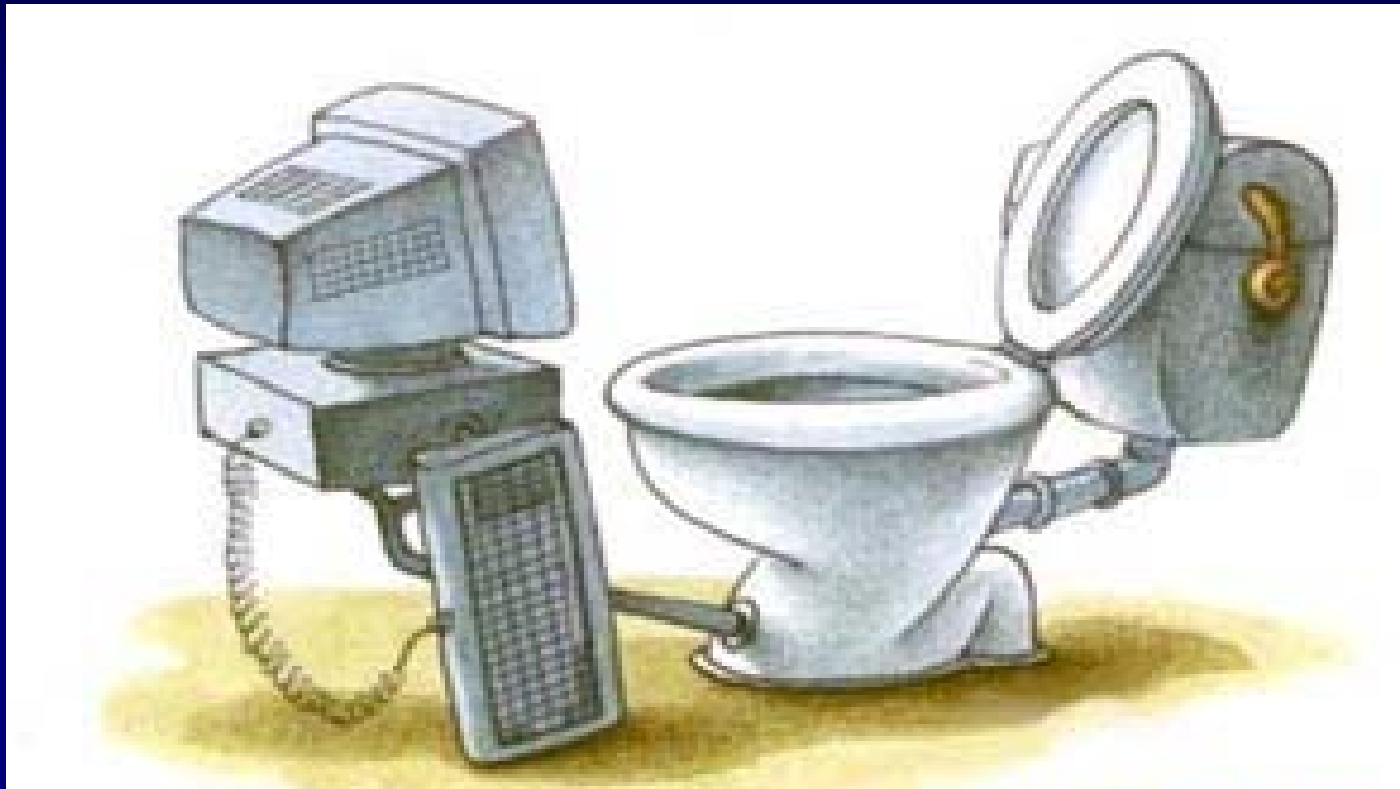


Maintenance at the Stickney Water Reclamation Plant

Public Image of Maintenance?



