# Decommissioning of Platforms: On-Shore Disposal

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October 20, 2010

# Presentation Contents

- Some History
- Pacific OCS Platforms
- On-shore disposal Options

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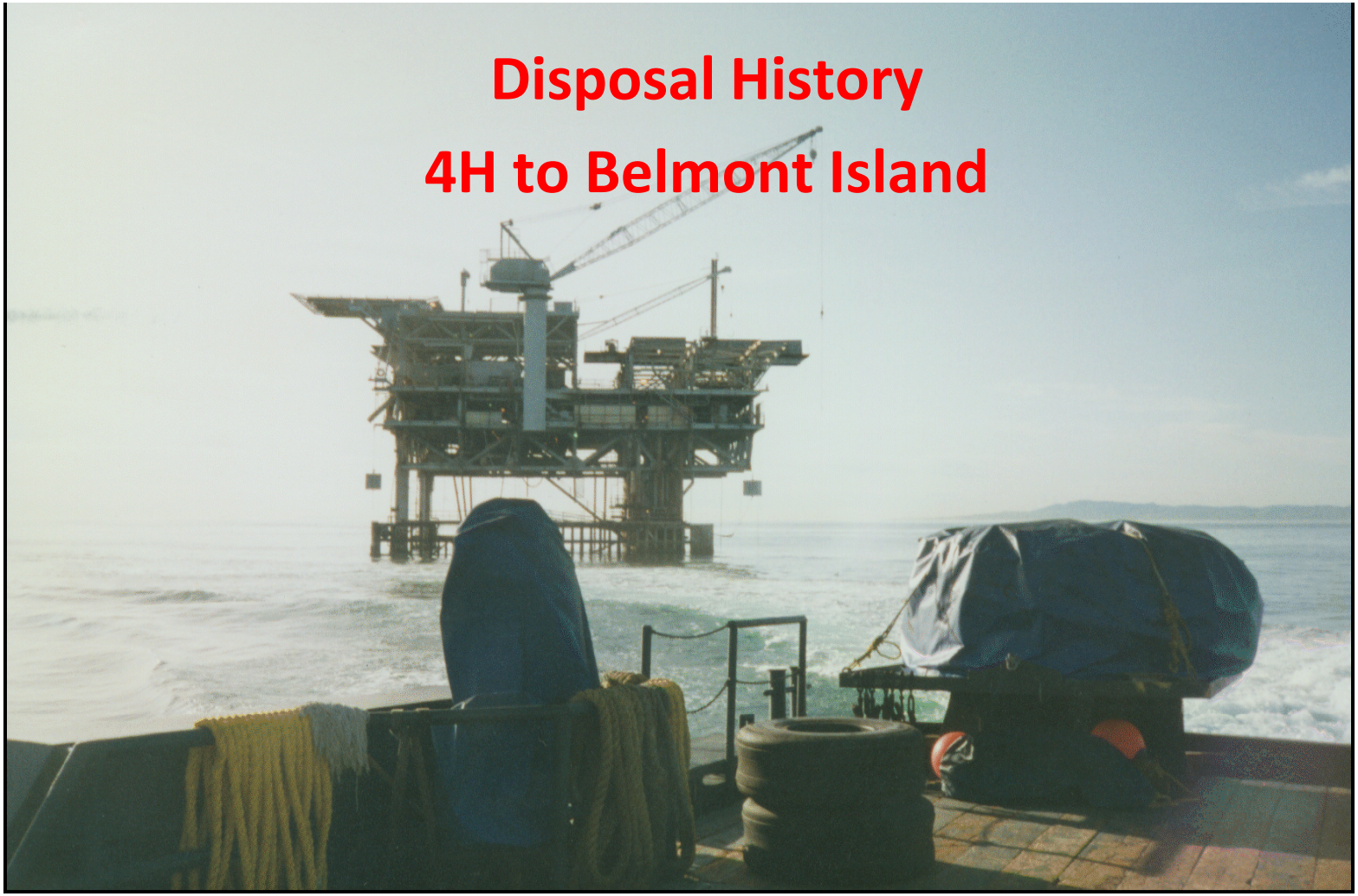
# Disposal History

# 4H to Belmont Island



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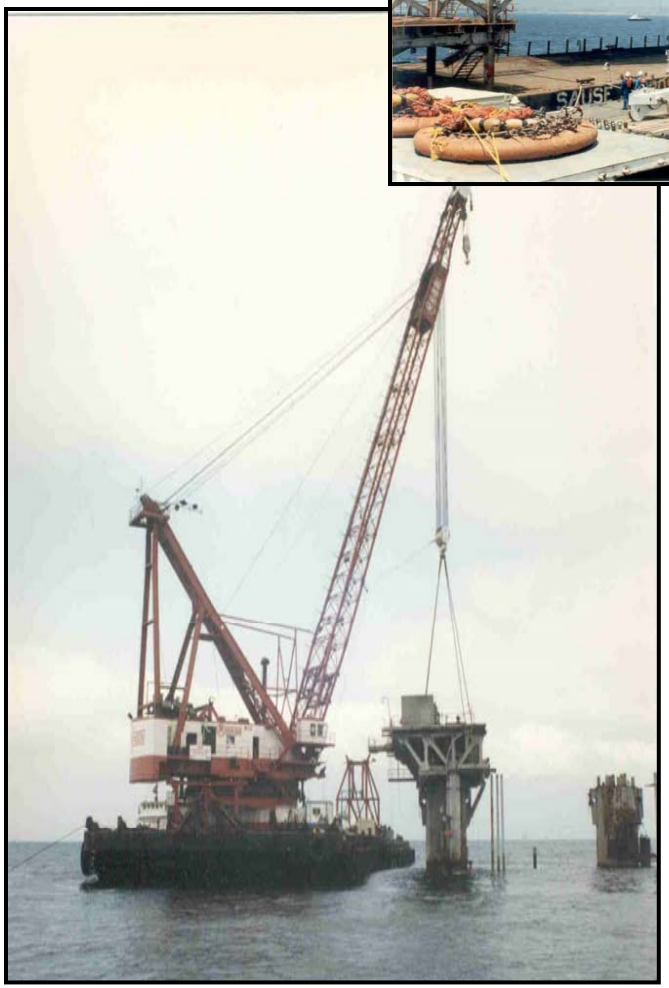
# 4H Platform Decommissioning

- Jacket components transported to 20 acre site on Terminal Island
- Topsides and jacket packages limited to 30 feet in heights
- 10,000 tons of steel
- 3,000 tons of misc. materials
- 2,700 tons of marine growth



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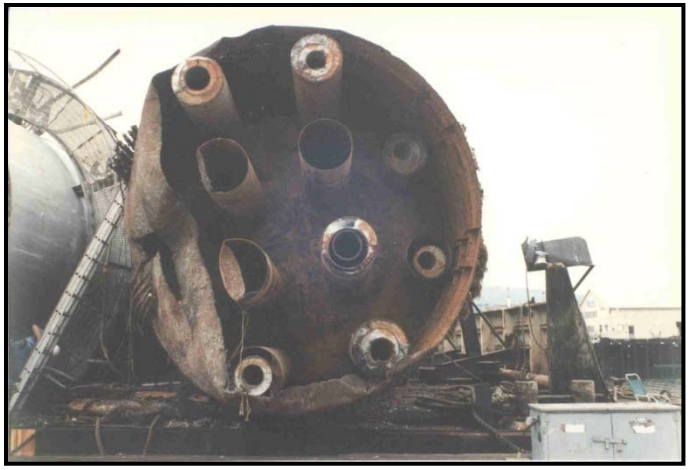
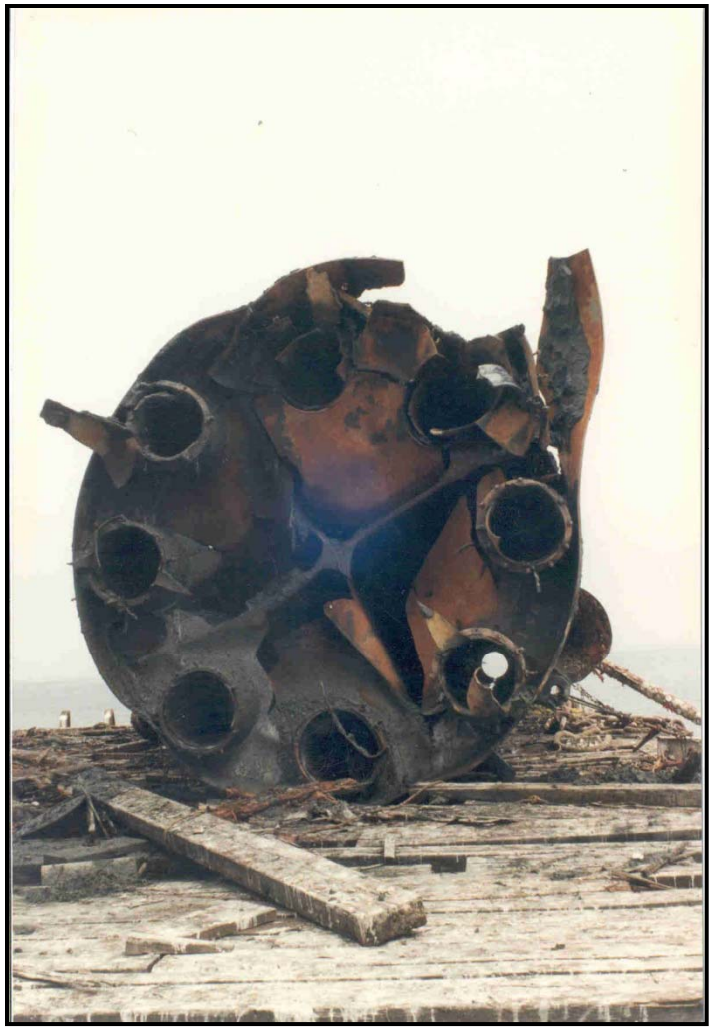
# Platform Components and Marine Growth





