

## WHITE PAPER

### CHAMP Walkdowns

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#### Introduction

Fauske & Associates LLC (FAI), a Westinghouse Electric Company, has extensive experience in evaluating, testing and assessing cable performance. FAI established our Cable Health Aging Management Program (CHAMP) to evaluate and support Cable Condition Monitoring programs. One of the most effective CHAMP processes for evaluating cable performance is via performing visual walk downs

For the nuclear power industry, the Generic Aging Lessons Learned (GALL) Report, NUREG-1801, Section XI.E1 provides guidance to applicants for a renewed operating license to develop a program for the management of aging for Non-EQ Insulated Cable and Connections. Our CHAMP program is intended to support plants in complying with the GALL and related License Renewal requirements. In addition, the Electric Power Research Institute (EPRI), and other organizations have established procedures, recommendations and best practices for the implementation of effective cable walk down programs. The FAI CHAMP walk down program utilizes all of these resources along with lessons learned from previous walk downs to effectively evaluate and catalog the plant's cable assets.

#### Walkdown Process

A CHAMP cable walkdown assessment to evaluate cable assets, support Maintenance Rule functions, License Renewal Aging Management Programs and/or for other applications involves evaluate all plant locations that have the potential have cables located in an Adverse Localized Environments (ALEs). This typically involves performing walkdowns both inside containment (during outages) and outside containment (typically during power operation or non-outage)

The CHAMP walkdowns are a visual inspection of the ALEs in which observations are made, Infrared thermographs are employed (if allowed) and digital pictures will be taken. Areas of interest that are not readily accessible (i.e., cables within cabinets, cables located in "out of reach" locations, etc.) should be identified in advance, if possible, with the best attempt made to grant access to these during the walkdown (outage or non-outage as appropriate).

A CHAMP walkdown procedure is developed and reviewed with the client prior to initiating the walkdown. The walkdown procedure provides the specific locations and information to be gathered during the walkdown. As a minimum the following information is gathered during the walkdowns:

- Identification of any damaged cables

- Visual inspection notes
- Infrared temperature of areas that warrant measurement
- Infrared thermography pictures (if permitted)
- Digital photographs of the cables under evaluation
- Potential sources that could be detrimental to the cables under evaluation (i.e., heat sources, moisture, etc.)
- Cataloging of the cable assets.

Throughout the duration of the walkdown process, regular updates of the walkdown findings are provided to the client. If any cables are found to be damaged, or any other conditions are identified that could be detrimental to plant operation or safety, this information is transmitted to the client as soon as possible. At the completion of each walkdown, a walkdown report is issued to the client.

### **Experience & Capabilities**

Recent and current CHAMP Walkdown activities:

- CHAMP Walkdown at a dual unit PWR in the USA – Unit-1 inside & outside containment and Unit-2 outside containment (complete)
- Cable fire, PRA & performance walkdown at several European BWR & PWR plants (complete)
- Cable fire, PRA & performance walkdown at several USA plants (complete)
- Numerous BWR, PWR & Other Types of nuclear plant walkdowns to support various programs including cable, PRA, and plant specific issues (complete and ongoing)
- CHAMP Walkdown (continuation project) at a dual unit PWR in the USA – Unit-2 inside containment (Fall 2013)
- CHAMP Walkdown at a dual unit PWR in the USA: Both units inside and outside containment (2014)

### **Quality Assurance**

As requested, work can be performed under FAI's QA program which is regularly audited and is compliant with 10CFR50 Appendix B and FAI's ISO 9001 certification. Typically the CHAMP walkdowns are not performed to our QA program. However, they can be if requested.

### Summary

The Fauske & Associates LLC (FAI), an affiliate of the Westinghouse Electric Company, Cable Health Aging Management Program (CHAMP) provides several services including experience performing plant cable walkdowns. We look forward to talking with you to discuss your specific issues and how we can assist you.

### Additional Information

For additional information, please contact:

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Figure 1 Interesting Cable conduit hot pipe separation



Figure 2 Thermally Degraded Cable Jacket

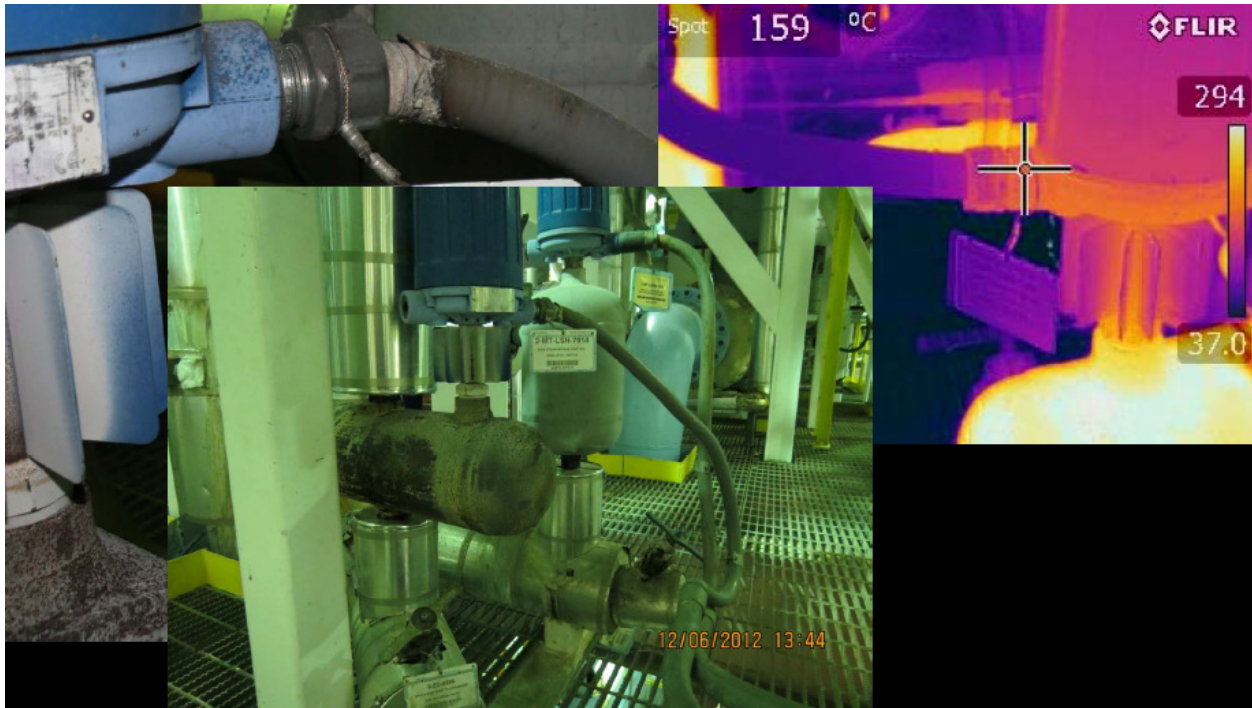


Figure 3 Un-insulated accumulators next to Cable/Conduit