stress
 - Resistant to water
 - Resistant to electricity
 - Chemically and structurally stable
 - Resists bacteria, marine organisms and corrosion.

Pipe Coating Pipe Coating Operations

In the GOM, pipe coating mills are usually located adjacent to the pipe mill, so line pipe moves directly from the pipe manufacturer to the coating facility



Or onshore pipe can be coated in the field, once the pipe is in place



Source: BSS, <http://www.bss.com.cn>; Consolidated Pipe Coatings, <http://expert-pipe-coaters.com>; Shandong Xunda Anticorrosion, <http://www.xundatape.com>

Pipe Coating

Types of Pipe Coating

The natural gas industry uses several different types of pipe coatings. Historically, pipeline companies coated pipe with coal tar enamel or an enamel tape wrap.

Today a fusion bond epoxy (FBE) coating is used most widely. FBE coating can be recognized by its light blue color, often seen on pipe being transported by rail or truck. Regardless of the type of coating used, the purpose is the same: Prevent external corrosion by prohibiting moisture from coming into direct contact with the metal.

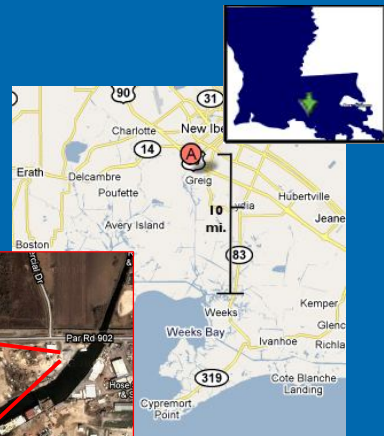


Source: Cangzhou Spiral Steel Pipe Co, <http://steelpipe-fitting.com/>; Battelle, <http://www.battelle.org/pipetechnology/FLOWLOOP/Links/PipeCoating.htm>;

Pipe Coating The Bayou Companies, New Iberia, LA



Stacked, coated
pipe



Source: <http://www.bayoucompanies.com>.

Pipe Coating The Bayou Companies, Baton Rouge, LA

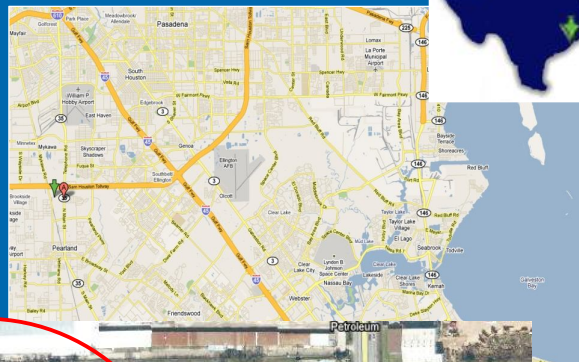
The Bayou Companies' Baton Rouge facility is located adjacent to the Stupp Corporation Pipe Mill. The facility has access to the CN railroad and is in close proximity to the port of Greater Baton Rouge.



Source: <http://www.bayoucompanies.com>.

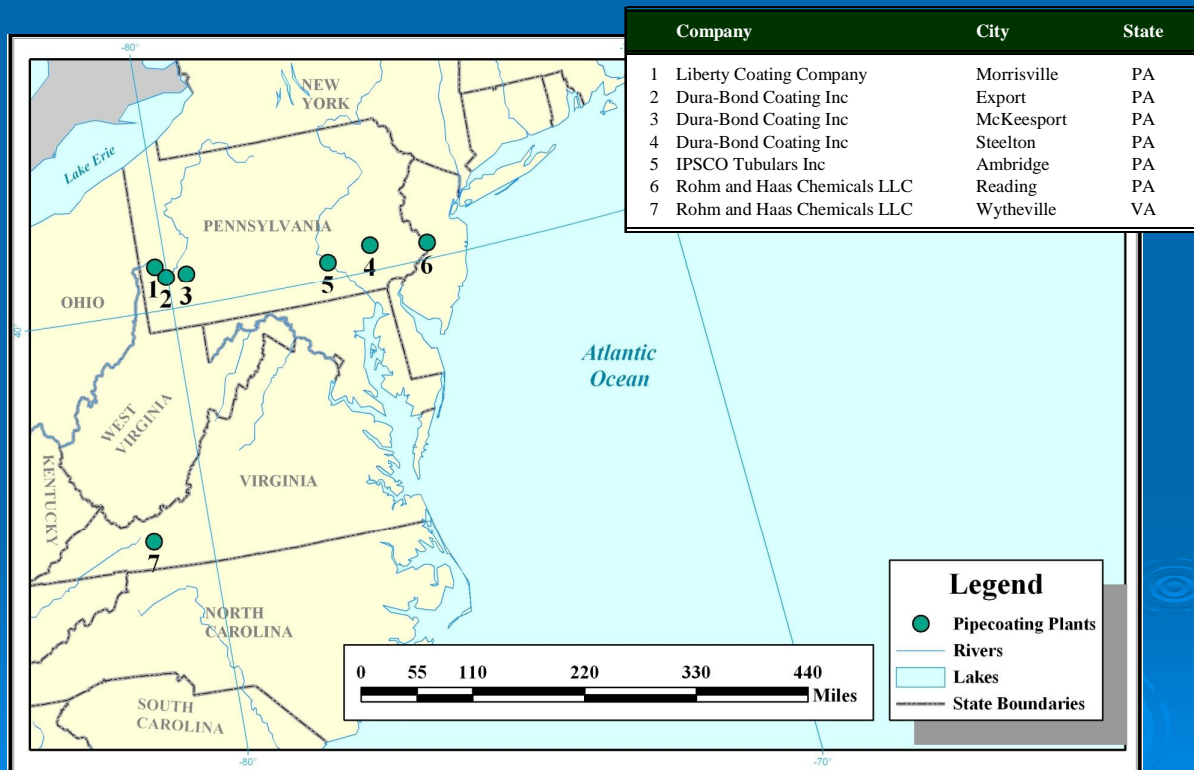
Pipe Coating Bredero Shaw, Pearland, TX

Bredero Shaw's pipe coating facility in Pearland, Texas is accessible by truck, rail and through the Houston/ Galveston ports.