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# Belmont Island Overview

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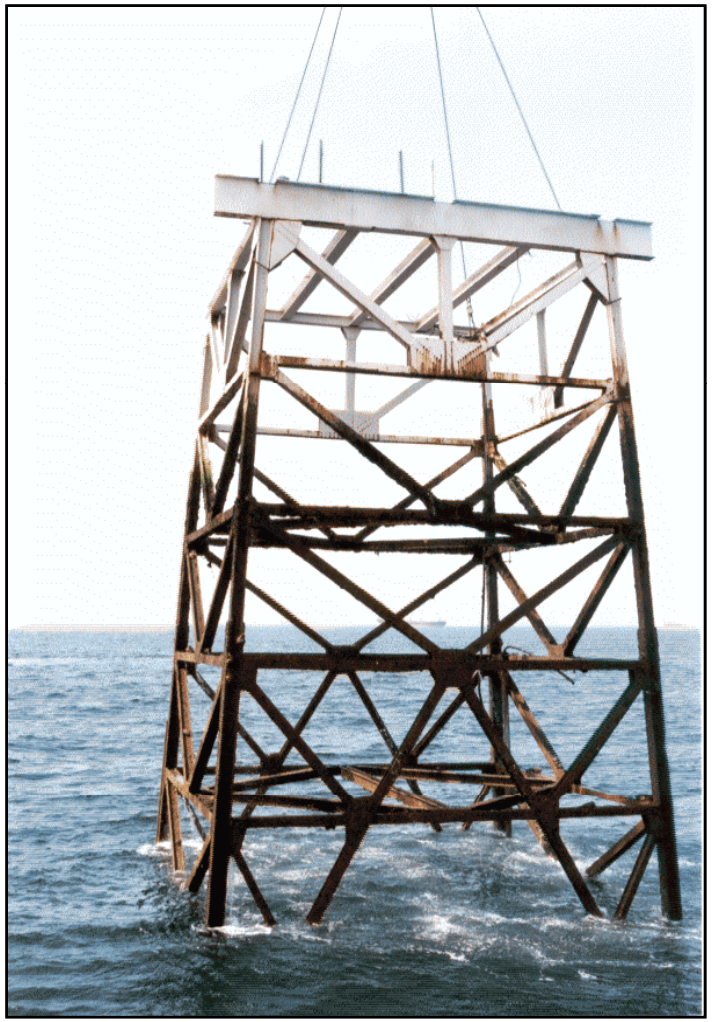
# South Tower Disposition



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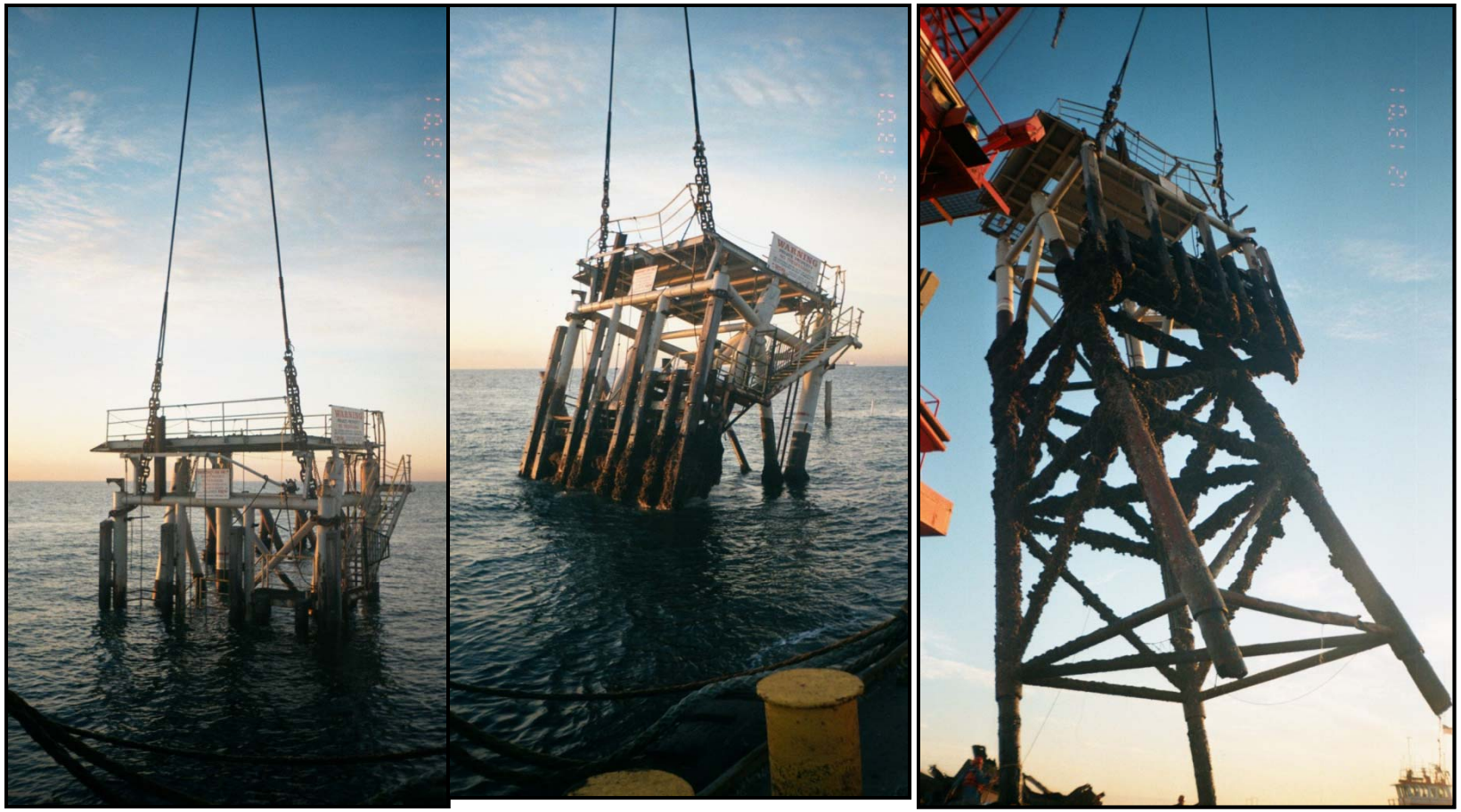
# Boat Landing Removal



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# Onshore Concrete, Steel and Wood Handling

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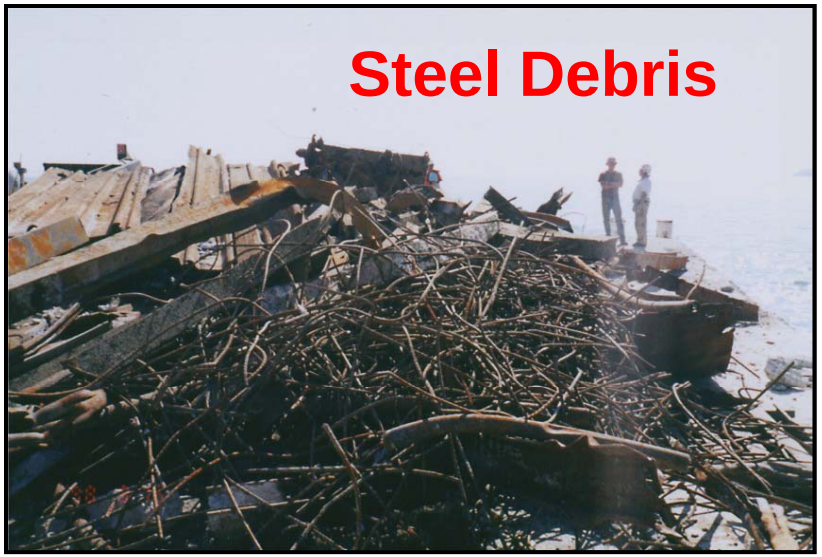
# Demolition Debris