Increase Productivity



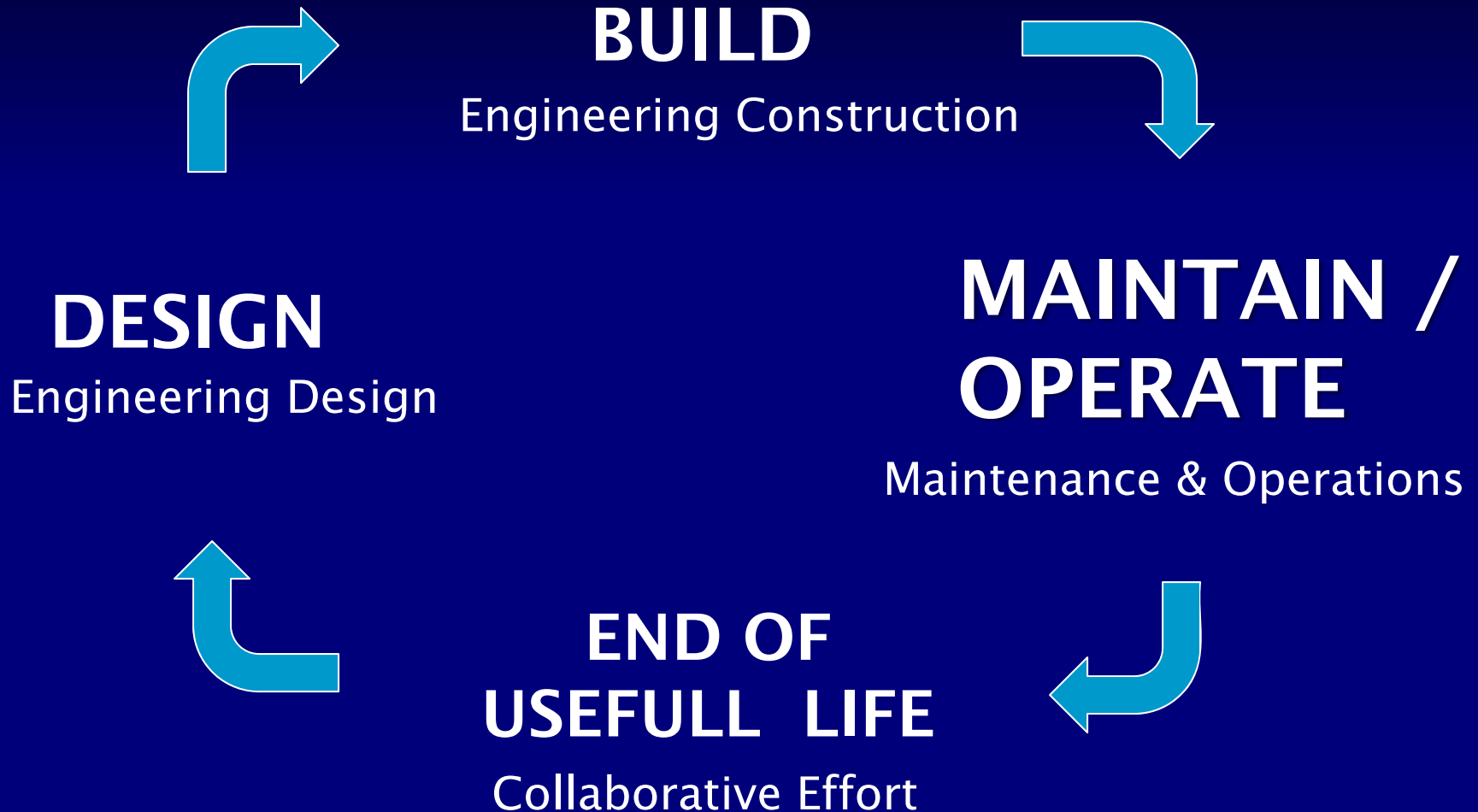
Latest iPod Product



Maintenance

More than just firefighting

ASSET MANAGEMENT CYCLE



Maintenance Mission

To ensure reliable plant
operation in the most
economically sustainable manner
possible.

