OCS Study
MMS 98-0023

PROCEEDINGS: PUBLIC WORKSHOP

DECOMMISSIONING AND REMOVAL OF OIL AND GAS FACILITIES OFFSHORE CALIFORNIA:

RECENT EXPERIENCES AND FUTURE DEEPWATER CHALLENGES

Ventura, California
September 23-25, 1997

Sponsored by:
U.S. Department of the Interior, Minerals Management Service
California State Lands Commission

Co-Sponsored by:
E & P Forum
Chevron, USA, Inc.
Torch Operating Company

Hosted by:
University of California, Santa Barbara
University of California, Berkeley

Edited by:
Frank Manago, Minerals Management Service
Bonnie Williamson, University of California, Santa Barbara

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Sponsored by:
U.S. DEPARTMENT OF THE INTERIOR, MINERALS MANAGEMENT SERVICE
and
CALIFORNIA STATE LANDS COMMISSION

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E & P FORUM
CHEVRON, USA, INC.
TORCH OPERATING COMPANY

Doubletree Hotel
Ventura, California
September 23-25, 1997

Edited by:
Frank Manago
and
Bonnie Williamson

Prepared by:
Southern California Educational Initiative
Coastal Research Center
Marine Science Institute
University of California, Santa Barbara
Santa Barbara, CA 93106
May 1998

Disclaimer

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SPONSORSHIPS

The **Minerals Management Service** and the **California State Lands Commission** sponsored the workshop.

In addition, the following organizations made financial contributions to the workshop:

✶**Gold** **E & P Forum**
✶**Silver** **Chevron, USA, Inc.**
✶**Bronze** **Torch Operating Company**

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- **UC Coastal Toxicology Program**
- **Ecomar, Inc.**
- **Twachtman, Snyder & Byrd, Inc.**

ACKNOWLEDGEMENTS

Acknowledgements are extended to all the participants involved in this very successful workshop.

BACKGROUND

There are a total of 27 oil and gas platforms and approximately 200 miles of associated pipelines located off the coast of southern California. Of the 27 platforms, four are located in state tidelands within 3 miles of the coast and 23 on the Federal Outer Continental Shelf (OCS). There are also six artificial islands located in State tidelands that have been constructed to recover oil and gas resources. As the end of the service life approaches for these facilities, plans for decommissioning and removing the facilities must be developed.

In 1994, the Minerals Management Service (MMS) and the California State Lands Commission (SLC) jointly sponsored a workshop to familiarize the public with the decommissioning process and disseminate information on upcoming projects. Since that time several major decommissioning projects have been completed and several others are underway or moving forward. This includes a recently-announced project that could involve the decommissioning and removal of as many as five OCS platforms and two associated onshore processing facilities. The decommissioning and removal of these platforms, which are located in water depths ranging from 318 to 740 feet, will present significant technical, environmental and material disposal challenges.

To facilitate the continuation of public involvement and participation in the decommissioning process, the MMS and SLC decided to sponsor a 1997 workshop to review recent experiences and discuss future deepwater decommissioning challenges.

WORKSHOP GOALS

The goals of this workshop were to disseminate information to the public on the results of recently completed projects, identify issues of concern, and elicit recommendations on future California decommissioning operations and associated technical, environmental, socio-economic and disposition issues.

WORKSHOP ORGANIZING COMMITTEE

Frank Manago, Minerals Management Service, Pacific OCS Region
John Smith, Minerals Management Service, Pacific OCS Region
Pete Johnson, California State Lands Commission
Marina Voskanian, California State Lands Commission
Mark Carr, Department of Biology, University of California, Santa Cruz
Bonnie Williamson, Marine Science Institute, University of California, Santa Barbara

WORKSHOP SESSION CO-CHAIRS

Technical Workshop Session

Robert Byrd, **Co-Chair**, Twachtman, Snyder & Byrd, Inc.
Marina Voskanian, **Co-Chair**, California State Lands Commission

Environmental Workshop Session

Bill Douros, **Co-Chair**, Santa Barbara County, Energy Division
Simon Poulter, **Co-Chair**, Padre Associates, Inc.

Disposition Workshop Session

Mark Carr, **Co-Chair**, University of California, Santa Cruz
John Stephens, **Co-Chair**, Vantuna Research Group and
University of California, Los Angeles

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DECOMMISSIONING AND REMOVAL OF OIL AND GAS FACILITIES OFFSHORE CALIFORNIA: RECENT EXPERIENCES AND FUTURE DEEPWATER CHALLENGES

DOUBLETREE HOTEL, VENTURA, CALIFORNIA
SEPTEMBER 23 - 25, 1997
WORKSHOP PROGRAM

TUESDAY, SEPTEMBER 23 - MORNING

8:00-8:30 Registration

PLENARY SESSION

8:30 - 9:00 Welcome and Introduction

- Dr. Russell Schmitt, Professor of Ecology, UC Santa Barbara
- Carolita Kallaur, Associate Director, Offshore, Minerals Management Service
- Robert Hight, Executive Officer, California State Lands Commission

9:00 - 9:50 Pacific Region Decommissioning Update, Outlook and Perspectives

- Tom Dunaway, Regional Supervisor, Office of Development, Operations & Safety, Minerals Management Service, Pacific OCS Region
- Paul Mount, Chief, Minerals Resources Management Division, California State Lands Commission
- John Patton, Director, Santa Barbara County, Dept. of Planning and Development
- Linda Krop, Senior Staff Attorney, Environmental Defense Center
- Frank Holmes, Coastal Coordinator, Western States Petroleum Association

9:50 - 10:40 Decommissioning Policy, Regulations and International Developments

- Bud Danenberger, Chief, Engineering and Technology Division, Minerals Management Service
- Dwight Sanders, Chief, Div. of Environmental Planning and Management, California State Lands Commission
- Susan Hansch, Deputy Director, Energy & Ocean Resources Unit, California Coastal Commission
- Bill Griffin, Director of Special Projects, Phillips Petroleum Company
- Simon Poulter, Principal, Padre Associates, Inc.

10:40-11:00 Break

11:00 - 11:45 Preview of the Workgroup Sessions

Technical Workgroup Co-Chairs

- Marina Voskanian, Chief Reservoir Engineer, Minerals Resources Mgmt. Div., California State Lands Commission
- Dr. Robert Byrd, Principal, Twachtman, Snyder & Byrd, Inc.

Environmental Workgroup Co-Chairs

- Bill Douros, Deputy Director, Energy Division, Santa Barbara County, Dept. of Planning and Development
- Simon Poulter, Principal, Padre Associates, Inc.