Source: <http://www.brederoshaw.com/>

Pipe Coating Mid-Atlantic Pipe Coating Facilities



Pipe Coating Mid-Atlantic Pipe Coating Facilities

Liberty Coating Company



Dura-Bond Coating, Inc



Source: Dura-Bond Coating Inc., <http://www.dura-bond.com/facilities.html>; Liberty Coating Company, <http://www.libertycoating.com/specifications.html>

Pipe Coating, Milling, and Yards Employment – Annual Operations

Employment levels & staffing will be a function of scope of the activities at the pipeyard. A full service facility, with milling activities, a wide range of coating activities, and business operations could employ several hundred direct employees and contract labor. Below are some of the potential positions that may support limited field operations.

Position Description	Salary Range
Business/Management	\$100,000 to \$120,000
Business/Marketing	\$70,000 to \$110,000
Engineers (C.E., M.E)	\$100,000 to \$120,000
Technicians/Operations	\$75,000 to \$95,000
Support/Maintenance	\$45,000 to \$75,000
Support/Business-Clerical	\$35,000 to \$45,000
Misc. Local Contract Support	Varies by Trade/Craft but averages around \$89,000

Ports and Service Bases

Ports and Service Bases Overview

- Ports provide a vital link to the offshore oil and gas industry
- Ports house the service bases from which the “vehicles” (mainly ships and helicopters) that support offshore platforms are based and maintained
- Ports & service bases take delivery of, transfer, & serve as launching points for the structures, equipment, supplies & crew that serve the offshore industry
- Support activities include providing products & services (e.g. engine & turbine construction & repair, generators, gears, tools, pumps, compressors)
- Additionally, drilling muds, chemicals, & fluids are necessary daily inputs that have to be transported to offshore structures from onshore support facilities

Ports and Service Bases Hornbeck Marine, Golden Meadow, LA

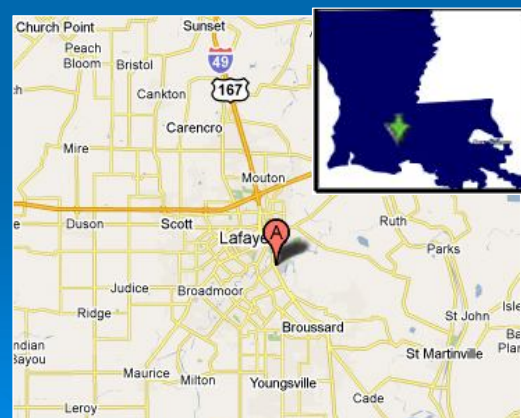
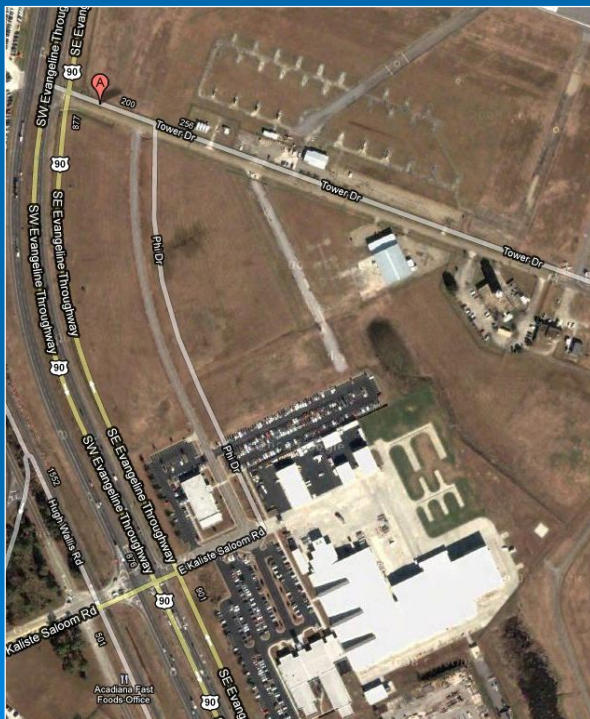
Offshore service vessels (“OSVs”) serve exploratory drilling rigs and production facilities and support offshore and subsea construction, installation, maintenance and repair activities. In addition to transporting deck cargo, such as pipe or drummed material and equipment, OSVs also transport liquid mud, potable and drilling water, diesel fuel, dry bulk cement and personnel between shore bases and offshore rigs and production facilities.



Source: Hornbeck Marine, http://www.hornbeckoffshore.com/vessel_overview.html

Ports and Service Bases PHI Inc., Lafayette, LA

PHI's fleet of helicopters serves installations more than 200 miles offshore.