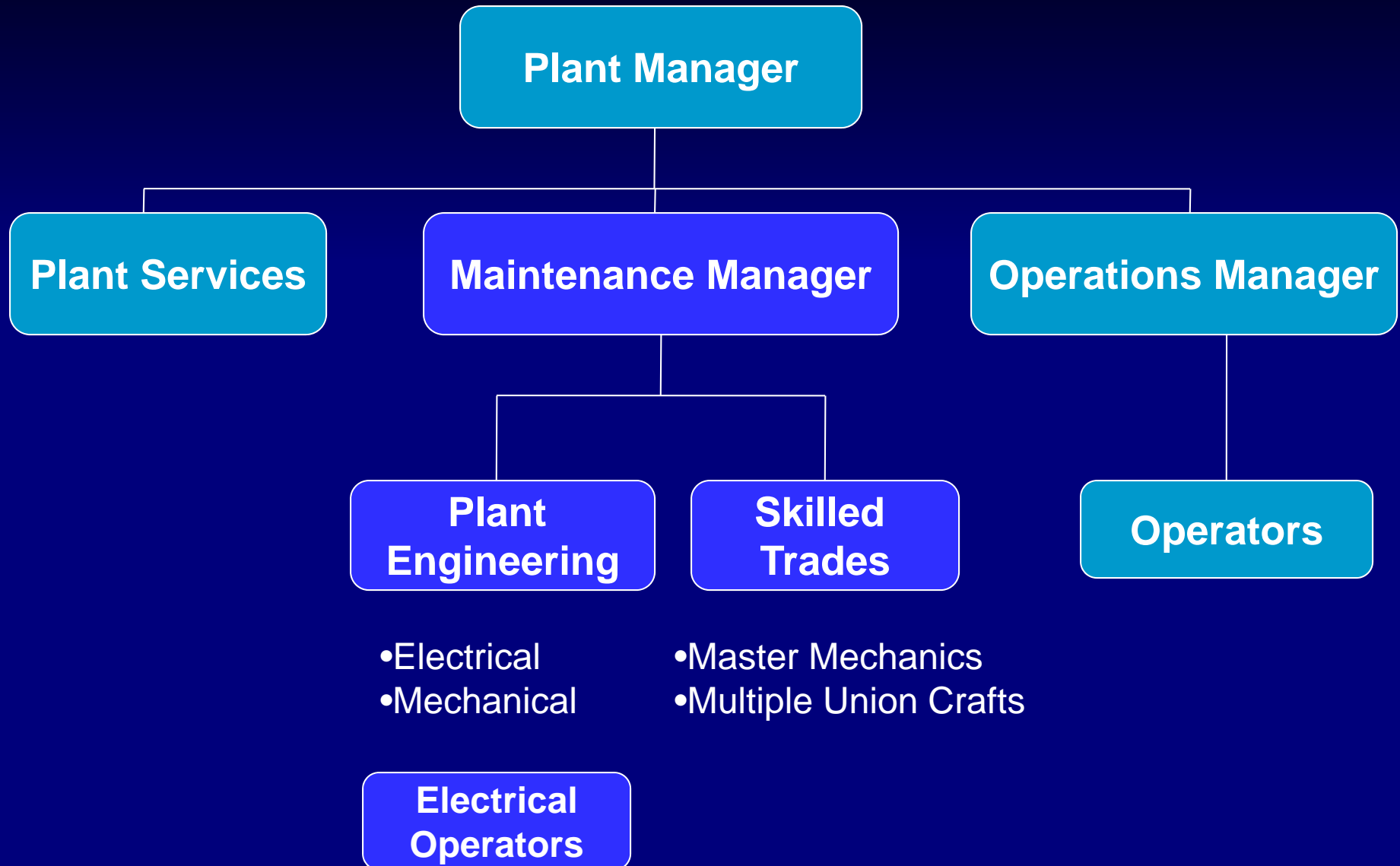
Over 11,000 Stickney Asset Records

- The Stickney WRP
 - Main Sewage Pumps up to 3500HP
 - Blowers up to 10,000HP
 - 37 Centrifuges
 - 96 Final Clarifiers
 - 6 Boiler, 4 capable of 80,000lbs/hr steam
 - Miles and miles of piping

Over 11,000 Stickney Asset Records

- 6 Pumping Stations
 - Mainstream 550MGD, 8 pumps 3,600 – 17,500HP
 - Racine Ave 3.9BGD, 14 pumps 1,000 - 1,750HP
- 103 TARP Control Structures
- 4 Reservoirs

SWRP M&O Org Chart



SWRP M&O Org Chart

Maintenance Manager (ETPO)
Steve Carmody

Supervising Mechanical Engineer
Farsheed Hafezi

Master Mechanic II:
Tom Butler

Principal Mechanical Engineers
Bob Regan
Pete Kane

Assistant Master Mechanics:
Bob Henry
Jim McNamara
Mike Pijanowski
Christine Vollmer

Supervising Electrical Engineer
Lionel Gomberg

Principal Electrical Engineers
Mike Cavarretta
Sam Evans

M&O Engineer Responsibilities

- Work order approval and planning
- Manage \$20M+ in spare parts
- Budget and administer contract services
- Preventive maintenance administration
- M&O Liaisons on Engineering projects
- Technical knowledge and libraries
- Root-cause analysis
- Betterments

M&O Master Mechanics and Skilled Trades

Over 160 skilled trades
13 Unions

Work order planning and scheduling
Tools and equipment
Work execution

Computerized Maintenance Management System

aka CMMS
or
Mainsaver

Pre-Computerized Maintenance System (Pre-1990)

Pencil, paper, and the TUBE.

- No asset inventory for maintenance purposes
- Work orders on paper
- No time-reporting
- Squeaky-wheel scheduling
- Few PM's, mostly lubrication
- Service history not recorded
- Spare parts not inventoried

Computerized Maintenance System (Post1990)

- Complete asset inventory
- Electronic work orders
- Time-reporting/contract capturing
- Formalized scheduling based on priority
- Automated preventive maintenance
- Service history captured
- Spare parts inventoried and interfaced