Concrete Rubble



Wood Decking and Pilings

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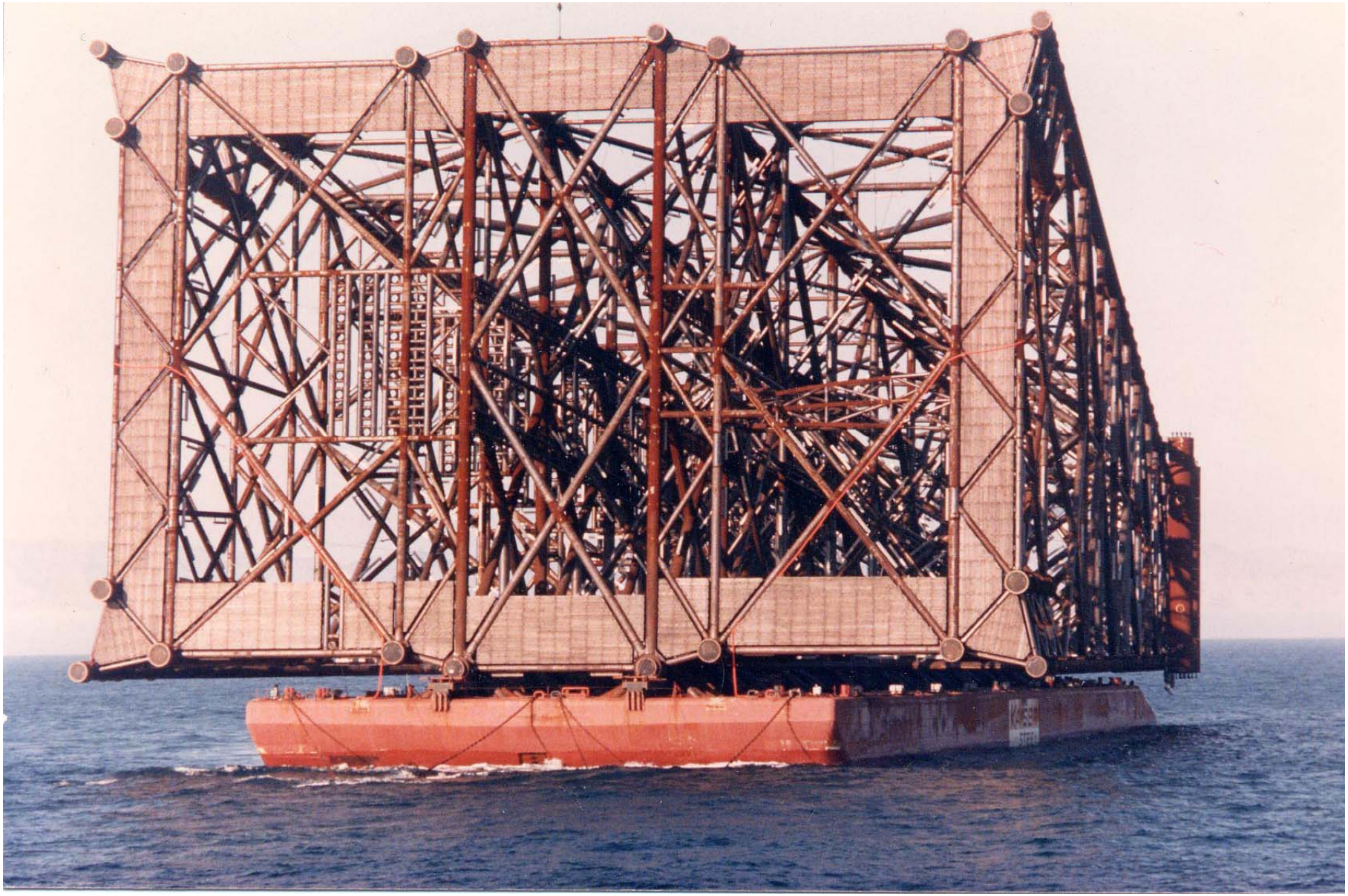

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# MMS POCSR Decommissioning Cost Update 2010

## Current Pacific OCS Inventory

| Platform Name | Water Depth (ft) | # Piles Main/Skirt | Total Weight |
|---|---|---|---|
| A | 188 | 12/0 | 6,405 |
| B | 190 | 12/0 | 6,535 |
| C | 192 | 12/0 | 5,796 |
| Edith | 161 | 12/0 | 9,147 |
| Ellen | 265 | 8/0 | 14,016 |
| Elly | 255 | 12/0 | 9,400 |
| Eureka | 700 | 0/24 | 38,360 |
| Gail | 739 | 8/12 | 33,924 |
| Gilda | 205 | 12/0 | 11,690 |
| Gina | 95 | 6/0 | 1,426 |
| Grace | 318 | 12/8 | 11,256 |
| Habitat | 290 | 8/0 | 9,044 |
| Harmony | 1,198 | 8/20 | 78,380 |
| Harvest | 675 | 8/20 | 32,815 |
| Henry | 173 | 8/0 | 4,046 |
| Heritage | 1,075 | 8/26 | 67,515 |
| Hermosa | 603 | 8/8 | 29,516 |
| Hidalgo | 430 | 8/8 | 22,478 |
| Hillhouse | 190 | 8/0 | 5,929 |
| Hogan | 154 | 12/0 | 5,497 |
| Hondo | 842 | 8/12 | 28,713 |
| Houchin | 163 | 8/0 | 5,977 |
| Irene | 242 | 8/0 | 8,646 |

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# Pacific Outer Continental Shelf

| Platform | Water Depth (ft) | Jacket Weight (st) |
|---|---|---|
| Hidalgo | 430 | 10,950 |
| Hermosa | 603 | 17,000 |
| Harvest | 675 | 16,633 |
| Eureka | 700 | 18,500 |
| Gail | 739 | 18,300 |
| Hondo | 842 | 12,200 |
| Heritage | 1,075 | 32,420 |
| Harmony | 1,198 | 42,900 |

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# MMS POCSR Decommissioning Cost Update 2010 Scenario

| Platform | Year Installed | Water Depth (feet) | Deck Wt. (tons) | Jacket Wt. (tons) | Proj. Removal Timeframe | Projected DB Lift Capability (tons) |
|---|---|---|---|---|---|---|
| **Project I – Eastern Santa Barbara Channel** | | | | | | |
| Hogan | 1967 | 154 | 2,259 | 1,263 | 2015-2020 | 500 |
| Houchin | 1968 | 163 | 2,591 | 1,486 | 2015-2020 | 500 |
| **Project II – South Coast (Los Angeles/Orange County)** | | | | | | |
| Eureka | 1984 | 700 | 8,000 | 19,000 | 2015-2020 | 2,000 |
| Elly | 1980 | 255 | 4,700 | 3,300 | 2015-2020 | 2,000 |
| Ellen | 1980 | 265 | 5,300 | 3,200 | 2015-2020 | 2,000 |
| Edith | 1983 | 161 | 4,134 | 3,454 | 2015-2020 | 2,000 |
| **Project III – Eastern Santa Barbara Channel** | | | | | | |
| A | 1968 | 188 | 1,357 | 1,500 | 2015-2020 | 2,000 |
| B | 1968 | 190 | 1,357 | 1,500 | 2015-2020 | 2,000 |
| C | 1977 | 192 | 1,357 | 1,500 | 2015-2020 | 2,000 |
| Henry | 1979 | 173 | 1,371 | 1,311 | 2015-2020 | 2,000 |
| Hillhouse | 1969 | 190 | 1,200 | 1,500 | 2015-2020 | 2,000 |
| Gina | 1980 | 95 | 447 | 434 | 2015-2020 | 2,000 |
| **Project IV – Santa Barbara Channel/Southern Santa Maria Basin** | | | | | | |
| Gilda | 1981 | 205 | 3,792 | 3,220 | 2015-2020 | 2,000 |
| Irene | 1985 | 242 | 2,500 | 3,100 | 2015-2020 | 2,000 |
| Habitat | 1981 | 290 | 3,514 | 2,550 | 2015-2020 | 2,000 |
| **Project V – Santa Barbara Channel/Southern Santa Maria Basin** | | | | | | |
| Gail | 1987 | 739 | 7,693 | 18,300 | 2020-2025 | 4,000 |
| Grace | 1979 | 318 | 3,800 | 3,090 | 2020-2025 | 4,000 |
| Hermosa | 1985 | 603 | 7,830 | 17,000 | 2020-2025 | 4,000 |
| Harvest | 1985 | 675 | 9,024 | 16,633 | 2020-2025 | 4,000 |
| Hildalgo | 1986 | 430 | 8,100 | 10,950 | 2020-2025 | 4,000 |
| **Project VI – Western Santa Barbara Channel** | | | | | | |
| Hondo | 1976 | 842 | 8,450 | 12,200 | 2025-2030 | 4,000 |
| Harmony | 1989 | 1,198 | 9,839 | 42,900 | 2025-2030 | 4,000 |
| Heritage | 1989 | 1,075 | 9,826 | 32,420 | 2025-2030 | 4,000 |