Disposition Workgroup Co-Chairs

- Dr. John Stephens, Director, Vantuna Research Group and Office of Research, UC Los Angeles
- Dr. Mark Carr, Assistant Professor of Biology, UC Santa Cruz

11:45 - 12:15 Public Discussion Period

Moderator: Dr. Russell Schmitt, Professor of Ecology, UC Santa Barbara

12:15 - 1:30 Lunch Break

TUESDAY, SEPTEMBER 23 - AFTERNOON

TECHNICAL SESSION

1:30 - 3:15 The Process of Decommissioning and Removing Offshore and Associated Onshore Oil and Gas Facilities

Co-Chair: Dr. Robert Byrd, Principal, Twachtman, Snyder & Byrd, Inc.
Co-Chair: Marina Voskanian, Chief Reservoir Engineer**,** Minerals Resources Management Division, California State Lands Commission

Making Oil & Gas Wells Safe: The Plugging Process

- Steve Fields, Operational Engineer, California Department of Conservation, Division of Oil, Gas and Geothermal Resources

Offshore Production Facilities: Decommissioning of Topside Production Equipment

- Dr. Peter Prasthofer, Technical Manager, Offshore Decommissioning Communications Project

Decommissioning of Decks, Jackets, Pipelines and Cables

- Andy Culwell, Vice President of Special Projects, American Pacific Marine, Inc.

3-15 - 3:30 Break

3:30 - 4:30 TECHNICAL SESSION - (continuation)

Site Clearance and Verification

- Jack McCarthy, Geophysicist, Minerals Management Service, Pacific OCS Region

Onshore Facility Cleanup and Removal

- Luis Perez, Energy Specialist, Energy Division, Santa Barbara County, Dept. of Planning & Development

4:30 - 5:30 Public Discussion Period

WEDNESDAY, SEPTEMBER 24 - MORNING

8:00 - 8:30 Registration

ENVIRONMENTAL SESSION

8:30 - 10:30 Environmental and Socio-Economic Effects Occurring During the Decommissioning and Removal Process and Measures for Mitigating Impacts

Co-Chair: Bill Douros, Deputy Director, Energy Division, Santa Barbara County, Dept. of Planning and Development
Co-Chair: Simon Poulter, Principal, Padre Associates, Inc.

Air Quality

- Peter Cantle, Santa Barbara County Air Pollution Control District

Commercial / Recreational Fisheries

- Dr. Craig Fusaro, Director, Joint Oil Fisheries Liaison Office

Fisheries Research

- Villere Reggio, Outdoor Recreation Planner, Minerals Management Service, Gulf of Mexico OCS Region

Marine Mammals

- Peter Howorth, Principal, Marine Mammal Consulting Group

Marine Benthic Organisms

- Ray de Wit, L.A. de Wit, Consulting

Water Quality

- Dr. Peter Raimondi, Assistant Professor of Biology, UC Santa Cruz

10:30 - 10:45 Break

10:45 - 11:25 ENVIRONMENTAL SESSION - (continuation)

Cleanup Standards: Assessment and Remediation of Onshore Sites

- Frank DeMarco, Associate Water Resource Control Engineer, Central Coast Regional Water Quality Control Board

Future Land Use

- Kim Schizas, Land Use Planner, Wynmark Company

11:25 - 12:30 **Perspectives of Ocean User Groups and Public Discussion Period**
Moderator: Dr. Russell Schmitt, Professor of Ecology, UC Santa Barbara
Ocean User Group Representatives
Commercial Fishing
- Mike McCorkle, President, Southern California Trawlers Association

Recreational Fishing
- Merit McCrea, Owner, Captain McCrea's Sportfishing

Oil and Gas Industry
- David Tyler, Public Affairs Advisor, Exxon Co., USA, Inc.

Environmental Interest Groups
- Marc Chytilo, Chief Counsel, Environmental Defense Center

12:30 - 1:30 **Lunch Break**

SEPTEMBER 24 - AFTERNOON

DISPOSITION SESSION

1:30 - 3:10 **Long-term Environmental and Socio-Economic Effects Related to the Disposition of Oil and Gas Facilities**
Co-Chair: Dr. John Stephens, Director, Vantuna Research Group and Office of Research, UC Los Angeles
Co-Chair: Dr. Mark Carr, Assistant Professor of Biology, UC Santa Cruz
Commercial Fishing
- John Richards, Sea Grant Extension Program, Marine Science Institute, UC Santa Barbara

Recreational Fishing
- Dr. Milton Love, Associate Research Biologist, Marine Science Institute, UC Santa Barbara

Habitat Value of Oil and Gas Facilities
- Dr. Mark Carr, Assistant Professor of Biology, UC Santa Cruz

Enhancement of Platforms as Artificial Reefs
- Dave Parker, Senior Biologist, California Dept. of Fish and Game

Site Clearance: Long-term Issues
- Jack McCarthy, Geophysicist, Minerals Management Service, Pacific OCS Region

3:10 - 3:30 **Break**

3:30 - 4:10 **DISPOSITION SESSION - (continuation)**
Onshore Disposition: Ultimate Fate
- Dr. James Lima, Social Scientist, Minerals Management Service, Pacific OCS Region

Social and Economic Effects
- Dr. Robert Ditton, Professor of Wildlife and Fisheries Sciences, Texas A&M University

4:10 - 5:30 **Perspectives of Ocean User Groups and Public Discussion Period**
Moderator: Dr. Russell Schmitt, Professor of Ecology, UC Santa Barbara
Ocean User Group Representatives
Commercial Fishing
- Gordon Cota, Member, Southern California Trawlers Association

Recreational Fishing
- Dan Frumkes, Director, Conservation Network, American Sportfishing Association

Oil and Gas Industry
- Lee Bafalon**,** Senior Land Representative, Chevron U.S.A., Inc.