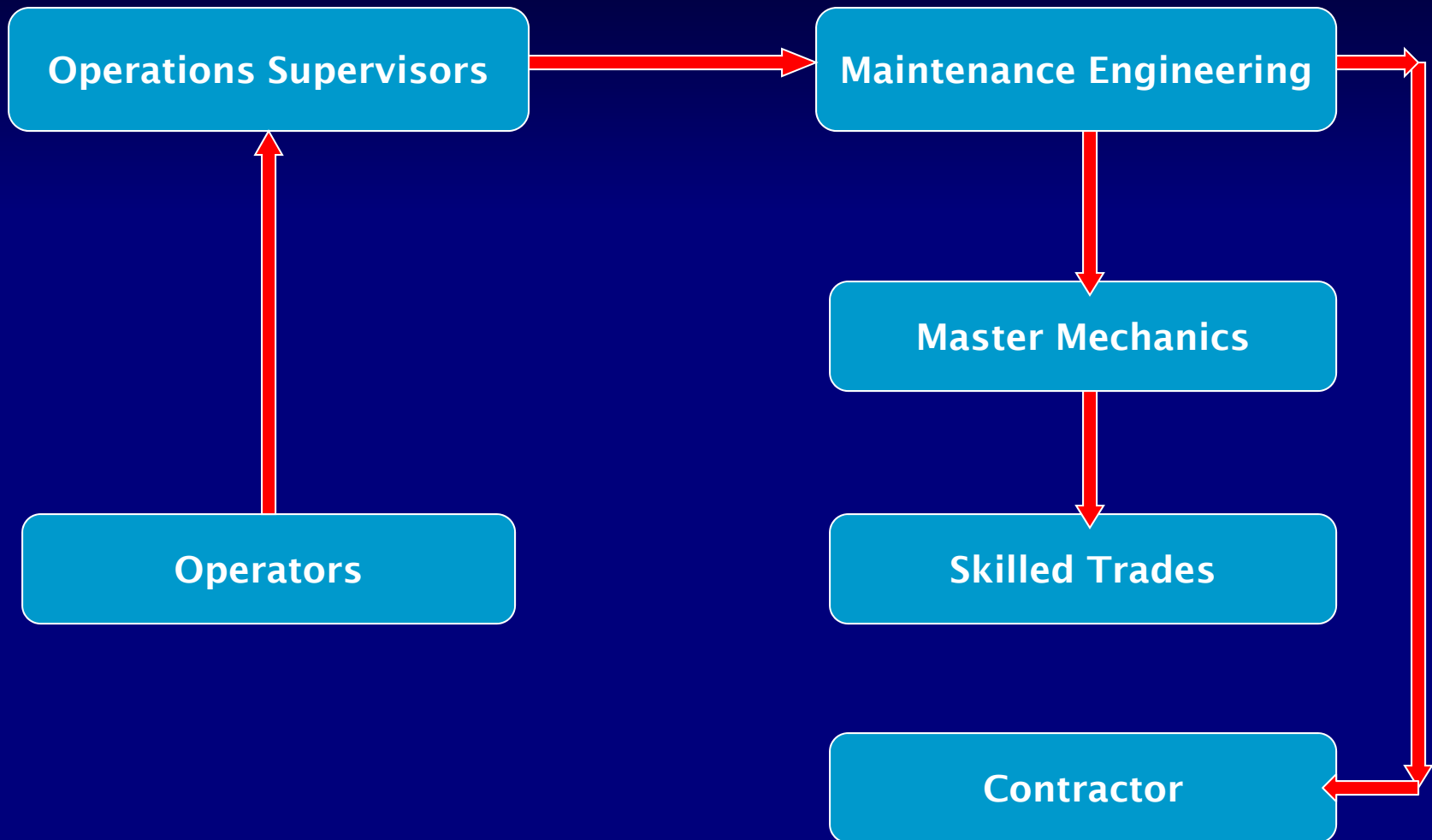
WORK ORDER BASICS

Corrective

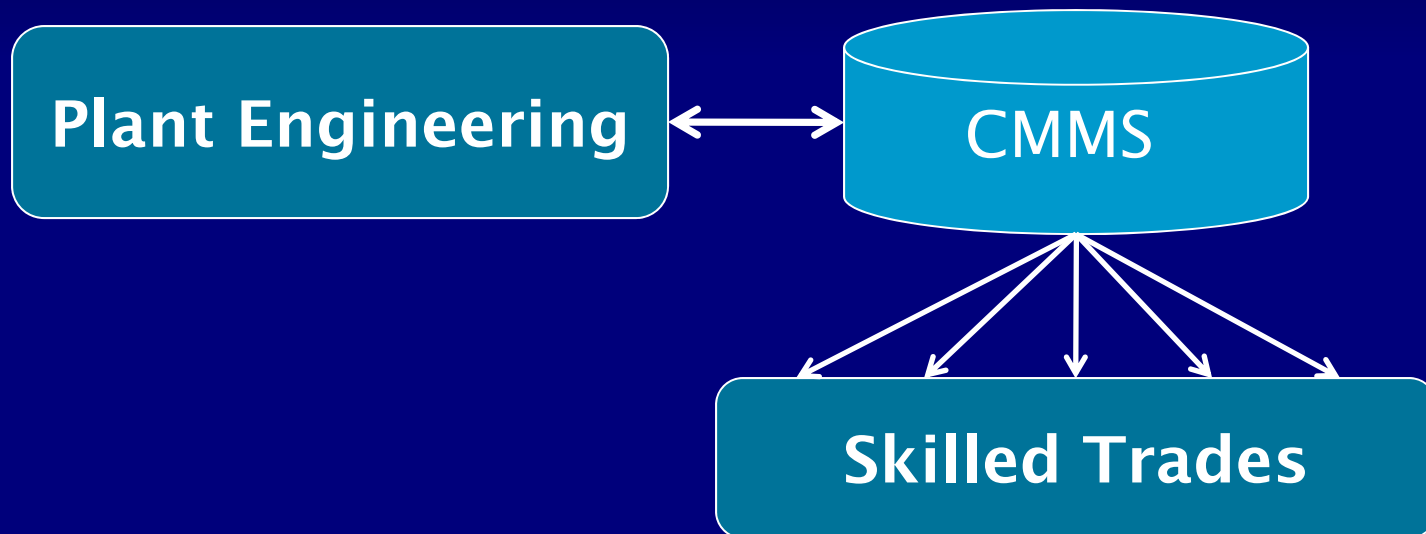
Preventive

Predictive

Corrective Work Request Flow



Preventive/Predictive Maintenance



Preventive/Predictive Maintenance Examples

- Blower overhauls based on vibration
- Chain & flight overhauls
- Cleaning and testing of electrical distribution
- Cleaning and painting of large motors
- Filter changes
- Instrumentation calibrations
- Lubrication

