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PROJECT BULLETIN

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RCM Program Development for a Geothermal Power Plant

Background

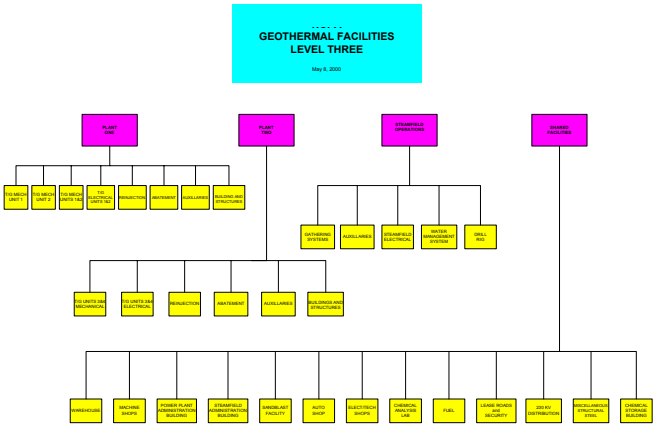
In today's competitive energy market many power plants are increasing their competitiveness by adopting new operating and maintenance philosophies to reduce their Operation and Maintenance (O&M) costs. For geothermal power plants to stay competitive, they must also adopt similar strategies to optimize their resources. Flexible operations (such as load-follow) and adopting reliability centered maintenance (RCM) programs are two powerful strategies with significant cost savings potentials for the geothermal plants.

A well-developed and implemented RCM program for geothermal power plants can significantly reduce the cost of power generation making it more competitive with other options. Estimated savings in O&M costs from implementing a RCM program can be on the order of 9% or more. Therefore, a project was initiated by MIS with co-funding from the Department of Energy to develop and implement such a plan at a geothermal facility.

Discussion

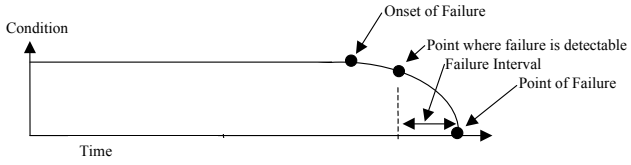
The specific objectives of the project were:

1. Identify and rank major components of a typical geothermal power plant which are affected by unit operation and are either safety related or essential for operation of the unit.
2. Select components that can benefit from changing their maintenance practice from a preventive approach to a reliability-centered approach.



Partial Asset Hierarchy

3. Develop individual and integrated RCM programs for these components to reduce maintenance cost and improve unit reliability by mitigating component failures.
4. Develop guidelines and roadmaps for developing similar RCM programs for other geothermal power plants.
5. Implement and benchmark the developed RCM program at a geothermal facility.



Failure History Diagram

Benefits expected from development and implementation of such a RCM Program are:

1. Reduction of the life-cycle cost of geothermal electricity generation by improving power plant operation and maintenance practices, reduction of environmental impacts, and increasing revenue generation for the geothermal plant operators.
2. Allow for increased substitution of geothermal for non-renewable energy resources by making it more cost competitive.
3. Increase efficiency of geothermal energy use by optimizing O&M costs and preventing failures.
4. Increase the participation and knowledge of plant personnel in optimizing the operation of the plant.

Conclusion

This project developed and successfully implemented a RCM program for a geothermal facility. Initial findings from the new program showed an optimized maintenance approach resulting in large savings in maintenance resources.

As RCM is a live and active program, it should be continually reviewed and updated to better serve its intended functions. This requires a continuous level of interest and involvement from plant personnel to assure its evolution. Therefore, the foremost recommendation for developing and implementing similar programs at other sites, we believe, would be to assure that the RCM team remains motivated in its use of the program.