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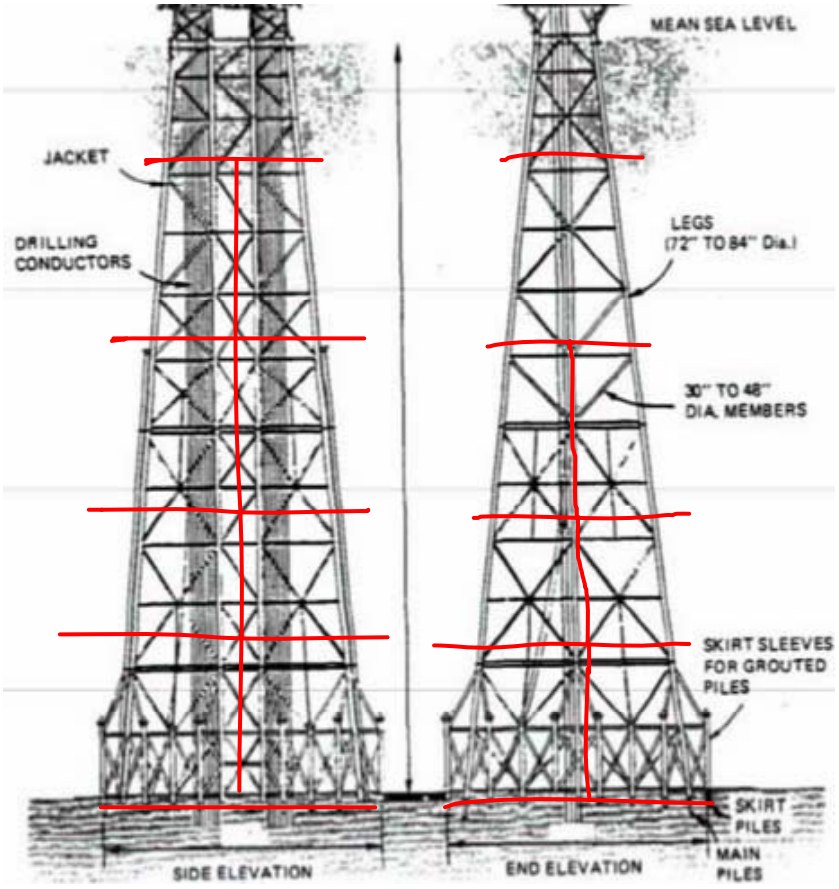
# MMS POCSR Decommissioning Cost Update 2010
# Platform Removal

Jacket and Pile Removal

- Abrasively sever piles 15ft below mudline
- Removed in one piece or cut into sections small enough (40-50% of full crane capacity) for the DB crane to remove safely and efficiently
- Transport to shore via cargo barge

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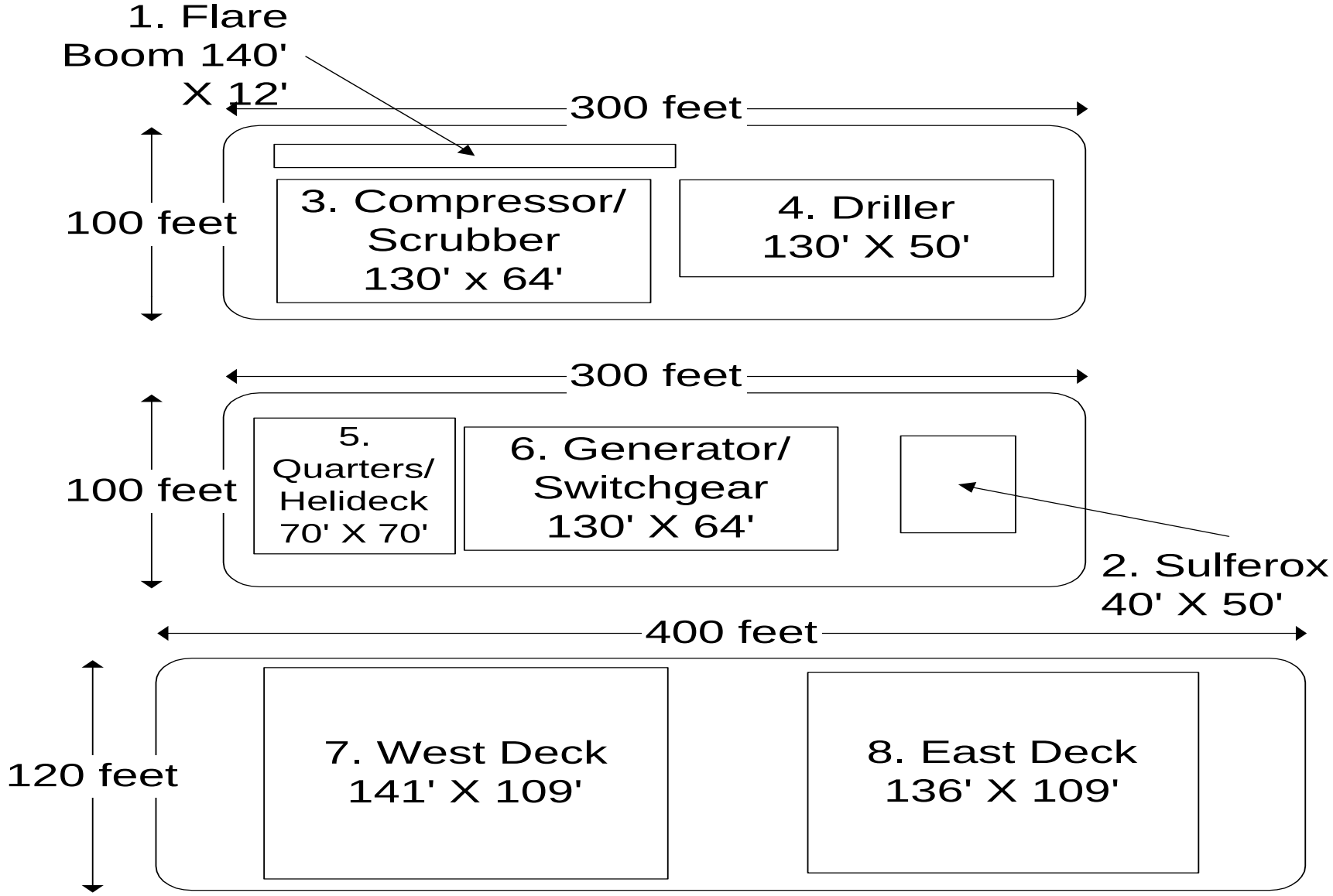
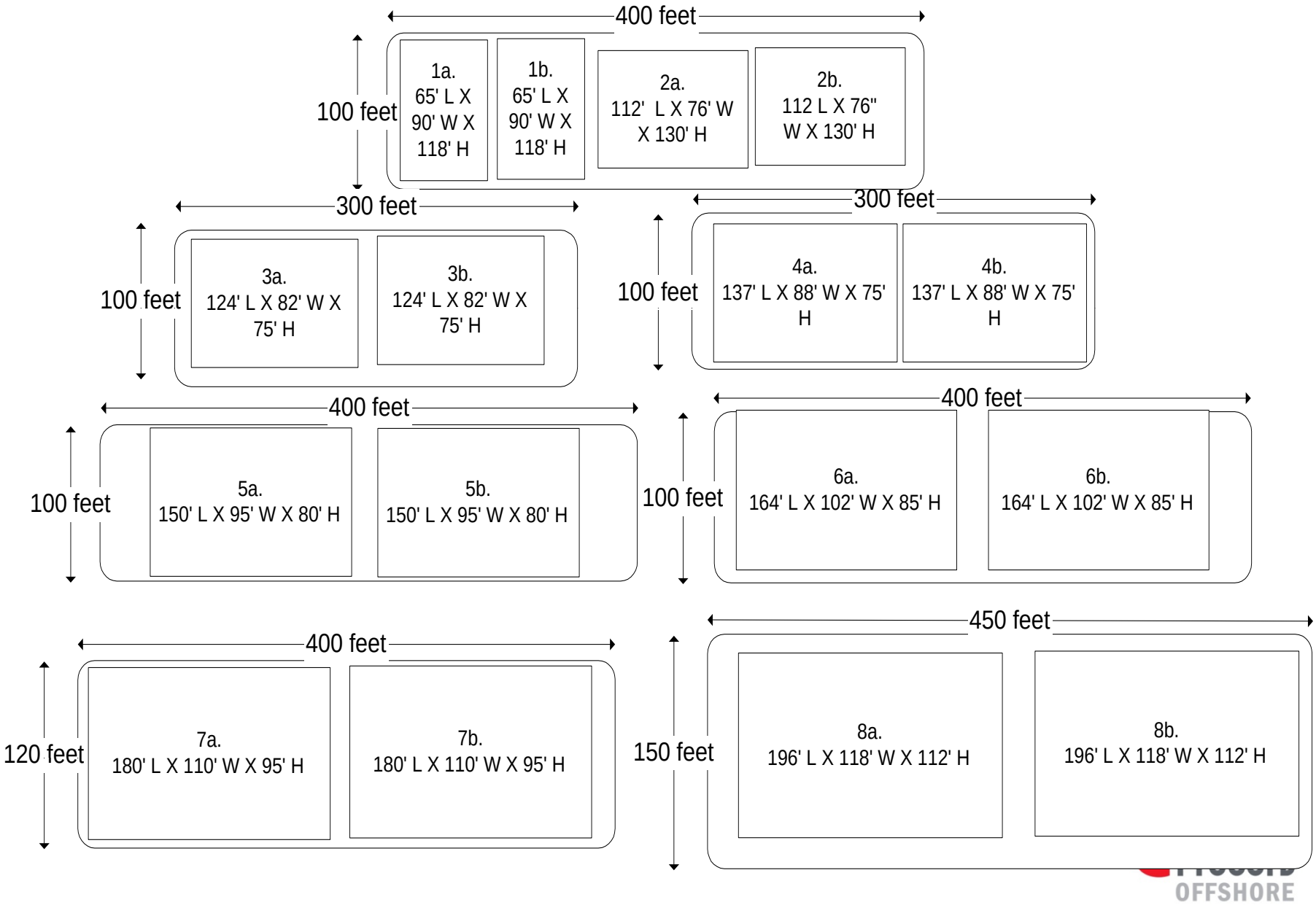
U.S. Minerals Management Service
Cargo Barge Loadout
Gail - Topsides