Work Volume

- 1,300 – 1,500 Work orders per month
- 50% Corrective 40% Preventive/Predictive
10% Emergency

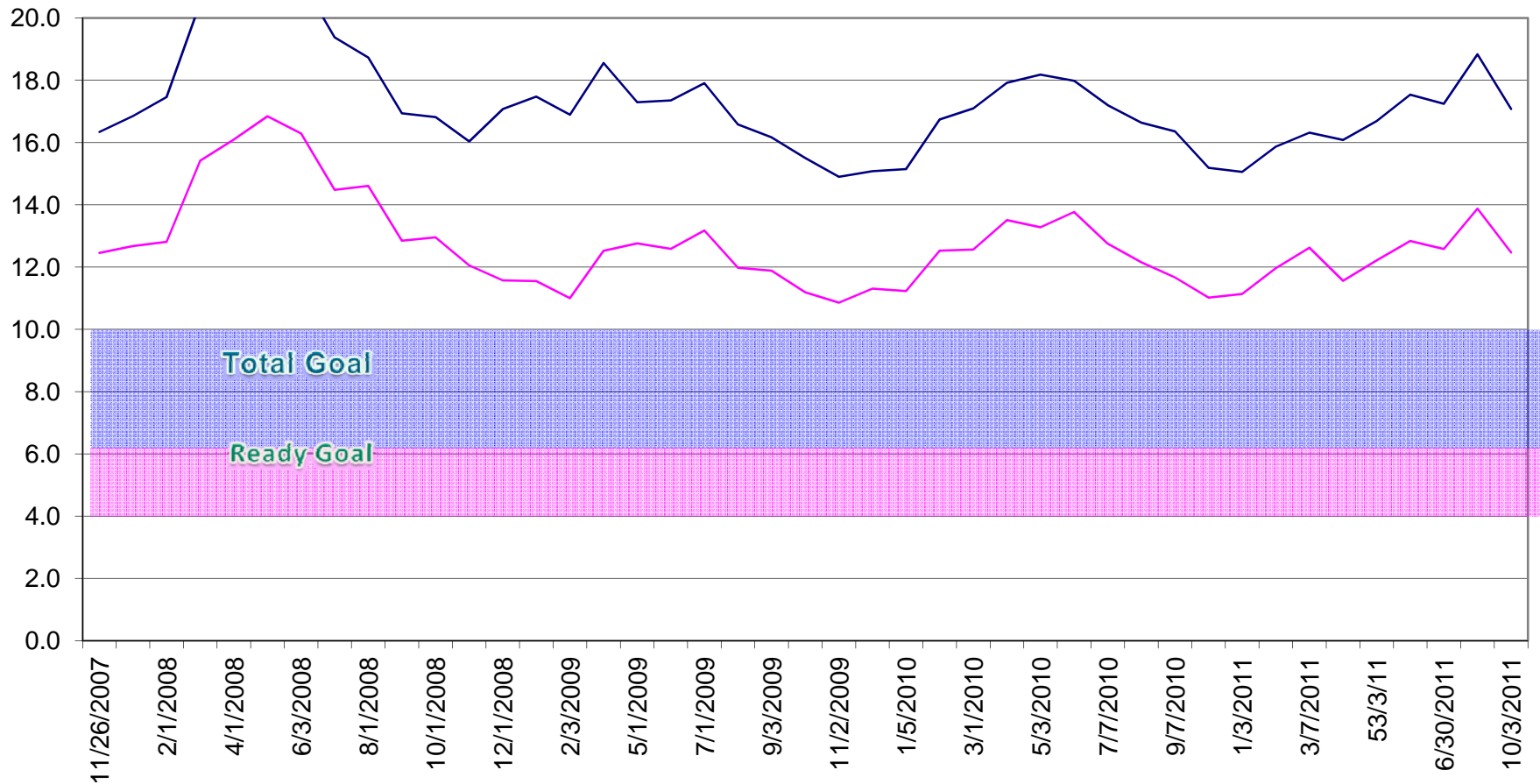
Labor Costs(70/20/10)