Source: PHI, Inc., <http://www.phihelico.com/>

Ports and Service Bases Port of Morgan City, LA

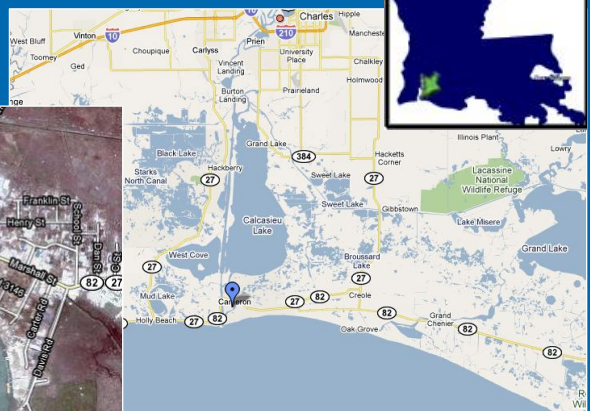


Ports and Service Bases Port of Venice, LA



Ports and Service Bases

Port of Cameron, LA



Ports and Service Bases
GOM, Intracoastal City Shore Base, LA



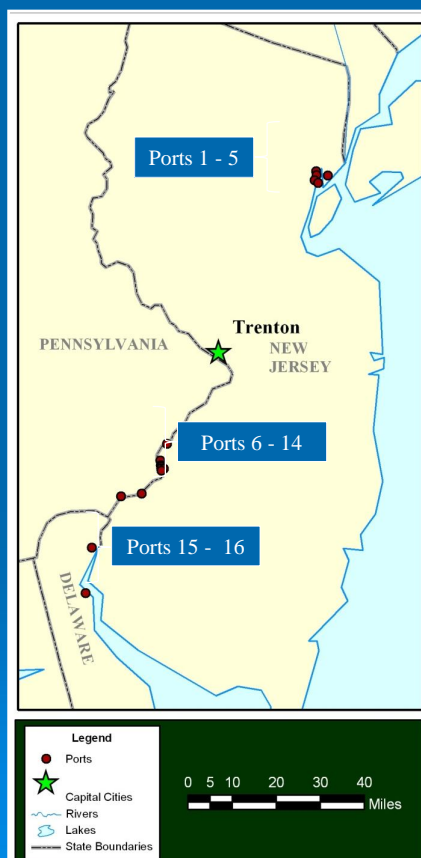
Mid-Atlantic Ports



- The Atlantic Coast between Newark, NJ and Brunswick, GA is home to 35 port terminals
- 26 of the 35 terminals are major terminals
- 9 of the 35 terminals are minor or covered piers
- The largest port by acreage is Port Newark in Port Newark, New Jersey with 2,230 acres of space and 41,000 linear feet of berthing space for ships
- New York/New Jersey; Norfolk, VA; and Charleston, SC each have at least three local ports
- The mean low water depth at dock of Atlantic Coast Ports is 40 ft
- North Carolina has two ports - Port of Morehead and Port of Wilmington

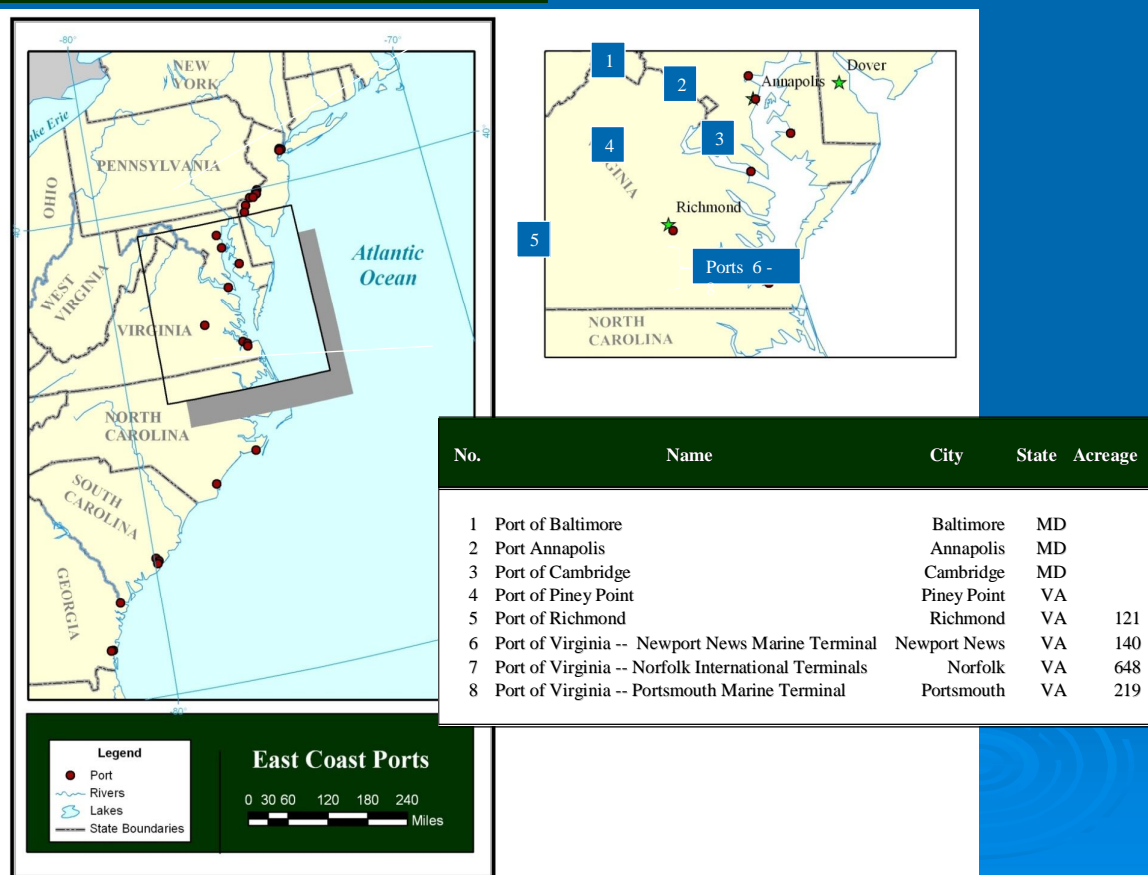
Note: For this analysis, a port is considered major if it had at least 20 acres of lay down area and wasn't a covered pier, otherwise it is considered minor.