U.S. Minerals Management Service
Cargo Barge Loadout
Gail - Complete Removal



# Proposed On-shore Disposal of Chevron Platforms at Schnitzer Steel in Portland, OR

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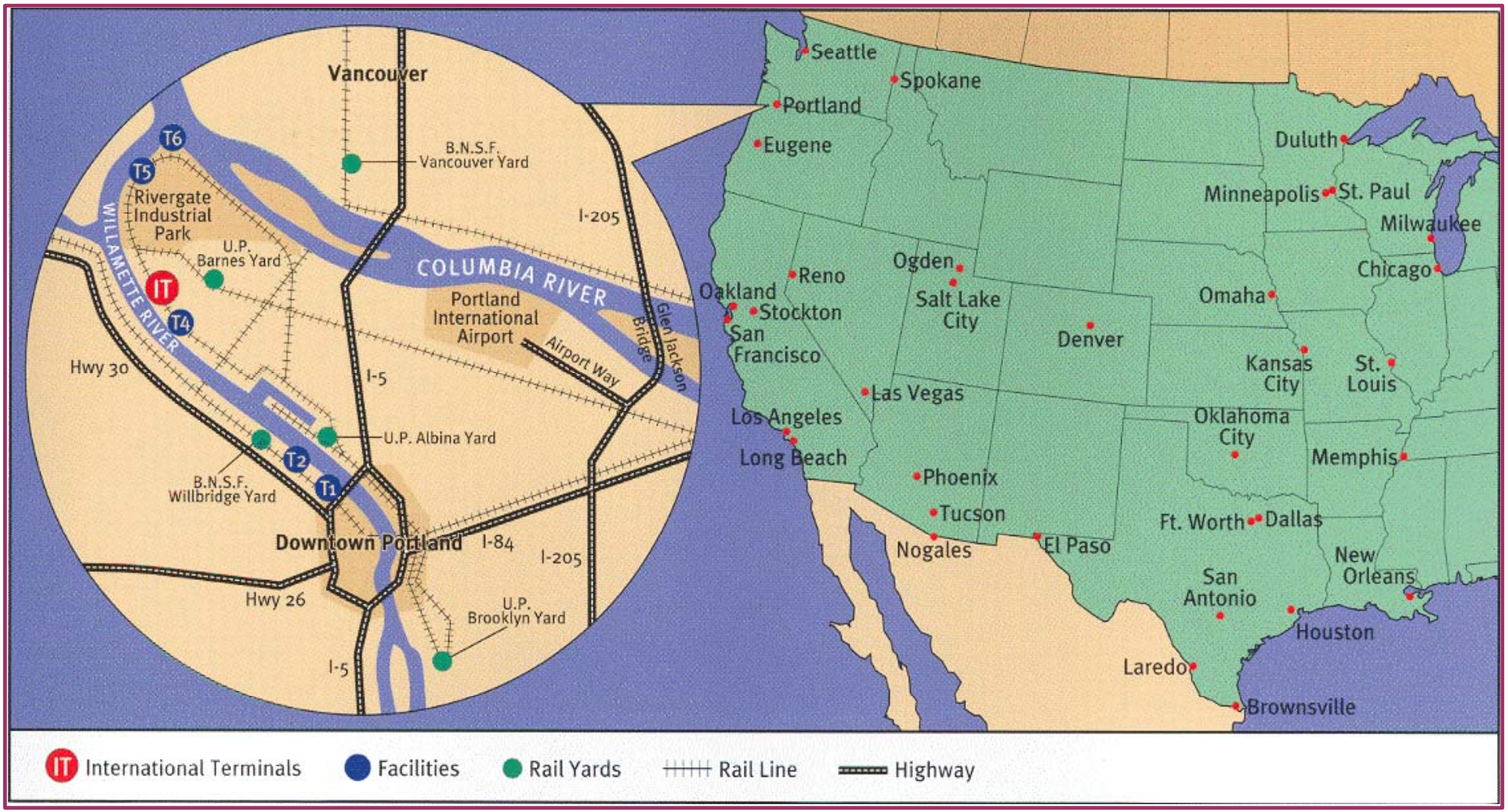


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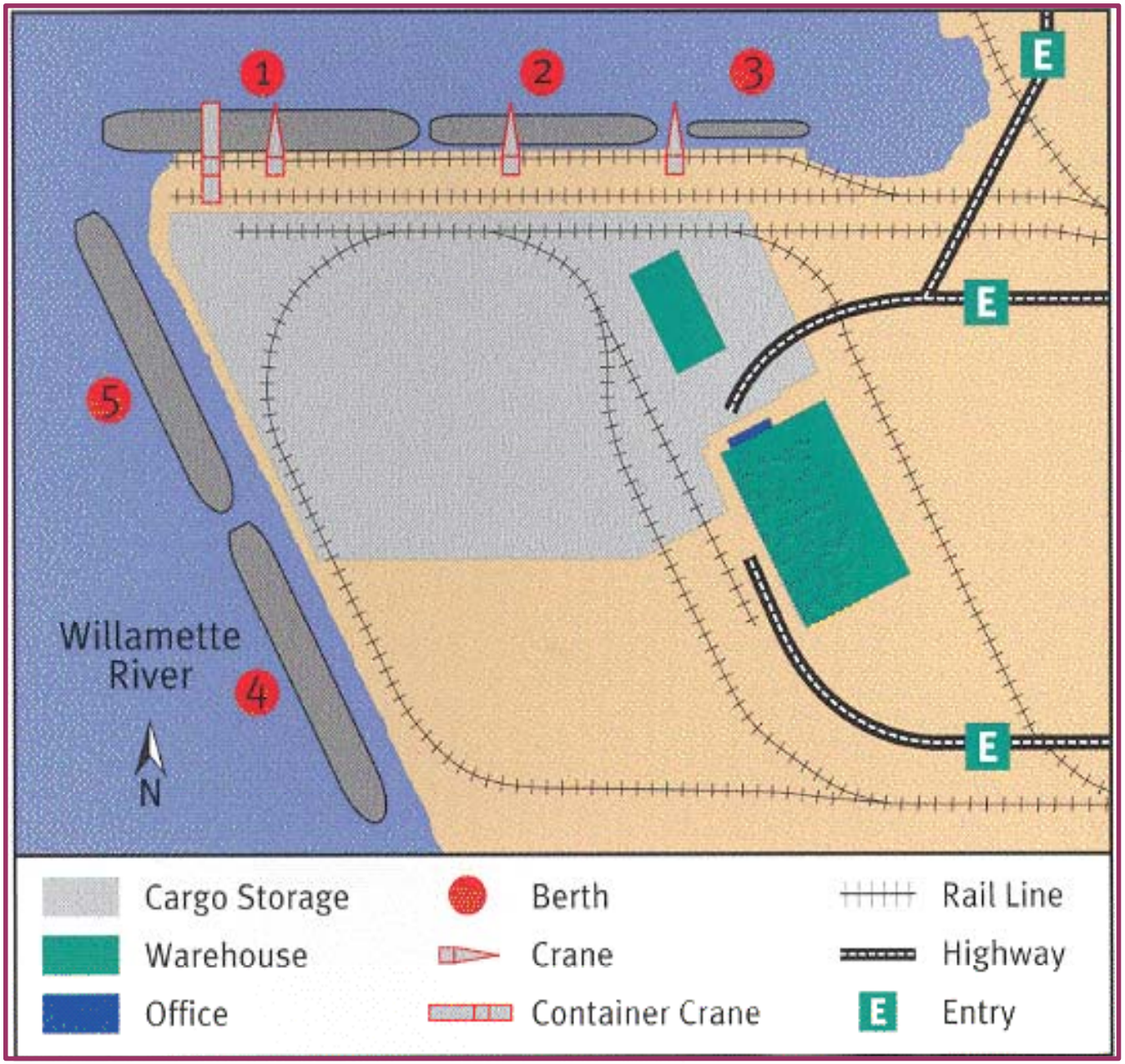