Backlog

Average Backlog in Weeks for Primary Trades
C2 E2 F2 I2 M2 P2 S2 T2 G2

— Total Backlog Average

— Ready Backlog Average



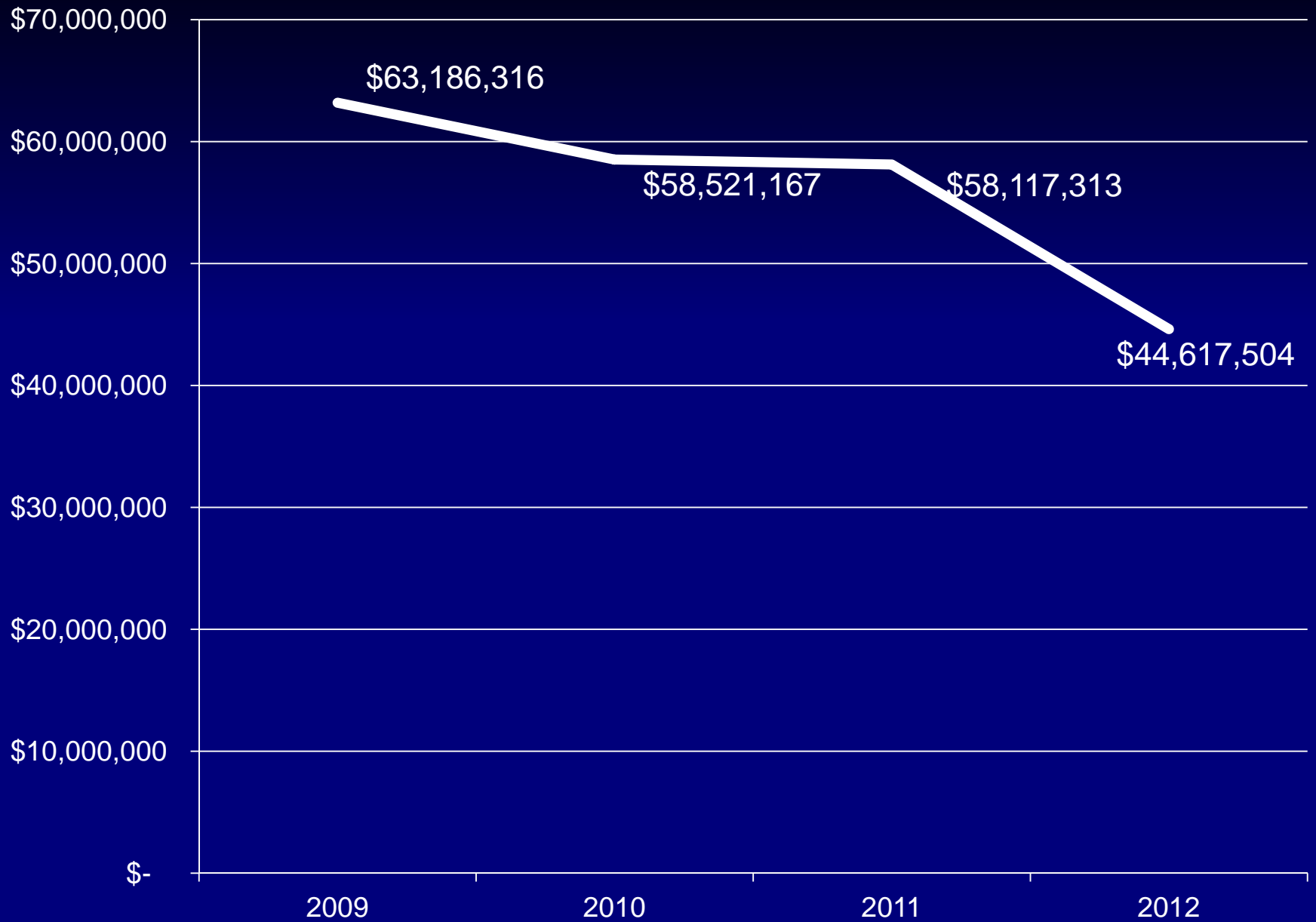
Contract Maintenance

Outsourcing Examples

- Tank Rehabs
- Steam Boilers
- Centrifuges
- HVAC
- Rotating Assemblies
- Final Clarifier Painting
- 13.2kV Switchgear
- Motor Cleaning