Environmental Interest Group
- Linda Krop, Senior Staff Attorney, Environmental Defense Center

THURSDAY, SEPTEMBER 25 - MORNING

SUMMARY AND RECOMMENDATIONS SESSION

Moderator: Dr. Russell Schmitt, Professor of Ecology, UC Santa Barbara

9:00 - 10:00 Report of Session Co-Chairs

Technical Workgroup Session

- Dr. Robert Byrd / Marina Voskanian

Environmental Workgroup Session

- Bill Douros / Simon Poulter

Disposition Workgroup Session

- Dr. Mark Carr / Dr. John Stephens

10:00 - 12:30 Agency Panel Discussion With Public

Federal Agency Representatives

- Dr. J. Lisle Reed, Regional Director, Minerals Management Service, Pacific OCS Region
- Richard Schubel, Chief, Regulatory Functions Branch, U.S. Army Corps of Engineers, Los Angeles District
- Maureen Walker, Deputy Director, Office of Ocean Affairs, U.S. Department of State

State Agency Representatives

- Robert Hight, Executive Officer, California State Lands Commission
- Brian Baird, Ocean Program Manager, California Resources Agency
- Susan Hansch, Deputy Director, Energy & Ocean Resources Unit, California Coastal Commission
- Pete Bontadelli, Administrator, Oil Spill Prevention and Response Office, California Dept. of Fish & Game

Local Agency Representatives

- Nancy Settle, Manager, Regional Programs Section, Ventura County, Planning Division, Resources Management Agency
- John Patton, Director, Santa Barbara County, Dept. of Planning and Development

Summary and Closing Remarks

Moderator: Dr. Russell Schmitt, Professor of Ecology, UC Santa Barbara

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Bonnie Williamson, UC Santa Barbara
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James Wiseman, UC Berkeley

PLENARY ADDRESSES

INTRODUCTORY REMARKS

CAROLITA KALLAUR

Associate Director for Offshore Minerals Management
U.S. Department of the Interior, Minerals Management Service

Good morning, it's my pleasure to be here today to welcome you to this important workshop.

For those of you who may be unfamiliar with the MMS, the MMS is the agency within the Department of the Interior responsible for administering oil and gas and other mineral development on the Federal Outer Continental Shelf (OCS). Offshore California, Federal OCS lands are those submerged lands located seaward of State tidelands, which extend from the coastline to three miles offshore.

Although the MMS is a relatively small bureau, we play a very significant role in managing development of our Nation's energy resources. We manage mineral development on 27 million acres of the OCS, which supplies over 25% of the natural gas and 12% of the oil produced in the United States. We also collect more than $4 billion annually in revenues from OCS and onshore mineral leases. This money is distributed to Federal and State Treasuries, to allottees, including Indian Nations, and to the Land and Water Conservation Fund and the National Historic Preservation Fund.

As the stewards of America's offshore resources, MMS has a duty to ensure safe and environmentally sound development of our Nation's offshore oil and gas resources. This responsibility applies not only to development but also to the decommissioning of offshore production facilities once they have reached the end of their service life.

As many of you are aware, decommissioning operations are commonplace in the Gulf of Mexico where there are more than 4000 offshore platforms currently in place. Between 100 – 200 structures are removed there each year. Of the 1200 structures removed to date in the Gulf of Mexico, the majority (80%) have been small structures located in less than 100 feet of water. To date, there have not been any platforms removed in the Gulf located in water depths greater than 400 feet.

In comparison, there are currently 27 oil and gas platforms (23 OCS and 4 State) located off the coast of southern California. Only seven offshore platforms have been removed to date, all from State tidelands. All of the platforms were relatively small structures located in less than 150 feet of water.

Industry is in the preliminary stages of developing plans for removing as many as five California OCS platforms and two associated onshore processing facilities early in the next century. Three of the platforms are located in water depths ranging from greater than 600 to 740 feet. If scheduling goes as planned, this could very well be the world's first ultra-deepwater decommissioning project. In terms of its combined onshore and offshore components, it will be the largest and most complex decommissioning project ever to be undertaken.

The decommissioning of deepwater oil and gas structures is a topic that has come to the forefront in the North Sea and is a topic that will be coming to the forefront in California, and the Gulf of Mexico in the near future. The topic is a timely one because it has implications for future deepwater development activity in the Gulf of Mexico, Pacific Region, North Sea, and other parts of the world. In the North Sea, decommissioning of offshore structures has been stymied by public controversy surrounding the Brent Spar Project, which involved the proposed decommissioning and ocean disposal of a large offshore loading structure. Due to this controversy, industry has had to re-evaluate its decommissioning strategy and consider the long-term implications for future development in the North Sea.

In contrast to shallow water, the decommissioning of deepwater facilities (> 200 foot water depths) will present significant technical, safety, environmental, and material disposal challenges. From a technical standpoint, the technology has yet to be developed to remove certain deepwater structures. This is particularly true in water depths exceeding 400 feet. The environmental impacts associated with decommissioning

large deepwater structures are also of much greater significance due to the size of the structures, which can be as large as the Empire State Building. The onshore infrastructure required to dispose of these massive steel structures also may not exist, which may necessitate consideration of other options such as converting the structures to artificial reefs or other uses.

In the Gulf of Mexico, statistics show that the greater the water depth the more likely decommissioned structures are to be converted to artificial reefs. Of the 1200 structures removed to date in the Gulf, about 10% have been converted to artificial reefs. However, 40% of the structures located in 100-200 feet of water, and 85% of the structures located in 200-400 feet of water have been converted to artificial reefs.

Let me assure you, MMS does not have a position one way or the other as to the rigs-to-reef program here in California. We believe that is an issue that falls primarily within the regulatory jurisdiction of the California Department of Fish and Game, Army Corps of Engineers, and the California Coastal Commission. The States of Louisiana and Texas have active rigs-to-reef programs, and MMS is involved to the extent that the decommissioning of OCS platforms takes place in a safe and environmentally sound manner. We are committed to working cooperatively with all interested parties to ensure that this goal is achieved off California.

Although our experience off California is limited, we recognize that the removal of offshore structures is a sensitive issue in California and that the utmost care must be taken to ensure that it is done in a manner that addresses the needs and concerns of all parties.

To accomplish that goal, we must all work closely together to develop a consensus on how to best proceed. That is why public workshops such as this are so important. They provide an opportunity for everyone who has an interest in the subject to share their viewpoints, discuss issues, and develop recommendations.

Offshore California, as in other offshore areas, we continue to place a very high priority on safety. We will also continue to work closely with all interested parties to ensure that the removal and disposal of platforms is conducted in an environmentally sound manner.

To that end, we are pleased to be co-sponsoring this workshop with the California State Lands Commission (SLC). We are also pleased to have participated with the State in sponsoring previous workshops such as the 1994 Decommissioning Workshop at UC Santa Barbara and the 1997 California and the World Oceans Conference in San Diego.

Before closing, I would like to thank the SLC for co-sponsoring this workshop with the MMS and UC Santa Barbara and UC Berkeley for the administrative support they have provided. I also want to thank those who made financial contributions – the E & P Forum, Chevron, USA, and Torch Operating Company – as well as those who have made in–kind contributions.