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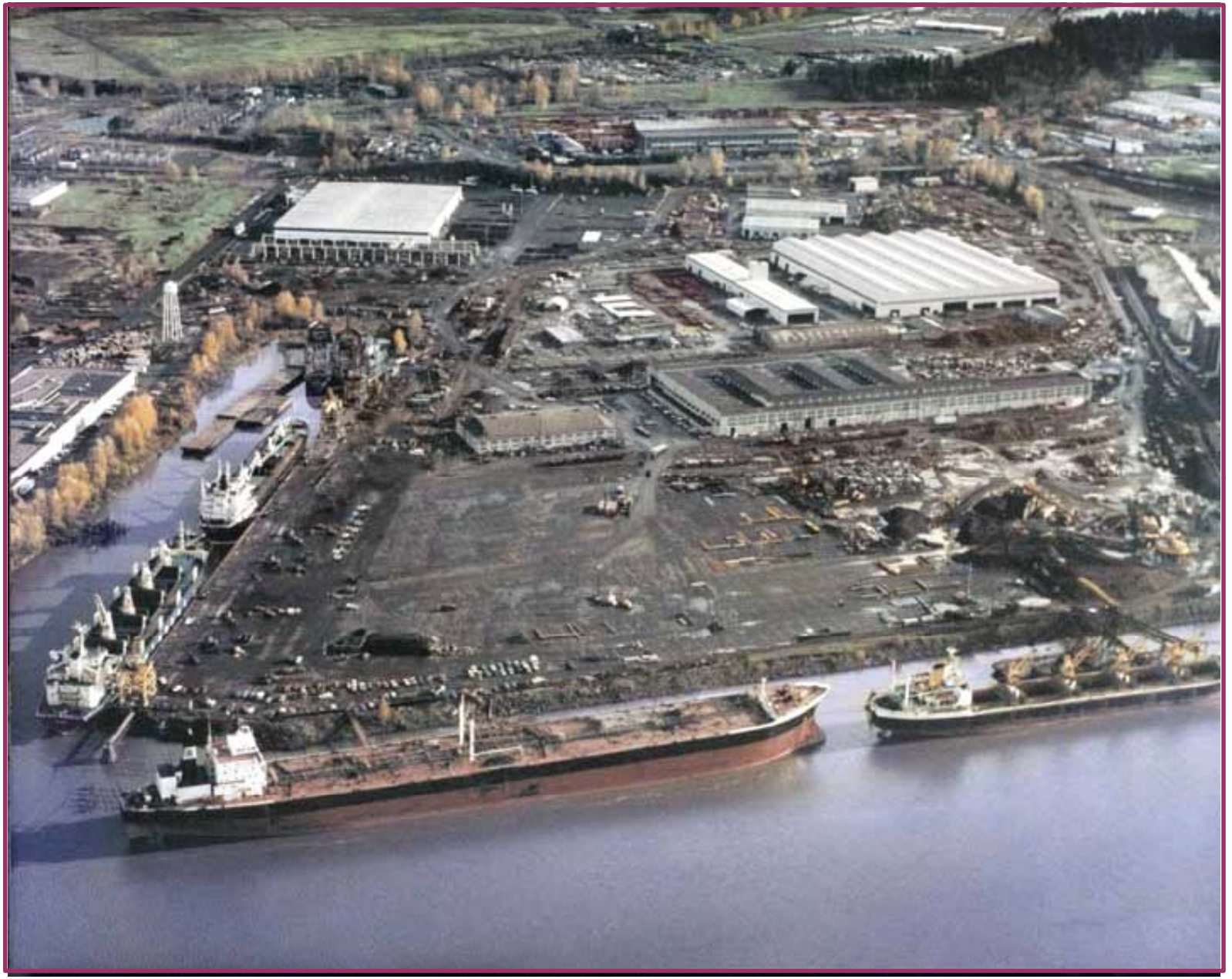

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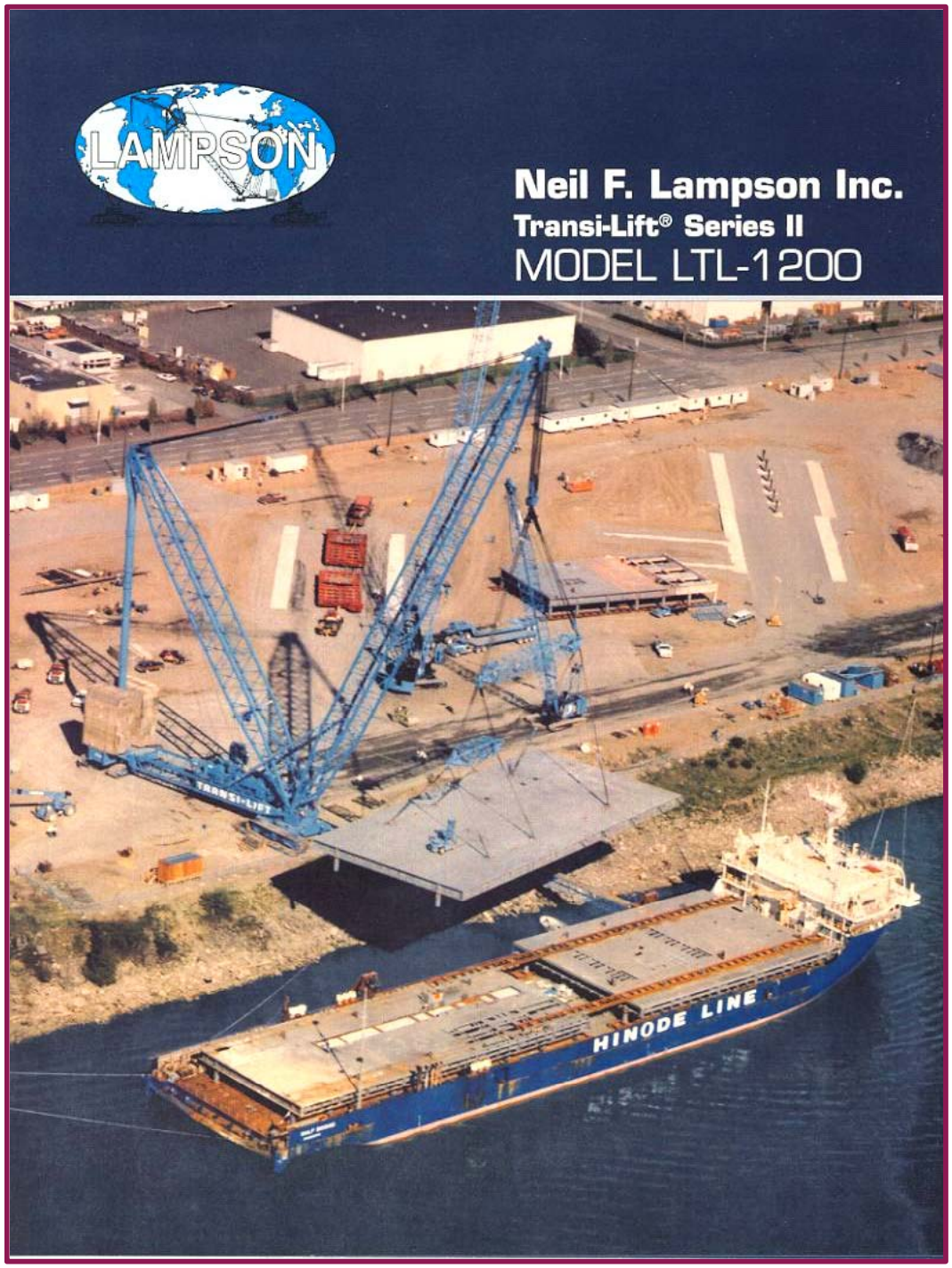
# Offloading


