The PdMUG meeting was held from July 11 to July 15, 2011 in Albuquerque, NM at the Hyatt Regency. During the meeting the following significant announcements were made:

- Steve Ciesla (SCE) was named the PdMUG Chairman for 2012
- Mike Cloutier (DTE Energy) was voted the PdMUG Vice-Chairman for 2012
- Those that attended the conference will be emailed a link to download all of the presentations for PdMUG/VTF/IRUG/Lube & Bearing, and attendee list contact with information.
- All of the presentations for PdMUG/VTF/IRUG/Lube & Bearing are posted on the EPRI Collaboration website under “Condition Based Maintenance (CBM)”, funders to NMAC and Generation Program 69 have access to these and all previous meeting material for the past 5 years.

**Monday July 11, 2011**

**Introduction**

The PdMUG EPRI Project Manager, Tom Turek, welcomed everyone to Albuquerque for the 2011 PdMUG Conference and, after a safety brief presented the “Antitrust Guidelines for EPRI Meetings and Conferences.

There was one item non-agenda that was presented to the group:

Utility Managers, in a meeting with EPRI, identified that the CBM groups and the EPRI component groups: (Turbine, Pump, Circuit Breaker, Large Motor, Transformer /Switchyard) rarely if ever have joint meetings that discuss common learnings and issues. EPRI Project Mangers (Gary, Nick, Tom) would like for each of the CBM Groups (Thermography, Oil, Vibration) to specifically discuss how we can develop a coordinative meeting with the Component groups.

Tom presented an “awareness” video illustrating the how easy it is for us (in CBM) to apply tunnel vision and not appreciate the perspective of component specialists. In order that we optimize the reliability and availability of our equipment we need to establish a strong line of communication between component specialists and CBM professionals, so that we do not miss something that we are not looking for.

**Attendee Introduction:**

The PdMUG Chairman, Art Miller, went over the schedule for the week, and the attendees introduced themselves, described their responsibilities at the company they work for, and anything they would like to specifically addressed at the meeting.
Presentations and Discussions:

(P1) The Science of Renewable Energy – Dr. Albert Migliori (LANL, Laboratory Fellow): Dr. Migliori, the keynote speaker for the conference, provided the challenges of energy storage, and distributed electrical energy options facing the US, and the potential complexities of configuring electrical loads to match generation. Alternative energy solutions were explored in depth, such as using the chemical production of fuels like ammonia in a modified diesel engine for vehicle transportation.

(P2) EPRI Condition-Based Maintenance Guidelines Revision - Jim Sharkey (EPRI), George Van der Horn (IMS), and Bill Woyshner (WSC): Jim, George and Bill presented the CBM Guideline revision status. Although the 2nd draft of the Guideline was issued, Jim stated that there was still time for those that wanted to contribute. If you did not have the opportunity to sign the Technical Advisory Group sheet please contact Jim directly: JSharkey@EPRI.com.

(P3) Japanese RCM-CBM User Group – Jim Sharkey (EPRI): Jim identified the need for US CBM technology experts to provide case histories, experience, methods, and perspectives to NMAC Members in Japan. If you are able to contribute your expertise in Japan, please contact Jim directly: JSharkey@EPRI.com.

(P4) Go Green or Go Home Corey Jackson (PDMA): Corey presented the types of questions that should be asked when a utility is deciding between rebuilding, reconditioning, or replacing motors. Corey specifically focused on the hidden costs associated with high efficiency motors.

(P5) PdM Program Self-Assessment Activities at the Palo Verde Nuclear Generating Station David King (APS): David identified how Palo Verde successfully evaluated their CBM program, improved equipment reliability, and improve on the working relationships with those groups that have integrated responsibilities with CBM.

(P6) Technology Program Health Reporting- Steve Ciesla (SCE): Steve described how CBM program, and Technology (vibration, thermography, and lube) assessments are effectively utilized to drive CBM enhancements that result in improved equipment reliability.

PdMUG - Round Table Topic: Development Plans for a CBM/PdM Specialist. There was considerable interest in developing a “Condition Based Maintenance Specialist Guide”.

Tom Turek (EPRI) agreed to propose the project plan for 2012 project consideration. In a demonstration of Member support, a technical advisory group list of utility industry volunteers was quickly developed.

Tuesday July 12, 2011

(P7) Introduction to Laser Doppler Vibrometry – A Non-Contact Vibration Measurement Technique– Vikrant Palan (Polytec): Vikrant provided an overview of a handheld laser, how it compares to traditional
accelerometers, the benefit of collecting vibration (velocity and displacement) data with a non-contact probe, and their typical uses in industry.