Budget

Maint Budget

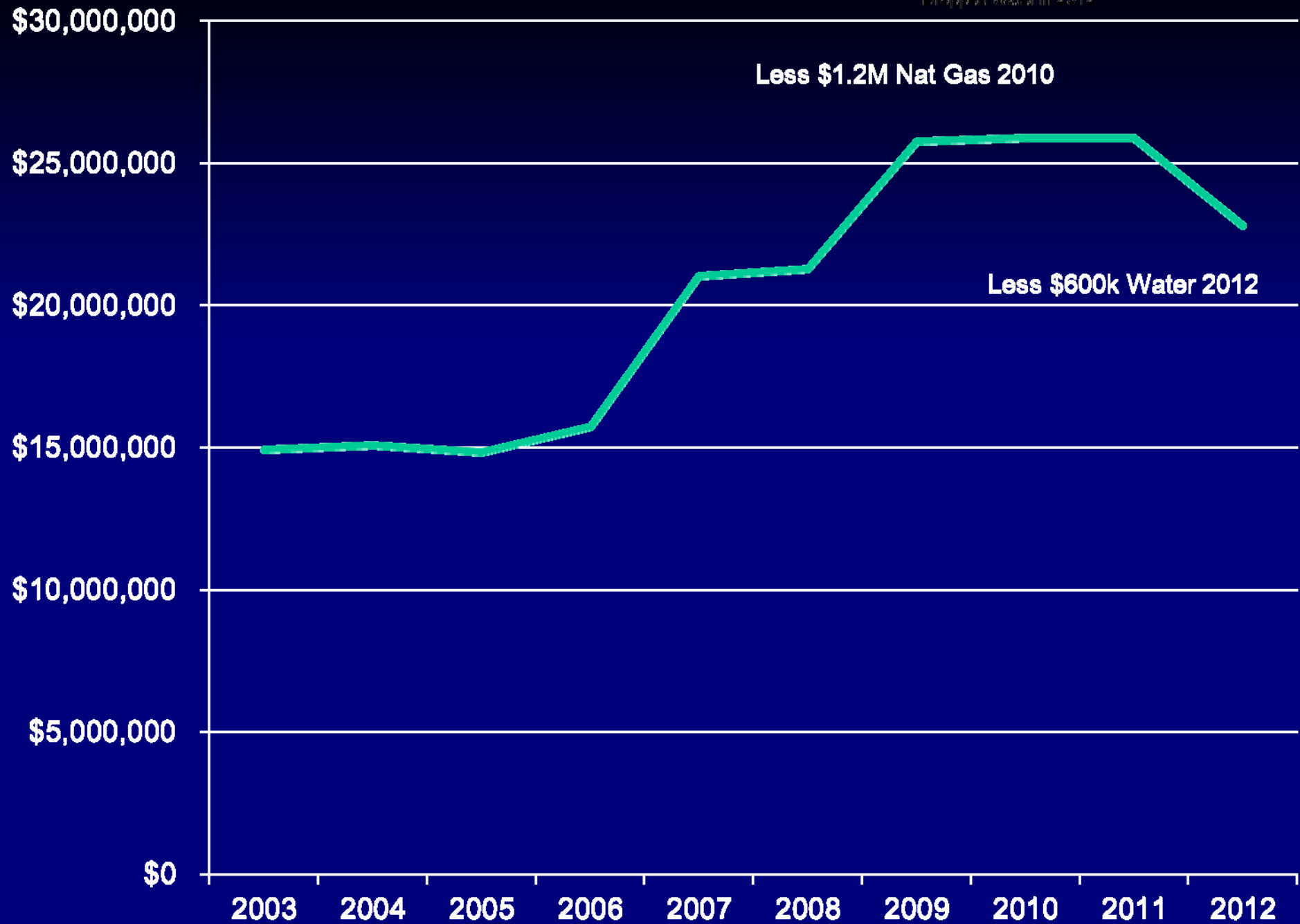


SWRP Maintenance Budget 2009-2012

- 9% Reduction in staff
- 50% Reduction in Service Contract Expenditures (\$13.2M – \$6.8M)