LAMPSON
Neil F. Lampson Inc.
Transi-Lift® Series II
MODEL LTL-1200
HINODE LINE

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| Schnitzer Steel Products<br>Offshore Platform Scrapping Program<br>Lay Down Foot Print | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Description** | **Length** | **Width** | **Item Area** | **50 Foot Access** | **Total** |
| | **GAIL Topsides** | | | | | |
| **1** | Flare Boom | 140 | 12 | 1,680 | 10,100 | |
| **2** | Sulferox | 50 | 50 | 2,500 | 7,500 | |
| **3** | Compressor-Scrubber | 130 | 64 | 8,320 | 12,200 | |
| **4** | Driller | 130 | 50 | 6,500 | 11,500 | |
| **5** | Quarters-Helo | 70 | 70 | 4,900 | 9,500 | |
| **6** | Generator-Switchgear | 130 | 64 | 8,320 | 12,200 | |
| **7** | West Deck | 141 | 108 | 15,228 | 14,950 | |
| **8** | East Deck | 137 | 104 | 14,248 | 14,550 | |
| | **Subtotal** | | | **61,696** | **92,500** | **154,196** |
| | **GRACE Topsides** | | | | | |
| **1** | Flare Boom | 120 | 21 | 2,520 | 9,550 | |
| **2** | Cantilever | 70 | 15 | 1,050 | 6,750 | |
| **3** | Compressor | 124 | 50 | 6,200 | 11,200 | |
| **4** | BOP | 120 | 40 | 4,800 | 10,500 | |
| **5** | Process | 142 | 50 | 7,100 | 12,100 | |
| **6** | Wellhead | 138 | 40 | 5,520 | 11,400 | |
| **7** | Quarters-Helo | 70 | 70 | 4,900 | 9,500 | |
| **8** | MUD | 90 | 65 | 5,850 | 10,250 | |
| **9** | Personnell-MCC | 61 | 66 | 4,026 | 8,850 | |
| **10** | Generator | 70 | 80 | 5,600 | 10,000 | |
| **11** | West Cap Truss | 119 | 62 | 7,378 | 11,550 | |
| **12** | East Cap Truss | 119 | 82 | 9,758 | 12,550 | |
| | **Subtotal** | | | **64,702** | **124,200** | **188,902** |
| | **HERMOSA Topsides** | | | | | |
| **1** | Flare Boom | 117 | 12 | 1,404 | 8950 | |
| **2** | Quarters-Helo | 67 | 61 | 4,087 | 8900 | |
| **3** | Power | 156 | 50 | 7,800 | 12800 | |
| **4** | Pipe Rack | 100 | 73 | 7,300 | 11150 | |
| **5** | Utility | 156 | 50 | 7,800 | 12800 | |
| **6** | Compression | 156 | 40 | 6,240 | 12300 | |
| **7** | Production | 156 | 40 | 6,240 | 12300 | |
| **8** | Well Head | 156 | 49 | 7,644 | 12750 | |
| **9** | Cap Truss | 210 | 100 | 21,000 | 18000 | |
| | **Subtotal** | | | **69,515** | **61,696** | **131,211** |

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| Schnitzer Steel Products<br>Offshore Platform Scrapping Program<br>Lay Down Foot Print | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Description** | **Length** | **Width** | **Item Area** | **50 Foot Access** | **Total** |
| | **HIDALGO Topsides** | | | | | |
| **1** | Flare Boom | 115 | 12 | 1,380 | 8,850 | |
| **2** | Quarters-Helo | 67 | 63 | 4,221 | 9,000 | |
| **3** | Power | 156 | 49 | 7,644 | 12,750 | |
| **4** | Pipe Rack | 101 | 69 | 6,969 | 11,000 | |
| **5** | Utility | 156 | 49 | 7,644 | 12,750 | |
| **6** | Compression | 156 | 37 | 5,772 | 12,150 | |
| **7** | Production | 156 | 37 | 5,772 | 12,150 | |
| **8** | Well Head | 156 | 49 | 7,644 | 12,750 | |
| **9** | Cap Truss | 210 | 100 | 21,000 | 18,000 | |
| | **Subtotal** | | | **68,046** | **109,400** | **177,446** |
| | **HARVEST Topsides** | | | | | |
| **1** | Flare Boom | 115 | 12 | 1,380 | 8850 | |
| **2** | Quarters-Helo | 67 | 63 | 4,221 | 9000 | |
| **3** | Power | 156 | 49 | 7,644 | 12750 | |
| **4** | Pipe Rack | 101 | 69 | 6,969 | 11000 | |
| **5** | Utility | 156 | 49 | 7,644 | 12750 | |
| **6** | Compression | 156 | 37 | 5,772 | 12150 | |
| **7** | Production | 156 | 37 | 5,772 | 12150 | |
| **8** | Well Head | 156 | 49 | 7,644 | 12750 | |
| **9** | Cap Truss | 210 | 100 | 21,000 | 18000 | |
| | **Subtotal** | | | **68,046** | **109,400** | **177,446** |
| | **GAIL Jacket** | | | | | |
| **1** | A-Top | 90 | 190 | 17,100 | 16,500 | |
| **2** | B | 112 | 212 | 23,744 | 18,700 | |
| **3** | C | 137 | 237 | 32,469 | 21,200 | |
| **4** | D | 164 | 264 | 43,296 | 23,900 | |
| **5** | E | 180 | 280 | 50,400 | 25,500 | |
| **6** | F-Bottom | 197 | 297 | 58,509 | 27,200 | |
| | **Subtotal** | | | **225,518** | **133,000** | **358,518** |
| | **GRACE Jacket** | | | | | |
| **1** | A-Top | 113 | 168 | 18,984 | 16,550 | |
| **2** | B | 141 | 196 | 27,636 | 19,350 | |
| **3** | C-Bottom | 158 | 213 | 33,654 | 21,050 | |
| | **Subtotal** | | | **80,274** | **56,950** | **137,224** |

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## Schnitzer Steel Products
## Offshore Platform Scrapping Program
## Lay Down Foot Print

| Item | Description | Length | Width | Item Area | 50 Foot Access | Total |
|---|---|---|---|---|---|---|
| | **HERMOSA Jacket** | | | | | |
| **1** | A-Top | 118 | 198 | 23,364 | 18,300 | |
| **2** | B | 137 | 218 | 29,866 | 20,250 | |
| **3** | C | 149 | 229 | 34,121 | 21,400 | |
| **4** | D | 161 | 241 | 38,801 | 22,600 | |
| **5** | E | 173 | 253 | 43,769 | 23,800 | |
| **6** | F | 187 | 267 | 49,929 | 25,200 | |
| **7** | G-Bottom | 200 | 279 | 55,800 | 26,450 | |
| | **Subtotal** | | | **275,650** | **158,000** | **433,650** |
| | **HIDALGO Jacket** | | | | | |
| **1** | A-Top | 123 | 203 | 24,969 | 18,800 | |
| **2** | B | 149 | 229 | 34,121 | 21,400 | |
| **3** | C-Bottom | 176 | 257 | 45,232 | 24,150 | |
| | **Subtotal** | | | **104,322** | **64,350** | **168,672** |
| | **HARVEST Jacket** | | | | | |
| **1** | A-Top | 201 | 62 | 12,462 | 15,650 | |
| **2** | B | 212 | 75 | 15,900 | 16,850 | |
| **3** | C | 225 | 90 | 20,250 | 18,250 | |
| **4** | D | 237 | 105 | 24,885 | 19,600 | |
| **5** | E | 251 | 121 | 30,371 | 21,100 | |
| **6** | F | 257 | 139 | 35,723 | 22,300 | |
| **7** | G | 281 | 158 | 44,398 | 24,450 | |
| **8** | H | 298 | 178 | 53,044 | 26,300 | |
| **9** | I-Bottom | 315 | 200 | 63,000 | 28,250 | |
| | **Subtotal** | | | **300,033** | **192,750** | **492,783** |
| | **Total Square Feet** | | | **1,092,284** | **969,246** | **2,061,530** |
| | **Total Acres** | | | **25** | **22** | **47** |

**Note:** "Fifty (50) foot access" is a clear "L" shaped crane access and traffic way allowance on the one (1) length and one (1) width of each item. This must be balanced in requirements for small topside sections and large jacket sections.

