

Transformer Yard Testing

August 2020

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Prepared for the U.S. Department of Energy Under DOE Idaho Operations Office Contract DE-AC07-05ID14517 New transformers will ensure uninterrupted power for INL's Advanced Test Reactor Complex

WHAT'S THE PROBLEM?

All power to ATR feeds through the ATR-774 transformer yard, which has been in service for 57 years. It is in degraded material condition and quickly reaching end of life. Current shortcomings of these transformers include:

- Oil Leaks
- Lack of oil containment system
- No lighting protection
- Inadequate fire protection

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 Radiant energy shields in disrepair Failing pressure alarms

On top of this, the redundancy provided by the original two-transformer design has been lost due to years of increasing loads.



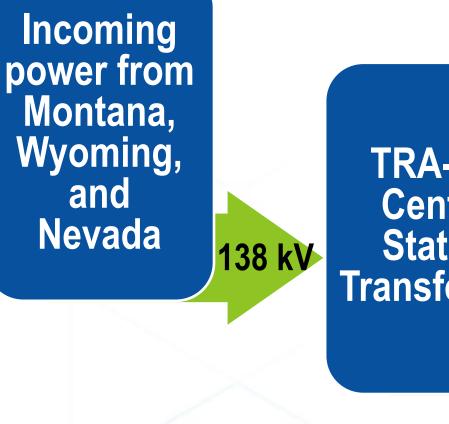
WHAT IS OUR SOLUTION?

To combat these problems, ATR has elected to construct a new transformer yard, and replace the existing 7.5 KVA transformers with two new 12.5 KVA transformers. The new transformer yard will provide:

- An oil containment system Lighting protection w/ underground
- dispersion pad
- Adequate fire protection
- New radiant energy shields
- Microprocessor system for temperature, pressure, and fluid level monitoring
- Seismic protection
- New conductors
- Pre-engineered Electrical Building

The new transformers will reincorporate redundancy and meet ATR's power needs.







TRA-774 Transformer Yard

Distribution to ATR



uninterrupted power for decades

A new transformer yard requires testing

Testing a transformer yard can be broken down into 8 different subsections, based on when and where the testing will be done. Dividing tests helps manage time, and coordinate efforts with the vendor.

- Manufacturer testing
- Pre-Installation
 - QA Verification
- SO Testing Post-Installation
- Receipt testing CC Testing
- Turnover

What tests need to be performed?

Thanks to organizations like IEEE, ANSI, and NEMA, standards on transformer testing have already been written. It is our responsibility to determine which standards are applicable and ensure that the procedures are followed.

- NETA ATS-2017 Acceptance Testing **Specifications**
- NETA ECS-2015 Electrical
- **Commissioning Specifications** NETA MTS-2015 Maintenance Testing
- **Specifications**

IEEE NEIA







Time is a constraint

Our mission is to reduce our impact on the CIC outage, through efficient planning and time management. By organizing the tests by time and location, we were able to cut back on time and cost.

What have we saved?

By organizing and categorizing these tests, we have reduced our impact to the CIC outage from 2 months to just a few weeks. Maximizing efficiency cuts down on cost.



PEEB/ Transformer Vendors

PO Issued to

6/3/20 BEA Reviews Final Design Package

8/27/20 Construction Begins

Green = New time required for testing

Orange = old time required for testing

8/13/21 **Construction and Testing** Completion

2/3/22 **Turnover**

5/5/22 Closeout

May June July Aug Sept Oct Nov Dec Jan Feb Mar April May June July Aug

2020

Sept Oct Nov Dec Jan Feb Mar April May June July

2021

Sept Oct Nov Dec Jan Feb Mar April May

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