Mid-Atlantic Ports New York, New Jersey, Pennsylvania and Delaware

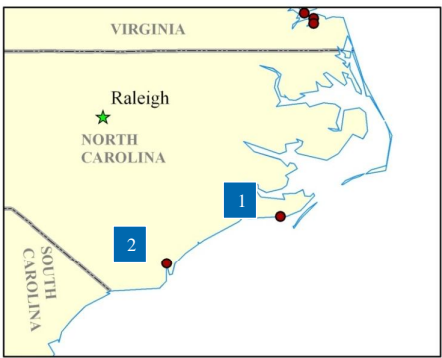
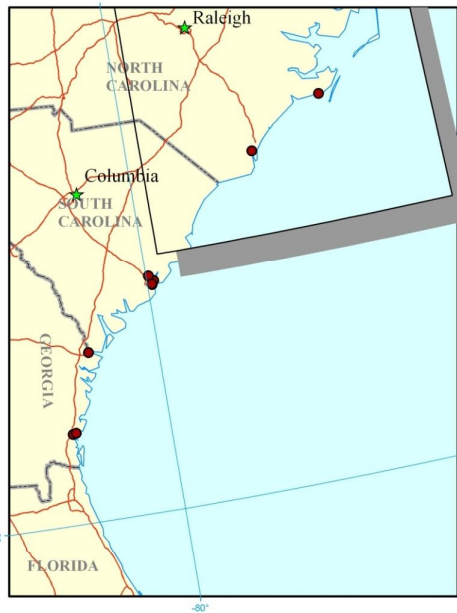


No.	Name	City	State	Acreage
1	APM Terminal	Elizabeth	NJ	350
2	Global Marine Terminal	Jersey City	NJ	98
3	Maher Terminal	Elizabeth	NJ	445
4	Port Newark / Elizabeth	Port Newark	NJ	2,230
5	Port Newark Container Terminal	Port Newark	NJ	180
6	South Jersey Port Corp -- Beckett Street Terminal	Camden	NJ	125
7	South Jersey Port Corp -- Broadway Terminal	Camden	NJ	180
8	Port of Philadelphia - Packer Avenue Marine Terminal	Philadelphia	PA	112
9	Port of Philadelphia - Pier 84	Philadelphia	PA	14
10	Port of Philadelphia - Piers 38 & 40	Philadelphia	PA	12
11	Port of Philadelphia - Piers 78 & 80	Philadelphia	PA	44
12	Port of Philadelphia - Piers 96 & 98 Annex	Philadelphia	PA	55
13	Port of Philadelphia - Tioga Marine Terminal	Philadelphia	PA	116
14	Penn Terminals	Eddystone	PA	80
15	Port of Delaware City	Delaware City	DE	
16	Port of Wilmington	Wilmington	DE	308

Mid-Atlantic Ports Rhode Island, Maryland and Virginia



Mid-Atlantic Ports North Carolina



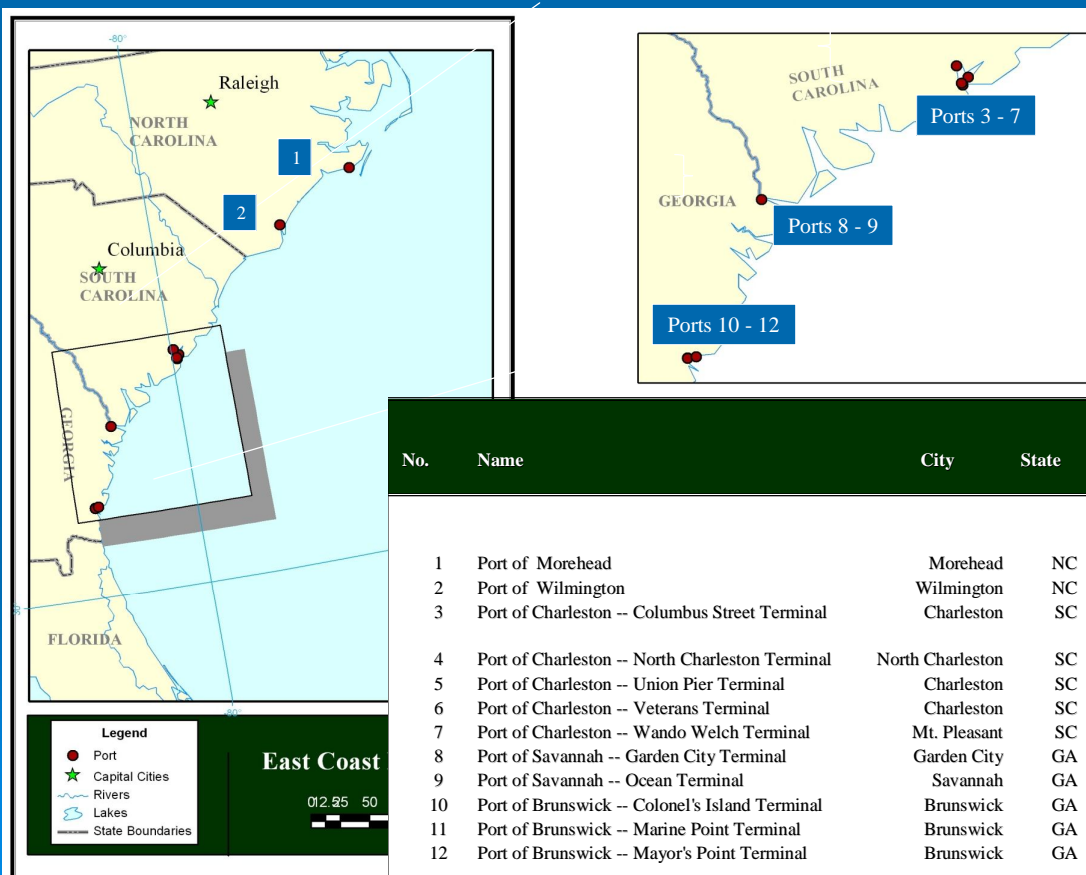
No.	Name	City	State	Acreage
1	Port of Morehead	Morehead City	NC	140
2	Port of Wilmington	Wilmington	NC	250