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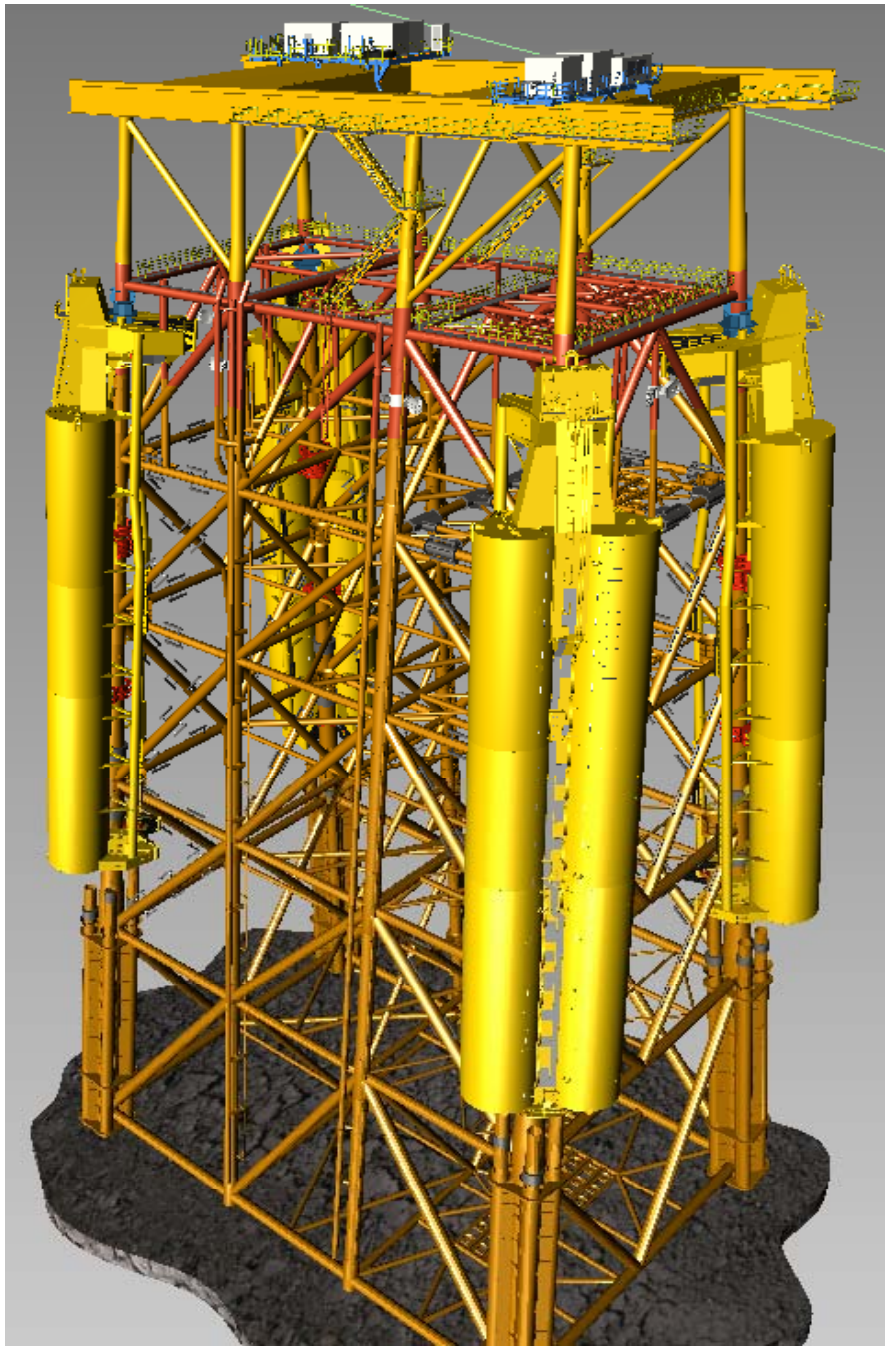
# Other options:

## Jacket Re-floatation



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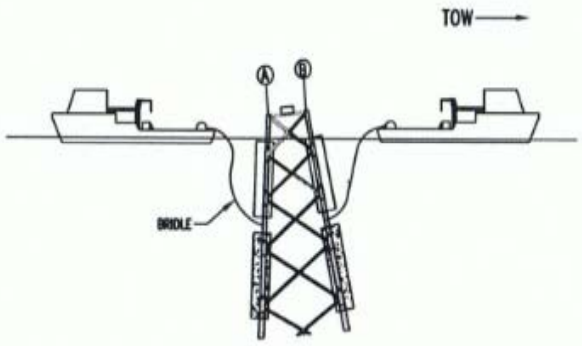
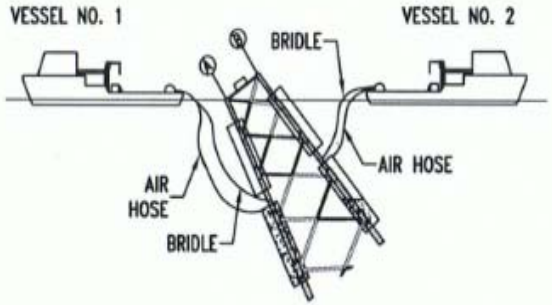
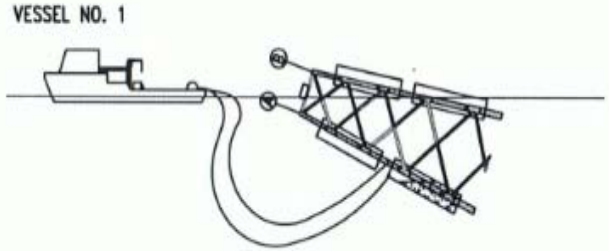


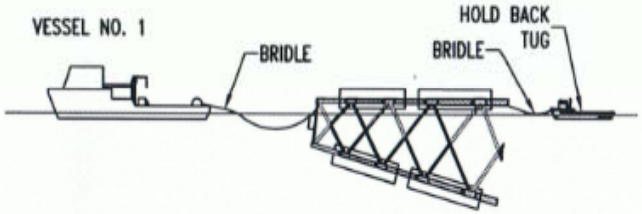

STEP 6: TOW TO REVERSE UPENDING LOCATION

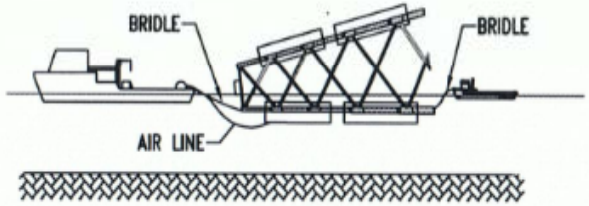



STEP 7: INFLATE FRAME B CVBS TO ROTATE JACKET




STEP 8: INFLATE FRAME A CVBS TO COMPLETE ROTATION




STEP 10: DE-BALLAST REMAINING BUOYANCY ON FRAME A TO ENTER PORT

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# MMS POCSR Decommissioning Cost Update 2010
# Materials Disposal

- Structures
  - Large Scale Capacity Facility
  - Processing and Disposal at LA / Long Beach Facilities
  - $384 per ton
- Conductors, Pipelines and Power Cables
  - Small Scale Capacity Facility
  - Truck and Dispose of Inland Near Bakersfield, CA
  - $123 per ton

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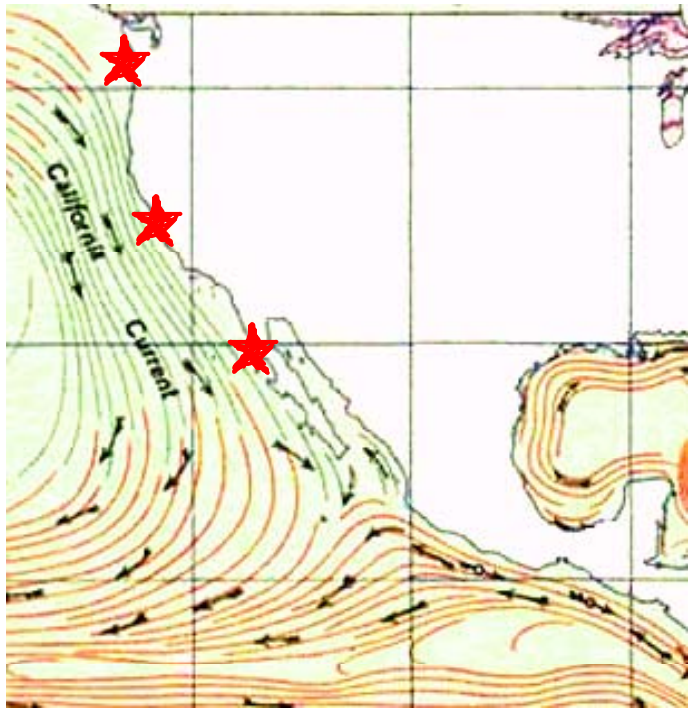
# MMS POCSR Decommissioning Cost Update 2010
# Materials Disposal

- Schnitzer Steel - Portland, OR
  - Fight a 0.5 kt counter flow current
  - Superfund Site
- SA Recycling -
  LA/Long Beach Facilities
  - Nearest Location
  - Best Option from a liability standpoint
- Baja Penninsula, Mexico
  - Travel with 0.5 kt current
  - Cheaper, but more liability and no guarantee of availability
- Reefing options not considered for this study due to current political atmosphere

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# On-shore Disposal Summary

- Approximately 10 acres/platform needed for on-shore disposal.
- Re-floatation as a single piece may be viable option for larger jackets.
- Disposal could be done in LA/Long Beach harbor areas, but will have air quality issues.
- Mexico may be more attractive if environmental issues could be worked out.

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# Questions/Discussion

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