

# What to Consider When Changing to Condition Based Maintenance

Jim Shelton Sacramento Municipal Utility District

Garry L Sparks Maintenance Consultant

[g.sparks@comcast.net](mailto:g.sparks@comcast.net)



# Condition Based Maintenance

- **What needs to be considered**
  - What new technologies should I implement
  - Do I have the right personnel to do the analysis
  - What is the impact on the existing maintenance procedures and practices



# Condition Based Maintenance

- What technology do I need to implement
  - The technologies that are available
    - IR
    - Ultra Sonic (Partial Discharge)
    - Vibration
    - Sweep Frequency Analysis
    - Moisture Measurements
    - Oil Sampling for Transformers, Load Tap Changers
    - SF6 Gas Sampling



# Condition Based Maintenance

- What technology do I need to implement con't
  - Load Tap Changer Temperature Monitoring
  - Oil Filtration Units for Load Tap Changers
  - Battery Testing (Voltage, Impedance, Sulfation)

Once the choice has been made:



# Condition Based Maintenance

- **Do I have the right personnel to do the analysis**
  - What should the organization structure look like
  - With the new technologies comes the need to ensure that the data is properly analyzed
  - What is the skill set of my personnel
  - What is the training cost
  - Who will be the primary decision maker.



# Condition Based Maintenance

- **Other Considerations**

- Do I need a maintenance management system
- Do I need laptops for the maintenance crew
- What new test equipment do I need to purchase
- What test equipment do I need to upgrade



# Condition Based Maintenance

- **Other Considerations Con't**

- Do I want every thing to be accomplished electronically
- Where will my data be stored.
- Who will be responsible for keeping files accurate.
- How will maintenance personnel access the data.
- How will information be shared with other stakeholders.



# Condition Based Maintenance

- Some of the Pit Falls

- Not making a complete commitment
- Not setting expectation with upper management
- Not funding adequately at the start.
- Must have dedicated personnel, maintenance vs capital.



# Condition Based Maintenance

- Expectations:

- Can I accurately define what goals and objectives I expect from the new approach.
- How will I monitor results and what milestones will I have in place to see if the results are being achieved.
- If my expectations aren't met how will I adjust the program.



# Condition Based Maintenance

- The Big Picture:

- Once I start the program what can I do to improve performance.
- Constant review and feedback will be needed.
- Am I actually spending my Conditioned Based Maintenance dollars effectively.



# Condition Based Maintenance

- **Some New Ideas:**

- Should equipment be prioritized with criticality as a criteria.
- Should preventive maintenance be scheduled immediately when diagnostics indicate a problem or can it be deferred.