East Coast Ports



Mid-Atlantic Ports South Carolina and Georgia



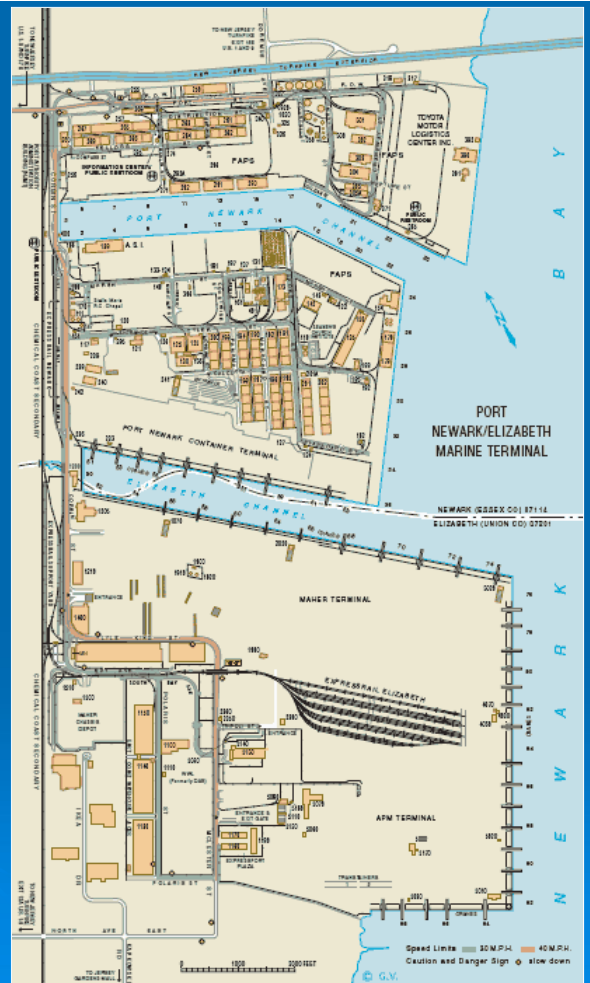
Mid-Atlantic Ports Port Newark / Elizabeth

Overview

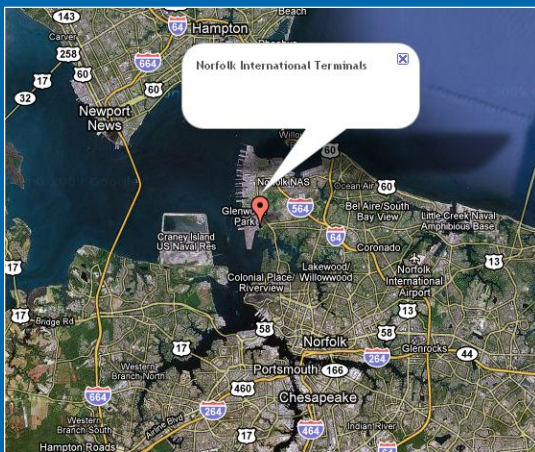
- 2,230 acre footprint
- 41,000 linear feet of ship berthing space
- This port, like many other Atlantic Coast ports, primarily handles shipping containers. It handles breakbulk such as furniture, mixed metal scrap, and women's and infant apparel. It also handles a large amount of RoRo (roll on/roll off) and bulk (edible liquid oils) traffic
- Rail and interstate access

Location

- Located in Port Newark, New Jersey. 



Mid-Atlantic Ports Norfolk International Terminals



Overview

- 648 acre footprint
- 14 heavy-duty container cranes
- 50 foot mean low water mark depth at dock

Location

- Located in Norfolk, Virginia. ★



Mid-Atlantic Ports Port of Savannah – Garden City Terminal

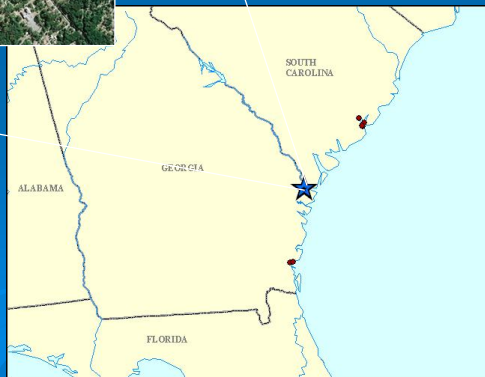


Overview

- 1,200 acre footprint
- 40 foot mean low water depth at dock
- 9,693 linear feet of berthing space
- Rail and interstate access

Location

- Located in Garden City, Georgia 



Ports and Service Bases Employment – Annual Operations

Employment levels & staffing will be a function of facility size and handling activities. Below are some of the potential positions that may support limited operations.