Utilities

Original Budget for 2010
Original Budget for 2012



Maintenance Photos



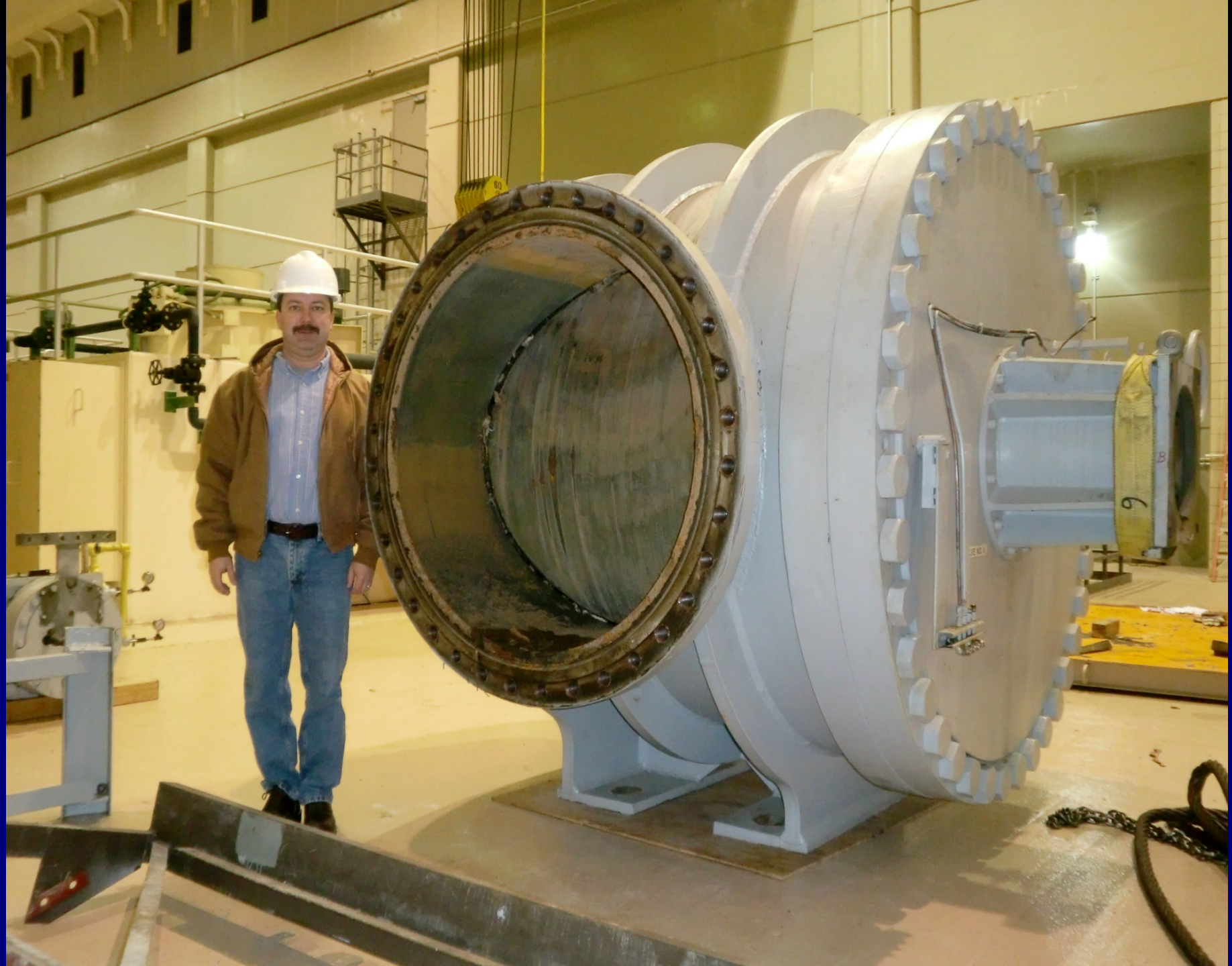












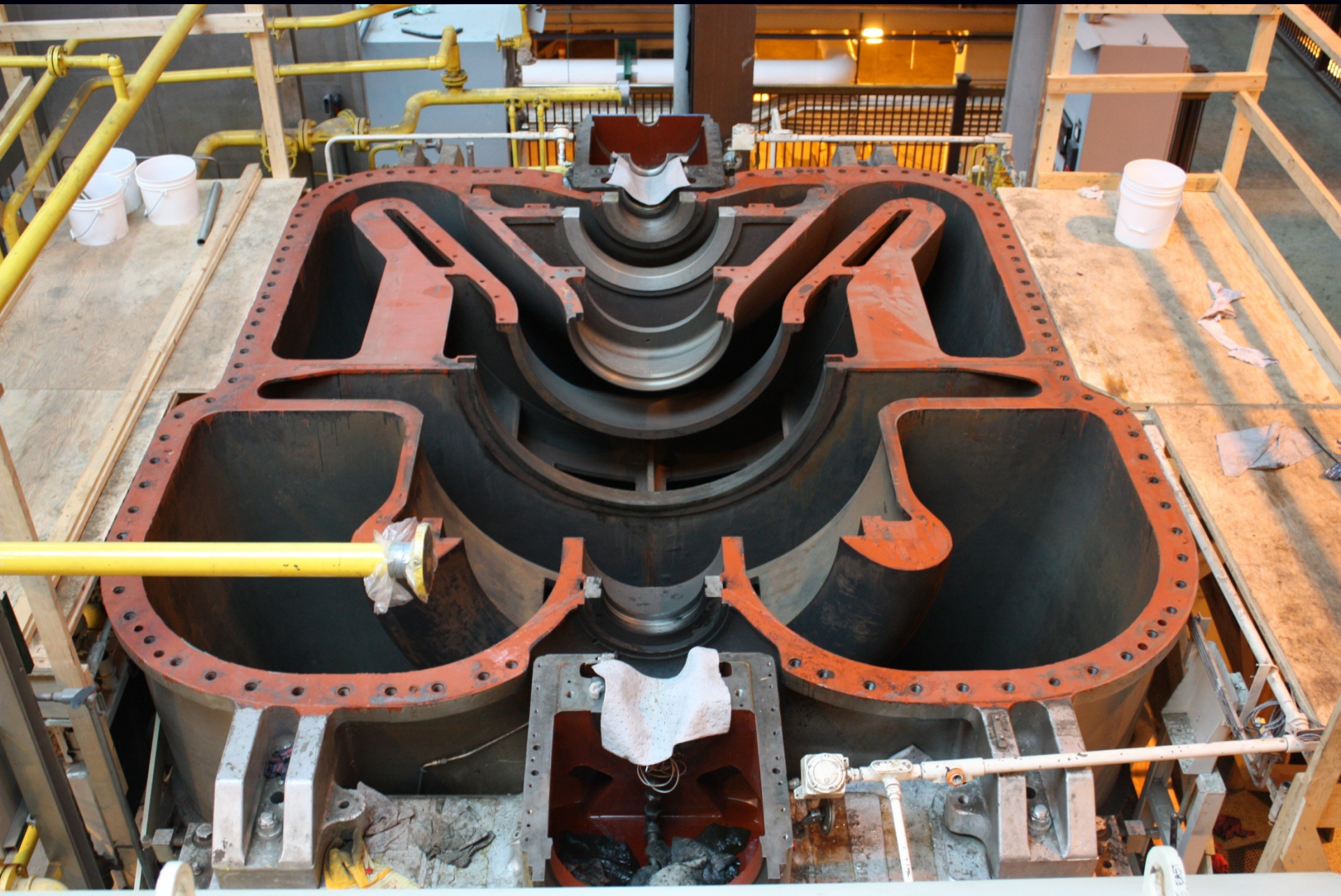
10,000 HP

Q3

R3





















3000 HP

4





















09.01.2006



09.01.2006

Emergencies





9/21/84

CONTRACT # 84-916-12

P.O. A 21904

REQ M 41883

ITEM # 15 OF THE ~~REQ~~ CONTRACT

2000 AMP PRIMARY DISCONNECT ASSEMBLY

S-A # 18-362-123-502

Pete

55

Be





POWER TECHNOLOGY, INC. 400 KW





MSPS Dewatering Chamber













RAPS 2008

Questions?

