### CAPITAL COSTS

#### Cherry Point Refinery, Whatcom County, Washington

#### DIRECT COSTS

- **A. Purchased Equipment**
  - a. Equipment (Material & Labor) $4,475,140 BP FCC Team Appraiser Estimate
  - b. Concrete (Material & Labor) $222,900 BP FCC Team Appraiser Estimate
  - c. Civil (Material & Labor) $699,100 BP FCC Team Appraiser Estimate
  - d. Steel (Material & Labor) $761,400 BP FCC Team Appraiser Estimate
  - e. Piping (Material & Labor) $4,806,160 BP FCC Team Appraiser Estimate
  - f. Insulation (Material & Labor) $399,900 BP FCC Team Appraiser Estimate
  - g. Instruments (Material & Labor) $1,707,150 BP FCC Team Appraiser Estimate
  - h. Electrical (Material & Labor) $221,660 BP FCC Team Appraiser Estimate
  - i. Conduit (Material & Labor) $487,110 BP FCC Team Appraiser Estimate
  - j. Painting (Material & Labor) $114,100 BP FCC Team Appraiser Estimate
  - k. Scaffolding (Material & Labor) $1,482,100 BP FCC Team Appraiser Estimate
  - l. Firewatch/Hoistwatch (Material & Labor) $161,100 BP FCC Team Appraiser Estimate
  - m. MTO Allowance (Material & Labor) $2,008,000 BP FCC Team Appraiser Estimate
  - n. Freight $433,000 BP FCC Team Appraiser Estimate
  - **Total Direct Field Costs $19,337,160** Calculation

#### INDIRECT COSTS

- **B. Direct Installation Costs**
  - a. Construction Service Labor (included in craft billing rates) $0 BP FCC Team Appraiser Estimate
  - b. Non-Productive (but time 3%) $416,005 BP FCC Team Appraiser Estimate
  - c. Small Tools (included in craft billing rates) $0 BP FCC Team Appraiser Estimate
  - d. Consumables (included in craft billing rates) $0 BP FCC Team Appraiser Estimate
  - e. Non-Payroll Tax & Insurance (included in craft billing rates) $0 BP FCC Team Appraiser Estimate
  - f. Construction Equipment (included in craft billing rates) $0 BP FCC Team Appraiser Estimate
  - g. Field Staff (included in craft billing rates) $0 BP FCC Team Appraiser Estimate
  - h. Crafts (included in craft billing rates) $0 BP FCC Team Appraiser Estimate
  - i. Premium on OT Work (115%) $999,591 BP FCC Team Appraiser Estimate
  - j. For Dress Allowance (5%) $271,066 BP FCC Team Appraiser Estimate
  - k. Crane Cost $250,000 BP FCC Team Appraiser Estimate
  - l. Safety Control (3%) $410,903 BP FCC Team Appraiser Estimate
  - **Total Direct Installation Costs $2,279,987** Calculation

- **C. Indirect Installation**
  - a. Detailed Design (1%) $9,293,200 Jacobs - RDM + 10%
  - b. License Fee $100,000 BP FCC Team Appraiser Estimate
  - c. Proprietary Hardware $800,000 BP FCC Team Appraiser Estimate
  - d. Engineering Fee $110,000 BP FCC Team Appraiser Estimate
  - e. Construction Costs (20%) $6,320,200 BP FCC Team Appraiser Estimate
  - **Total Indirect Costs (IC) $16,719,700** Calculation

- **D. Project Contingency (ODDC + ICC) (5.4)** $15,755,680 Jacobs - RDM + 10%

- **E. Escalation**
  - 40% $2,970,953 Jacobs

- **F. Carbon**
  - $70,000 BP FCC Team Appraiser Estimate

- **G. Substitution**
  - $10,000,000 BP FCC Team Appraiser Estimate

- **H. HST Upgrade**
  - $1,000,000 BP FCC Team Appraiser Estimate

- **I. Vapourizer in LEU**
  - $5,000 BP FCC Team Appraiser Estimate

- **Total Project Cost (in 2006 dollars)** $70,390,125 Calculation

- **TOTAL ANNUALIZED COSTS (TAC) (20 years at 7% interest)** $6,683,318 Calculation

### DIRECT AND INDIRECT ANNUALIZED COSTS

- **D. Operating Cost (assumed 0.033 installation cost)** $2,470,038 Jacobs

- **E. Maintenance Labor and Costs (0.014 installed cost)** $1,058,853 Jacobs on OAQPS

- **Total Annualized Costs (TAC + TAC*7% + TAC*10%)** $10,192,729 Calculation


Office of Air Quality Planning and Standards (OAQPS).

### BART Emissions

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<tr>
<th>Unit ID</th>
<th>BART Source Point Description</th>
<th>PM</th>
<th>Total Project Cost</th>
<th>Total Operating Cost</th>
<th>Cost per ton</th>
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Total: $31,353,314