Position Description	Salary Range
Business/Marketing/Sales	\$55,000 to \$75,000
Engineering	\$100,000 to \$120,000
Technicians/Operations	\$75,000 to \$95,000
Health/Safety Engineering	\$55,000 to \$120,000
Heavy Equipment Handling	\$75,000 to \$100,000
Helicopter Pilot	\$50,000 to \$95,000
Marine Transportation	\$50,000 to \$150,000
Support/Maintenance	\$45,000 to \$75,000
Misc. Local Contract Support	Varies by Trade/Craft but averages around \$90,000

Waste Disposal



Waste Overview

- A variety of different types of wastes are generated by offshore oil and gas E&P activities
- Some wastes are common to any manufacturing / industrial operation; others are unique to oil and gas
- Different types of wastes generated from offshore E&P activity include:
 - Solids (e.g. drill cuttings, pipe scale, produced sand)
 - Drilling muds (oil-based, synthetic, or water-based)
 - Fluids (e.g. produced waters, waters separated from drilling muds, clear brine completion fluids, wash waters)
 - (NORM) Naturally Occurring Radioactive Materials (e.g. tank bottoms, pipe scale, & other sediments that contain naturally high levels of radioactive materials)
 - Industrial hazardous wastes (e.g. solvents & compounds with chemical characteristics that render them hazardous)
 - Non-hazardous industrial oily waste streams; generated by machinery O&M (e.g. used compressor oils, diesel fuel, lubricating oils, & pipeline testing and pigging fluids)
 - Municipal solid waste (MSW) generated by personnel (rigs, platforms, tankers, & workboats)

Waste Onshore Network

The onshore infrastructure network needed to manage the spectrum of waste generated by offshore E&P activities can be divided into three categories:

1. Transfer facilities at ports, where waste is transferred from supply boats to another transportation mode (barge or truck) toward a final point of disposition;
2. Special-purpose waste management facilities dedicated to handling particular types of waste; and,
3. Generic waste management facilities that receive waste from a broad spectrum of American industry, of which oil field waste is only a small part.

Waste Common Waste Management Methods

Offshore Marine Discharge – In the GOM, water-based muds & cuttings may be discharged in Federal waters; some synthetic-based muds that are retained on cuttings may be discharged in Federal waters, with a number of limitations/restrictions.

Subsurface Injection – Oldest & most established method for disposing produced fluids when discharge is not allowed offshore

Salt Cavern Disposal – Solution-mined caverns used for the disposal of drilling wastes such as muds and cuttings

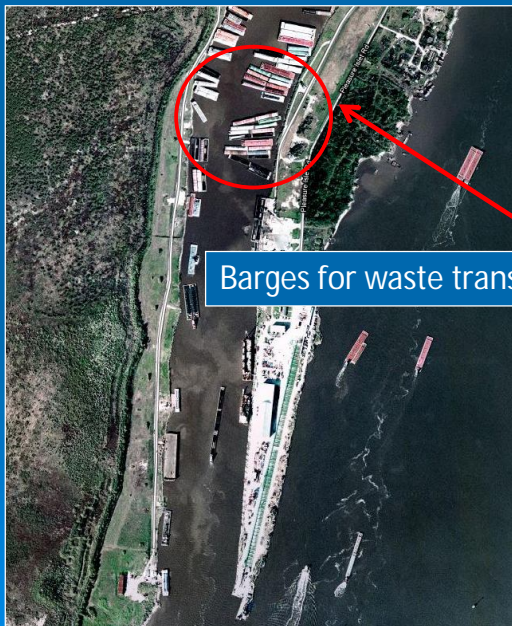
Land Application / Land Farming – Drilling muds, produced sand & other small solids can be spread onto the land & mixed with the earth to be incorporated into the soil

Land Filling – Most MSW is disposed in landfills; some cuttings, muds or watery waste streams may be treated and disposed in landfills

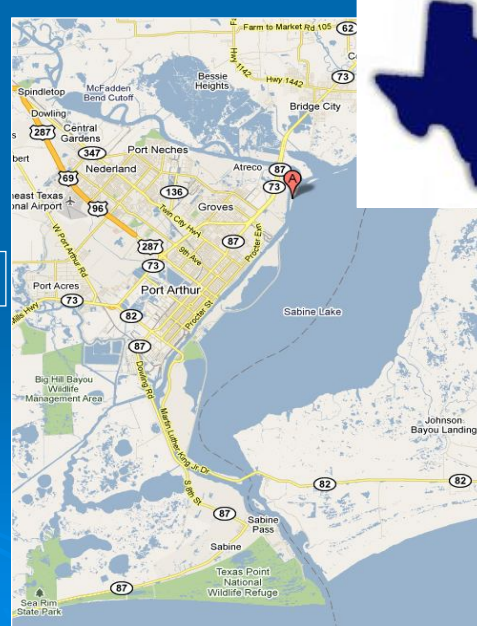
Recycling – Oil based muds & some synthetic-based muds can be recycled; cuttings from drilling operations can be used to stabilize surfaces (e.g. roads or drilling pads)

Waste Newpark Resources, Port Arthur, TX

E&P waste is collected at transfer facilities from drilling and production operations located offshore, onshore, and within inland waters. Waste is accumulated at transfer facilities and moved by barge through the Gulf Intracoastal Waterway to the Newpark Resources processing and transfer facility located in Port Arthur, Texas, and, if not recycled, is trucked to injection disposal facilities.