Finally, I would like to thank members of the Workshop Organizing Committee for facilitating workshop planning meetings and organizing the workshop. These individuals include Frank Manago and John Smith from MMS, Pete Johnson and Marina Voskanian from the SLC, and Bonnie Williamson from UC Santa Barbara. I also want to thank the many people who attended workshop planning sessions and contributed to the development of what I consider to be a well rounded and balanced program. In particular, I would like to thank the co-chairs of the Workshop Steering Committee, Paul Mount of SLC and Dick Wilhelmsen of MMS, as well as session co-chairs, speakers and panel members for the significant time and effort they devoted to organizing and planning their respective sessions.

On behalf of the MMS, I welcome your participation in this effort. I want to ensure you that we will carefully consider the views of all parties as well as the recommendations that will be forthcoming. During the open panel discussion with the public on day three, we will share with you our perspectives on the workshop and recommendations.

I am looking forward to an interesting and productive workshop and encourage you all to actively participate. We value your input and look forward to your recommendations.

PACIFIC REGION DECOMMISSIONING UPDATE, OUTLOOK, AND PERSPECTIVES

TOM DUNAWAY

Regional Supervisor, Office of Development, Operations and Safety
Minerals Management Service, Pacific Outer Continental Shelf Region

I'm going to start off with a short overview of our Region. The Minerals Management Service Pacific Outer Continental Shelf Region oversees development of Federal mineral resources, primarily oil and gas, offshore California, Oregon, and Washington. Currently, we manage 83 leases, all of which are off the coast of California. The Federal Outer Continental Shelf (OCS) off California begins 3 miles from the coast adjacent to State tidelands.

We have 23 platforms producing a total of about 150,000 barrels of oil a day and 180 million cubic feet of gas per day, from 43 of the leases in the Region.

The Pacific OCS Region is organized by major program functions: an Office of Environmental Evaluation, an Office of Resource Evaluation, and an Office of Development, Operations and Safety.

The Office of Environmental Evaluation analyzes proposed and ongoing offshore oil and gas operations to ensure the activities are done in a way that safeguards the environment. This office also conducts a comprehensive environmental studies program.

The Office of Resource Evaluation analyzes oil, gas, and other mineral potential on the Federal OCS, using a wide range of geologic and geophysical information, and provides technical support for marine mineral investigations.

I'm the Regional Supervisor of the third office, the Office of Development, Operations and Safety, which is responsible for proper development of OCS resources on existing leases and the safety and environmental integrity of operations on the OCS.

Our office is responsible for the offshore inspections program, and we have inspectors offshore overseeing operations every day of the year.

This Plenary Session covers Pacific Region Decommissioning Update, Outlook and Perspectives, so I'll begin with an update.

The newest of the Pacific OCS Region's 23 platforms have been in place 8 years; the oldest was installed 30 years ago this month. The Pacific OCS Region's facilities range from small shallow water to world class deepwater structures. We have one platform in less than a 100 feet of water; we also have two platforms in water depths of over a thousand feet. We haven't had any platforms decommissioned yet, but we had an offshore storage and treating vessel, a converted tanker, decommissioned in 1994. Though it wasn't a platform, the decommissioning was a technically complex operation, with separate phases involving disconnecting and removal of the vessel, the mooring buoy, and a riser section; cutting of piles and removal of the mooring base and subbase from the seafloor; cutting and removal of pipeline and power cable segments; and a survey of the area to recover debris. The Pacific OCS Region worked cooperatively with all interested parties before, during, and after that work. We learned from the experience, and we'll build on what we learned, for future decommissionings.

As to outlook, our first platform decommissionings will likely take place over the next 5-10 years. Chevron has started the planning process for decommissioning of their 5 platforms. Of those 5, the oldest was installed 18 years ago, and the newest only 11 years ago. The water depths range from around 300 feet to about 700 feet. Platform Harvest, off Point Arguello, is in 675 feet of water. And Platform Gail, in the Santa Barbara Channel, is in 739 feet of water.

These deeper waters, which would set a decommissioning world record to date for water depths, and the necessarily larger structures provide challenges for both industry and regulatory agencies. And these challenges will

be met with a collective effort that gives consideration to the various perspectives and concerns of all interested parties.

With regard to perspectives, we see decommissioning not as a surprise, but as an integral part of each oil and gas project. The careful planning for these final phases of the projects will thoroughly address safety of operations and of the environment. The planning will be a cooperative process involving industry, regulatory agencies, and the public, to ensure that everyone's concerns are heard and addressed.

CALIFORNIA STATE LANDS COMMISSION MANAGEMENT RESPONSIBILITY AND RECENT DECOMMISSIONING EXPERIENCE

PAUL MOUNT
Chief, Minerals Resources Management Division
California State Lands Commission

STATE LANDS COMMISSION

- Created in 1938
- 3 Independent Commissioners
  - Lt. Governor
  - State Controller
  - Director of Finance
- Manages
  - Sovereign lands - 1 million acres
  - 1100 miles of coastline
  - 30 rivers and 40 lakes
  - School lands - 5.5 million acres

OFFSHORE FACILITIES CURRENTLY ON STATE LANDS

- 4 Platforms
  - Emmy
  - Esther
  - Eva
  - Holly
- 6 Islands
  - 4 Thums Islands
  - Rincon
  - Belmont

MINERAL RESOURCE MANAGEMENT

• Oil	60,000 BBL/D
• Gas	27,000 MCF/D
• Geothermal	5,217,000 Lb/Hour
• Mineral	220,000 Tons/Year

Cumulative $ to date $6 Billion

RECENT DECOMMISSIONING

- Chevron 4-H project
  - Hope, Hazel, Hilda, Heidi
  - Four year project
  - About $40 million
- SWARS – Subsea Well Abandonment
  - Currently decommissioning wells and pipelines
- Belmont Island
  - Currently decommissioning wells
  - Island decommissioning in 1998

LESSONS LEARNED FROM 4-H

- Intensive advance planning and coordination prevented accidents and minimized environmental effects
- Early and complete coordination with all involved agencies
- Provide information early to community on project
- Must understand the needs of fishermen
- Explosives can be used safely underwater with detailed engineering and environmental pre-planning
- SLC engineering staff onsite essential to timely approval of plan modifications and prevention of problems

UPDATE ON DECOMMISSIONING ISSUES

ELMER "BUD" DANENBERGER

Chief, Engineering and Technology Division, Minerals Management Service

EXPLOSIVES HAVE PROVEN TO BE SAFE AND EFFECTIVE

- Used in 70% of removals
- Not diver dependent
- Mitigations have minimized the risk to turtles and dolphins

WHY 15 FEET?