(P8) Application of Laser Vibrometry – Scott Danehower (Exelon): Scott presented a case study in the application of laser vibrometry to measure cooling tower fan gearbox vibration. Precautions in obtaining accurate field data were explored, a likely safety benefit realized, and a potential savings in distance data collection realized.

(P9) Babbitt – The Other Bearing Lubrication - Mark Tarbet (Luminant): Mark presented a historical perspective of babbitt, and identified the properties, robust advantages, and material limits. Mark supported his presentation with two (2) case histories involving a Turbine Driven Boiler feed Pump, and a Primary Air Fan.

PdMUG - Round Table Topic: The “Equipment Exception List”. There was considerable interest and spirited debate over the what was thought to be universally accepted terms in CBM. Those involved concluded that further work in coming to identify and accept the best perspectives of the group members was warranted.

(P10) Equipment Assessment Reporting - Danny Franklin (PSEG): Danny presented how the equipment assessment process was successfully implemented at PSEG Salem Nuclear power plant. Danny also provided insight on the inter-departmental navigation required for a productively executed CBM program.

(P11) How to Communicate Your Value to Management - Gary Barnes (Entergy): Gary presented not only a probabilistic method of consistently measuring avoided costs, but also the benefit of a centralized monitoring center.

(P12) Predictive Maintenance/Condition Monitoring Through Airborne Ultrasound Technology – Joe Mark Goodman (UE Systems): Mark provided the multitude of applications of the hand held ultrasonic probe for airborne and contact equipment degradation. Mark specifically identified the use of ultrasonics to easily identify the integrity of water tight doors, and the ability of the ultra probe to detect electrical faults behind a closed MCC door, prior to exposing the a thermographer to potentially hazardous electrical conditions.

(P13) Ambiguities in IST Testing Requirements vs. PDM Testing Requirements for Pumps - Adriaan DeVilliers (Southern): Adriaan presented the ambiguities and potential misinterpretations that the present ASME IST standards offer. Adriaan proposed that EPRI coordinate the nuclear utility industry Technical Advisory Group (TAG) to propose language that would eliminate the ambiguous verbiage in the ASME code by way of a industry white paper.

Tom Turek (EPRI) agreed to pursue the idea with EPRI Management. In a demonstration of Member support, a technical advisory group list of utility industry volunteers was developed.

The Vendor Expo

The Vendor Expo was held Tuesday evening, the contributors this year included:

- UE Systems Inc
- SKF Condition monitoring and Reliability Systems
EPRI 2011 Predictive Maintenance User Group

- PDMA Corporation
- Vibro-Meter Inc
- Infraspection Institute
- Logos Computer Solutions
- Stress Engineering Services
- Hydro Inc
- Siemens Energy, Inc
- Polytec Inc

EPRI is grateful that the vendor participants provide an opportunity for the CBM Membership to see first hand the produce developments and services that are available to them.

**Wednesday July 15, 2009**

*(P-14a, P14b, P14c) PdMUG Fluid Film Bearing Workshop* - Lyle Branagan and Fred Wiesinger (Pioneer Motor Bearing): Lyle and Fred provided a abbreviated treatise of Fluid Film Bearings. The workshop was true learning opportunity addressing the theory and practical limits of journal bearings. The workshop consisted of three (3) separate presentations:

- **(P14a) Fluid Film Bearing Fundamentals**
  - Hydrodynamic film
  - Radial and Thrust Bearings
  - Machines supported by fluid-film and anti-friction bearings
  - Material Requirements: Housing/Babbitt Constituents/Bonding Issues
  - Lubricant Requirements
  - Bearing Scraping

- **(P14b) Fluid Film Bearing Damage Mechanisms**
  - Damage locations – thrust and radial bearings
    - Abrasion and Scratches
    - Varnish and Overheating
    - Hydrogen Blisters
    - Misalignment:

- **(P14c) CBM Interface with Fluid Film Bearing**
  - Vibration Monitoring
    - Casing Versus Shaft-Relative Vibration
    - Non-Linearity of Bearing Film and Bearing Supports
    - Instability Considerations
  - Lubricant Analysis
    - Sampling Point Considerations
    - Viscosity and Contamination Identification
    - Size Effects of Wear/Damage Particles
  - Infrared Technique Challenges
    - Heat flow in Fluid-Film Bearings