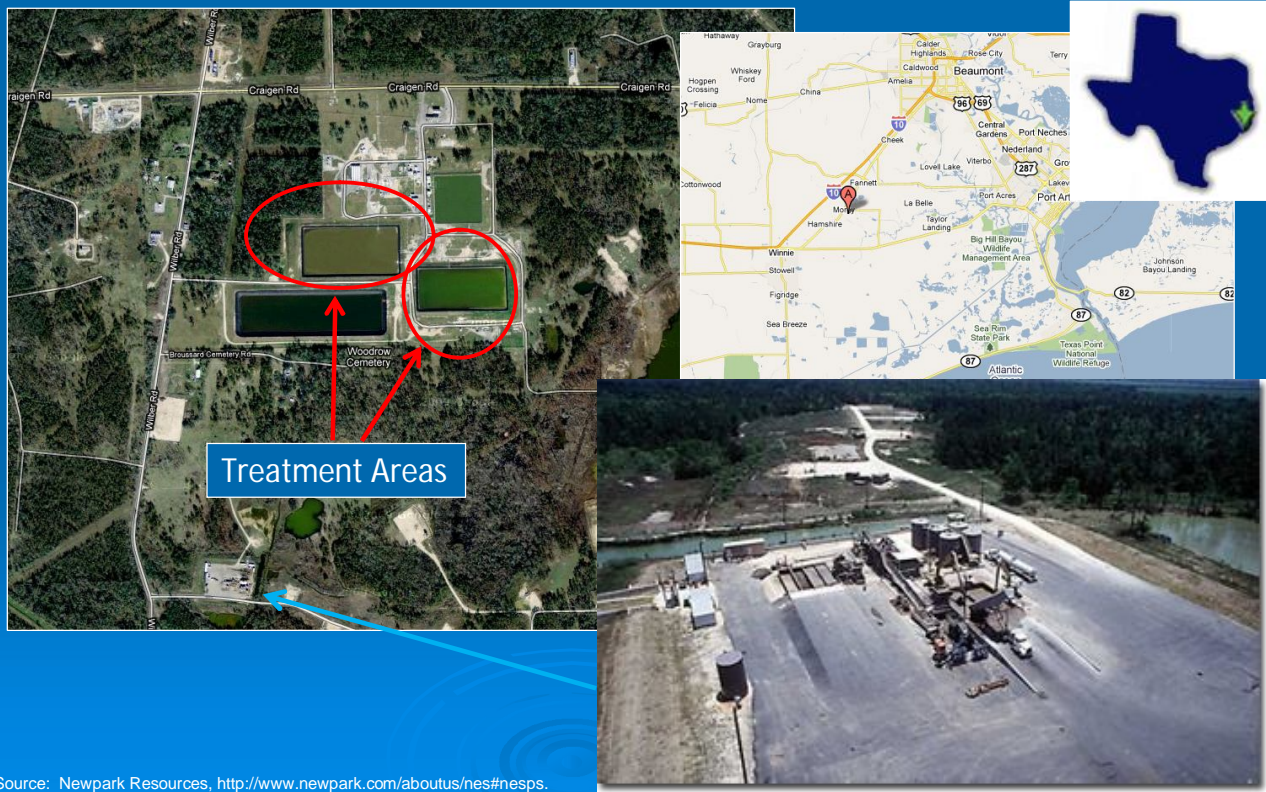
Barges for waste transfer



Source: Newpark Resources, <http://www.newpark.com/aboutus/nes#nesps>.

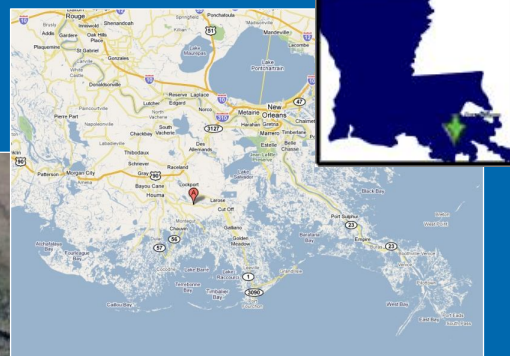
Waste Newpark Resources, Fannett, TX

This 400-acre site near Fannett, Texas is Newpark's primary facility for disposing of E&P waste.



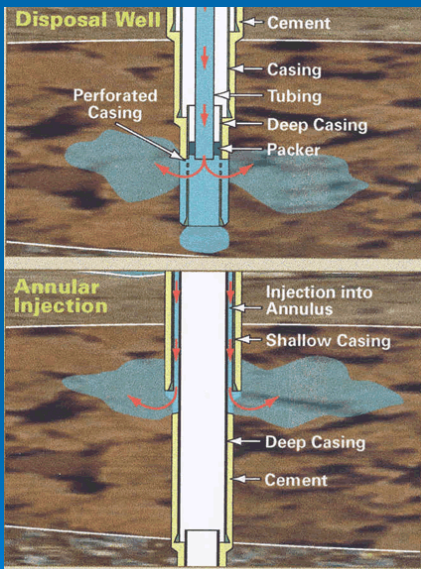
Source: Newpark Resources, <http://www.newpark.com/aboutus/nep#neps>.