- Proven to be effective in preventing seafloor obstructions
- Allows margin for error
- Reduces operator's liability risk
- District Supervisor may adjust

THREE-FOOT REMOVAL DEPTH MAY BE RISKY

- 3-5 feet scour potential in water depths less than 30 feet
- Bottom conditions affect removal depth measurements

SERIOUS CONCERNS ABOUT OBSTRUCTIONS

- Any exposed casing stubs or pilings could remain in place for 100+ years
- Thousands of trawling vessels work in the Gulf

PIPELINE BURIAL TO 3 FEET HAS NOT ALWAYS PROVEN TO BE SUFFICIENT

- *Hurricane Andrew:*
  9+ pipeline segments were exposed
  10 segments damaged by mud slides
  18 segments damaged by anchor dragging
- Shrimpers have often raised concerns about pipeline obstructions

PARTIAL REMOVALS

- Both Marine Board and Workshop support partial removals

MARINE BOARD AND WORKSHOP RECOMMENDED CHANGES IN MITIGATIONS

- Develop guidelines for determining the size of explosive charges
- Remove the limit on the number of detonations at any one time
- Shorten the observation time to 24 hours before the blast

MARINE BOARD AND WORKSHOP RECOMMENDED MORE STUDIES

- Turtle detection and scaring devices
- Compare natural reefs and oil and gas platforms
- Advanced explosive and non-explosive removal technology
- Consider deep-water pipeline abandonment procedures
- Evaluate the reef effect associated with deep-water platforms
- Evaluate the habitat value of structures in cold water environments
- Determine the water depth profile for fish killed by explosives
- Consider the effects of platform size on fish attraction
- Evaluate platform disposal options

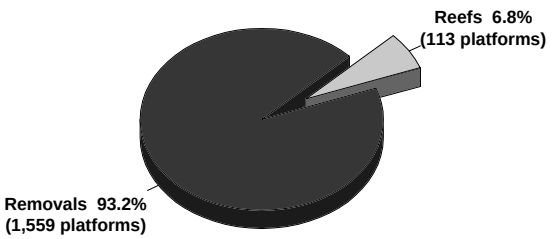
INTERNATIONAL CONVENTIONS

- London Convention of 1972 (LC)
- International Maritime Organization guidelines

LESSEES ARE RESPONSIBLE FOR ALL LEASE ABANDONMENT COSTS

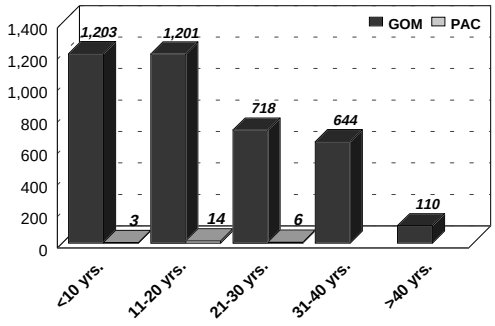
STATUS OF STRUCTURE ON THE OCS
Age and Water Depth
August 1997

Rigs to Reefs

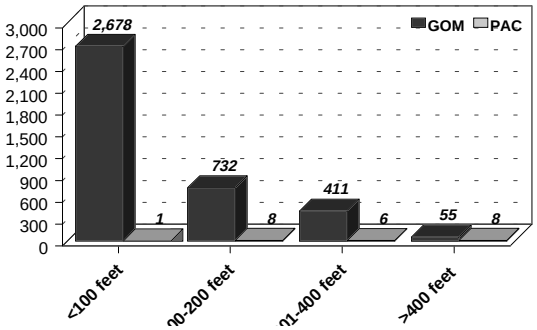


As of August 1997

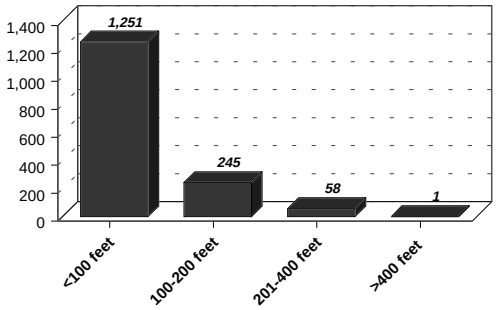
Existing OCS Structures by Age



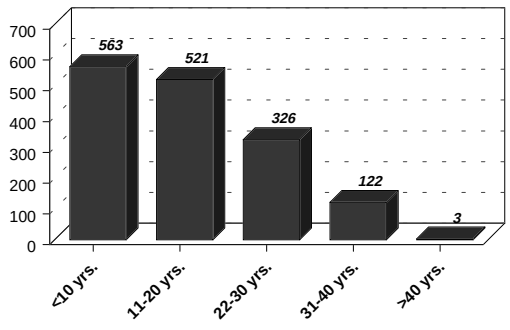
Existing OCS Structures by Water Depth



Structures Removed by Water Depth



Structures by Age at Time of Removal



CALIFORNIA STATE LANDS COMMISSION: DECOMMISSIONING POLICY AND REGULATIONS

DWIGHT E. SANDERS
Chief, Division of Environmental Planning & Management
California State Lands Commission

As we prepare for the approaching decommissioning and removal of additional structures, both offshore and onshore, we should recall that California is no stranger to oil and gas development. The area of Ojai was the site of an oil discovery in 1857 and oil was discovered on the coast of Ventura County some years later.

In 1890, gas was discovered within the limits of Summerland in Santa Barbara County and a few years later, in 1894, oil was discovered in Summerland very near to the sea. By 1896, Summerland hosted the first offshore oil and gas development – wooden piers and platforms began to appear along the area's beaches and shoreline. I am sure that most of us at one time or another have seen pictures of the developments that changed a popular swimming area into a forest of derricks.

By 1920, most pumping activity in the wells was finished and the industry moved on to more productive prospects, as in the gold rush, the area was abandoned by man but his structures remained. During the next 50 years, these decaying facilities were a constant reminder of man's "What me worry" philosophy.

The vistas of the offshore area of the county of Santa Barbara began to change in the summer of 1988 with the abandonment and removal of platforms Helen and Herman from State waters. I can still use these terms here since as far as I can determine, decommissioning was not substituted for abandonment until 1996 at the 'International Workshop on Offshore Lease Abandonment and Platform Disposal' in New Orleans.

By August 1997, four more platforms, Hope, Hazel, Hilda, and Heidi, were removed from the State waters offshore Santa Barbara County. We are still dealing with some aspects of this project, the circumstances of which I am sure you will hear more of both within and without the context of this workshop.

What has changed since the specter of Summerland? For one, the California State Lands Commission was created by the Legislature in 1938 and given the responsibility for the management, development and extraction of mineral resources located on State sovereign tide and submerged and State school lands. The State's sovereign offshore tide and submerged lands are those generally located from the mean high tide line to three nautical miles seaward.

The Commission's oil and gas leases, predominately issued in the fifties and sixties, contain the following language: "At the expiration of this lease or sooner termination thereof, the lessee shall surrender the premises leased, with all improvements thereon, in good order and condition, or, at the option of the State and as specified by the State, the lessee shall remove such structures and fixtures as have been put on the leased land by the lessee and otherwise restore the premises, all removal and restoration costs to be borne by the lessee, subject to the lessee's right to remove his equipment as provided in the statutes. Notwithstanding any provision of this lease, the lessee shall have the right to remove any oil drilling and producing platforms and other oil field development and producing equipment having a re-use or salvage value."

You can tell from the construct of this language that our attorneys were not paid on the basis of the number of periods used.

To date, the Commission has encouraged the removal of platforms rather than some form of abandonment in place. A Spring 1996 article in "Underwater Magazine" by Ross Saxon, Ph.D. entitled, 'Offshore Lease Abandonment and Platform Disposal, A Status Report' opines that

the removal of a platform involves five distinct steps:

1. Obtaining necessary permits and approvals, observed to be a complex, time consuming and difficult job of which I am sure Simon will inform us later
2. Plugging the well
3. Decommissioning, defined as ridding the platform of hydrocarbons
4. Removing the platform
5. Clearing the site

The Commission's lease terms, statutory authorities and responsibilities, and regulations governing the "decommissioning and removal" of oil and gas facilities offshore are augmented by the provisions of the California Environmental Quality Act or CEQA. Through the CEQA process, a project's potential adverse impacts on the environment are identified and analyzed. If any of these impacts are found to be significant, mitigation requirements are developed to avoid, substantially lessen or eliminate such impacts. Once adopted by the Commission, such mitigation is implemented by a Mitigation Monitoring Program administered by the Commission.

The CEQA process also provides opportunities for the public, public interest groups, other maritime user groups, and federal, state and local agencies to review and provide comments on the project and its environmental documentation.

Within the context of the Commission's experiences in 1988 and 1997, the process has certainly encouraged debate and discussion, but little consensus on major issues affecting facility decommissioning and disposition. For instance, who will accept liability if some or all of a structure remains in place; or, what portion of a structure could, by itself or with augmentation, function as an artificial reef?

To heighten the challenge, the issues have issues. For example, do artificial reefs nurture marine life or merely attract it and in either case do they place marine life at a disadvantage with respect to sport or commercial fishing activities? Which fishing interests should prevail, sport or commercial? Which environmental perspective should govern, that which advocates the use of offshore structures for artificial reefs or that which holds that no such disposition should occur since such reefs could pose potential harm to fishing operations?

Unfortunately, I cannot wrap this up with "Have I got a deal for you." I do hope, however, to learn from the discussions planned in this workshop and from you, the participants. Thank you for the opportunity to do both.

REGULATORY FRAMEWORK AND ENVIRONMENTAL REVIEW PROCESS FOR THE DECOMMISSIONING OF OIL AND GAS FACILITIES

SIMON POULTER
Principal
Padre Associates, Inc.

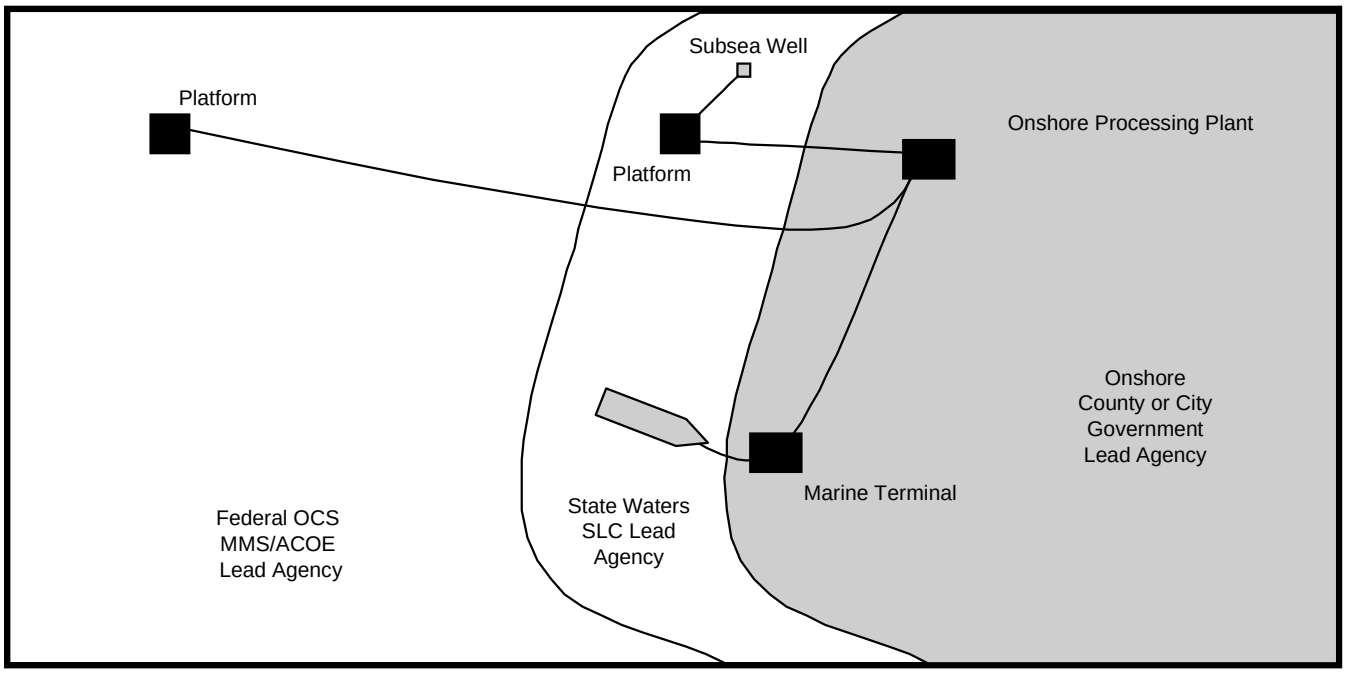
Lead and Key Agencies

- Lead Agencies
  - Minerals Management Service
  - Army Corps of Engineers
  - State Lands Commission
  - County or City Governments
- Other Key Agencies
  - California Coastal Commission
  - Air Pollution Control District
  - Regional Water Quality Control Board
  - NMFS/CDF&G
  - U.S. Coast Guard