Waste US Liquids of Louisiana, Bourg, LA



Waste Common Waste Management Methods

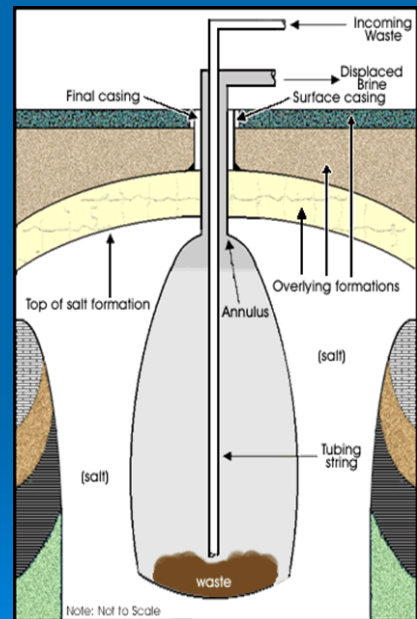
Subsurface
injection



Land farming / land
treatment process

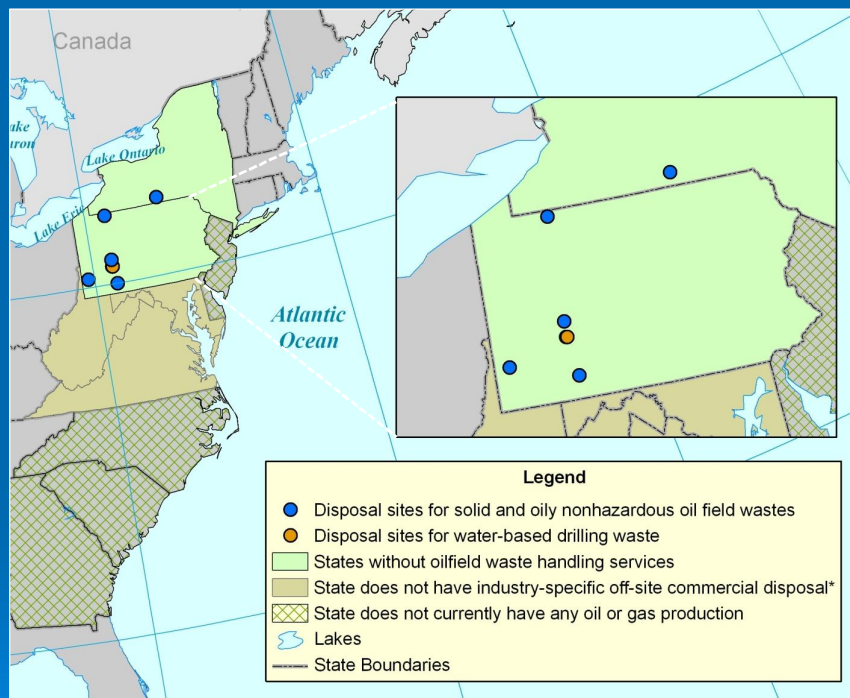


Salt cavern
disposal



Source: US Liquids of Louisiana, <http://www.uslla.com/html/services.htm>; Drilling Waste Management Information Services, <http://web.ead.anl.gov/dwm/techdesc/index.cfm>.

Oilfield Waste Treatment Mid-Atlantic Waste Facilities



Note: *In Maryland, cuttings are disposed of on-site and drilling fluids are taken to an out-of-state disposal facility; in Virginia drill cuttings are disposed of on-site but other solid wastes are sent off-site to approved landfills or other general waste disposal facilities. Liquid wastes are disposed of in injection wells or taken out of state to licensed facilities for disposal; and in West Virginia most nonhazardous oil field waste is disposed of on-site. Tank bottoms are generally sent off-site to a commercial disposal facility (most-likely in Pennsylvania).

Source: Veil, J. Costs for offsite disposal nonhazardous oil field wastes: salt caverns versus other disposal methods. Argonne National Laboratory, April 1997.

Oilfield Waste Treatment Employment – Annual Operations

Employment levels & staffing will be a function of facility size and handling activities. Below are some of the potential positions that may support limited operations.

Position Description	Salary Range
Business/Marketing/Sales	\$55,000 to \$75,000
Engineering	\$100,000 to \$120,000
Technicians/Operations	\$75,000 to \$95,000
Health/Safety Engineering	\$55,000 to \$120,000
Testing/Regulation	\$45,000 to \$95,000
Heavy Equipment Handling	\$75,000 to \$100,000
Marine Transportation	\$50,000 to \$150,000
Support/Maintenance	\$45,000 to \$75,000
Misc. Local Contract Support	Varies by Trade/Craft but averages around \$90,000

Summary & Conclusion

- MMS will continue to examine the potential onshore support network that would support offshore oil & gas development in the Atlantic.
- The final report of the current MMS Study "Oil & Gas Infrastructure in the Mid-Atlantic (GM-09-08)" is expected in June 2011.
- Many pictures of that facilities/assets shown today support the extensive O&G development in the GOM. Thus, the scope & size of many of these assets are significant & may not approximate the scale & scope of onshore assets that may be developed to support a single Atlantic lease sale, or limited Atlantic development.
- **MMS has no permitting authority for any onshore infrastructure. Individual states will make their own permitting and siting decisions.**

Thank You