Environmental Review Process

- National Environmental Policy Act (NEPA)
  - Environmental Impact Statement
  - Environmental Assessment/FONSI
- California Environmental Quality Act (CEQA)
  - Environmental Impact Report (EIR)
  - Mitigated Negative Declaration

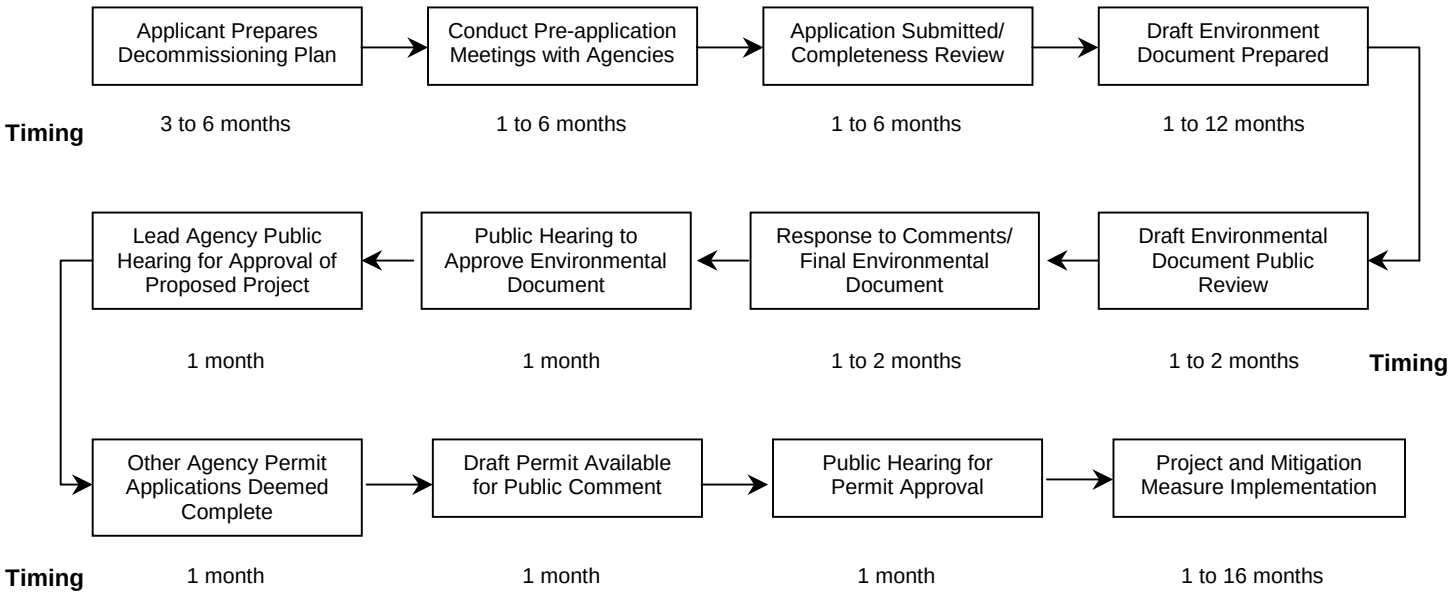
Permitting Jurisdictions



Overview of Permitting Requirements

	Permit Requirement by Facility Location		
	Federal OCS	**State Waters**	**Onshore - County or City**
Federal Agencies			
Minerals Management Service			
- Lease Condition/Stipulattions	●		
- Development and Production Plan	●		
- Lease Term Pipeline Application	●		
- Pipeline Right-of-Way	●		
EPA - NPDES Permit	●		
ACOE - Section 10/404 Permit	●	●	●
USCG - Aids to Navigation	●	●	
State Agencies			
California Coastal Commission			
- Consistency Certification	●		
- Coastal Development Permit		●	
SLC - Lease Agreement/Permit		●	
RWQCB - NPDES Permit		●	●
CDF&G - Section 1603			●
County or City			
Prelminary Development Plan			●
Conditional Use Permit			●
Final Development Plan			●
Coastal Development Permit			●
Misc. Permits			●
Air Pollution Control District			
- Authority to Construct	●	●	●
- Authority to Operate	●	●	●

Major Steps in the Permitting Process



INTERNATIONAL DEVELOPMENTS: LESSONS LEARNED AND NEED FOR PUBLIC INPUT

W. S. (BILL) GRIFFIN, JR.
Director of Special Projects
Phillips Petroleum Company

INTRODUCTION

- Speaking about Decommissioning is only part of the equation - must listen and include feedback into decision
- No communication with the public before Brent Spar

WORLDWIDE DISTRIBUTION OF PLATFORMS

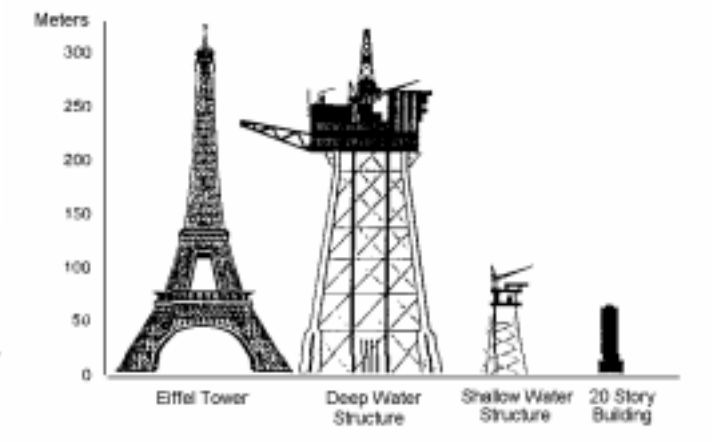
DISTRIBUTION

- 6500 structures in Continental Shelfs of 53 countries
- Cost of total removal estimated at 35-40 billion USD
- 4000 structures in GOM cost 5 billion USD
- 400 structures in North Sea cost 12-15 billion USD

PLATFORM SIZE COMPARISON

- Worldwide 600 larger than Shallow Water Structures
- About 50 larger than Deepwater Structures
- About 100 larger than 20 Story Building
- About 4500 smaller than 20 Story Building
- Deep Water Jacket shown weighs approximately 20,000 tonnes – Eiffel Tower weighs 7,100 tonnes

PLATFORM SIZE COMPARISON



HISTORY

- **1958 GENEVA CONVENTION – GLOBAL**
  - Set the legal framework to allow industry to explore and exploit continental shelves
  - Required total removal of platforms
- **1969 USGS - REGIONAL**
  - 1st State Practice under 1958 Geneva Convention
  - Required total removal to 15 feet below mud line and location dropped to be sure no obstruction
- **1972 – LS - GLOBAL**
  - The current authority for disposal at sea
- **1982 UNCLOS - GLOBAL**
  - Supercedes the 1958 Convention for platforms
  - Allows for competent body to set removal guidelines to ensure safety of navigation and not interfere with other users of the sea
- **1989 IMO GUIDELINES - GLOBAL**
  - Sets removal guidelines to ensure safety of navigation
  - After 1-1-98, no structure can be emplaced on any continental shelf that is not feasible to remove
- **1990 OSCOM - REGIONAL**
  - Specific guidelines for platform disposal at sea in NE Atlantic

- Must be sea disposed in at least 2000 meters of water and 150 nautical miles from level

- **1995 OSCOM MORATORIUM - REGIONAL**
  - After Brent Spar, banned sea disposal at sea in NE Atlantic
  - UK and Norway voted against, so not held to ban

INTERNATIONAL DEVELOPMENTS

- **LONDON CONVENTION**
- **IMO GUIDELINES**
- **OSPAR**

LONDON CONVENTION

- **New Protocol in 1996**
- **Precautionary Principle**
  Be sure of results before doing something
- **Polluter Pays Principle**
  The party doing the disposal pays all costs
- **Reverse List**
  1972 LC List what cannot be sea disposed
  1996 Protocol list what can be sea disposed
- **Waste Assessment Framework (WAF)**
  Procedure to follow for sea disposal
- **Will not be in force for several years. Until in force, 1972 LC Valid**

IMO GUIDELINES

Want to have IMO Review to see if they need to be revised
Sets removal guidelines to ensure safety of navigation
After 1-1-98, no structure can be emplaced on any continental shelf that is not feasible to remove

- **Minimum Guidelines**
  Coastal State can require more removed
- **74 meters / 4,000 tonnes**
  All structures in water less than 75 meters deep and substructures weighing less than 4,000 tonnes must be removed
- **After 1-1-98 – 100 meters / 4,000 tonnes**
  All structures emplaced after 1-1-98 in less than 100 meters of water and substructures weighing less than 4,000 tonnes must be removed
- **After 1-1-98 - Design**
  Must be shown at time of installation that it is feasible to be removed – actual decision made in future when structure becomes redundant
- **Partial Removal Allowed**
  Structures not totally removed must have a minimum of 55 meters of clear water above parts remaining
- **Rigs-to-Reefs allowed**
  Structures can be converted to a new use

OSPAR

Replace separate Oslo & Paris Conventions
Will be enforced by end of 1998
Jurisdiction in North East Atlantic

- **Five Categories**
  Sea bed completions – to shore
  Small steel – to shore
  Large steel - ?
  Floaters – to shore
  Concrete – left in place
  All structures come to shore regardless of water depth except for LARGE steel and they cannot reach agreement on definition of large steel
- **Not Agreed**
  Reverse list or prohibitive list – Will not have a reverse list or a prohibitive list to decide what disposal
  Definition of large steel – IMO definition of large steel or a more onerous definition
  Exceptions – There will always be need for exceptions to the rule
  Cut-off date – After a certain date in the future, any structure emplaced will come to shore for disposal
  Topside on large steel and concrete – Some topsides cannot be lifted because of design – special considerations
  Consultation Procedure – How will contracting parties give their approval?

PIPELINES AND DRILL CUTTING PILES NOT CURRENT ISSUE, BUT WILL BE AFTER PLATFORMS AGREE

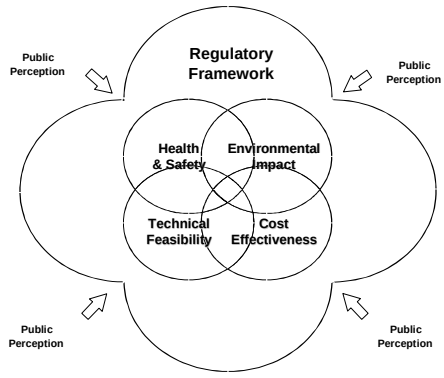
LESSONS LEARNED

- **Decommissioning is a process not a construction project**
  Began with SPAR in 1991, removed in 1995, disposed in 1999?
  Engineering is the easy part.
  Politics is the hard part

LESSONS LEARNED (continued)

- **Expect the unexpected**
  UK & Operator did not expect outrage
  Technical problems
  Not structural as drawing shows
  Unavailable equipment or service
  Weather
- **Time is important**
  Don't do anything until consequences are fully understood
  Don't be pushed
  Dead money spent. Only contractors have a return
  Maintaining structure may not be as expensive as thought
  New equipment may evolve
- **Not all should come ashore**
  Continue to enhance Marine Environment
  Clean seabed, but dirty atmosphere and land
  Recycled material, but not always cost efficient
- **Cost, Technology, Safety, Environment and Regulatory are important**
  ALL must be balanced
- **Public must be considered and involved**
  Prepare information for public as to what you are planning to do
- **Communicate and listen**

FINDING THE RIGHT BALANCE



FINDING THE RIGHT BALANCE

- **Balance Between**
  Health and Safety of workers
  Environment Impact to Land, Sea and Air
  Cost Effectiveness
  Technical Feasibility
- **Regulatory work for Politicians**
- **Politicians elected by Public**
- **Target is where the four inter circles overlap**
  Target moves by pressure from the public

NEED FOR PUBLIC INPUT

- **Industry beliefs**
  Bases their beliefs on Science, Technology & Economics
- **Public beliefs**
  Bases their beliefs on values and morals
- **Hazardous Risk Assessment**
  Industry performs calculation
  Public
  ~ If they feel they are in control ~ SAFE
  ~ If they do not feel in control ~ FEAR

NEED FOR PUBLIC INPUT

"IF YOU HAVE THE COURAGE TO SPEAK - YOU MUST HAVE THE DISCIPLINE TO LISTEN"

- **SPEAK – Give your message**
- **LISTEN – Hear public concerns**
- **IMPLEMENT – Incorporate public concerns into division or explain why not**