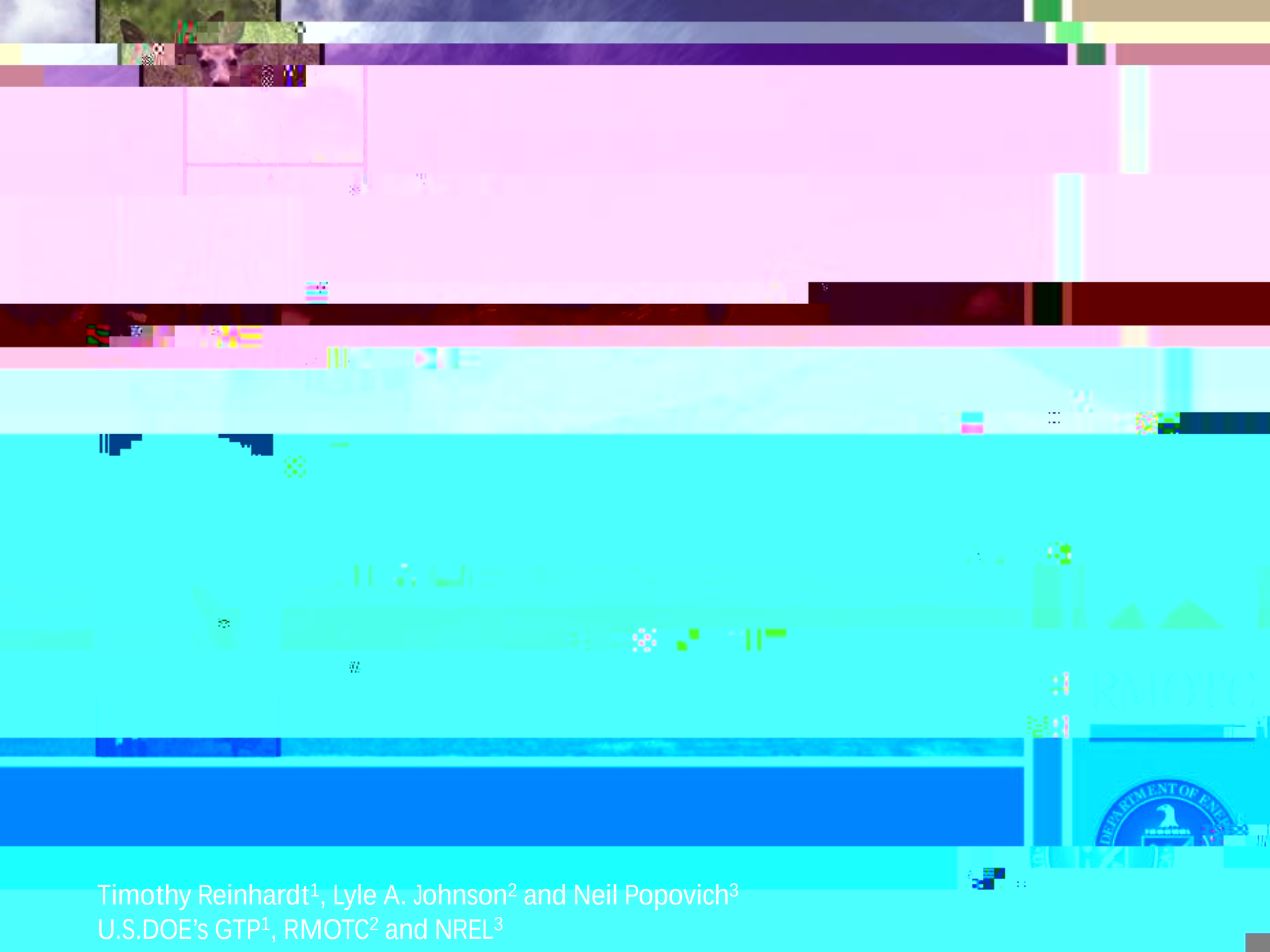


Timothy Reinhardt[1], Lyle A. Johnson[2] and Neil Popovich[3]
U.S.DOE's GTP[1], RMOTC[2] and NREL[3]

Location of RMOTC

NPR-3 is 35 miles north of Casper, WY

- 9481 acres
- 650+ wells
- 9 Oil producing formations
- 2 formations > 200 °F
- Geothermal Gradient is ~ twice normal gradient
- Produced brine of high quality (2500 – 3000 TDS)
- Extensive recharge region
- Government owned and operated

RMOTC

Project Goals

- Show the relative seamless integration of the technology into the oil field infrastructure.
- Demonstration of the long term operations of binary power generation units in an oil field environment
-

RMOTC

Initial Binary Unit

- Ormat nominal 250 kW ORC unit
- Isopentane working fluid
- Air cooled condenser
- Unit installed under testing program with Ormat Technologies

RMOTC

Second Binary Test Unit

Pratt & Whitney Pure Cycle 280
Genetron 245fa operating fluid
Water cooled Condenser

RMOTC

Project Plans

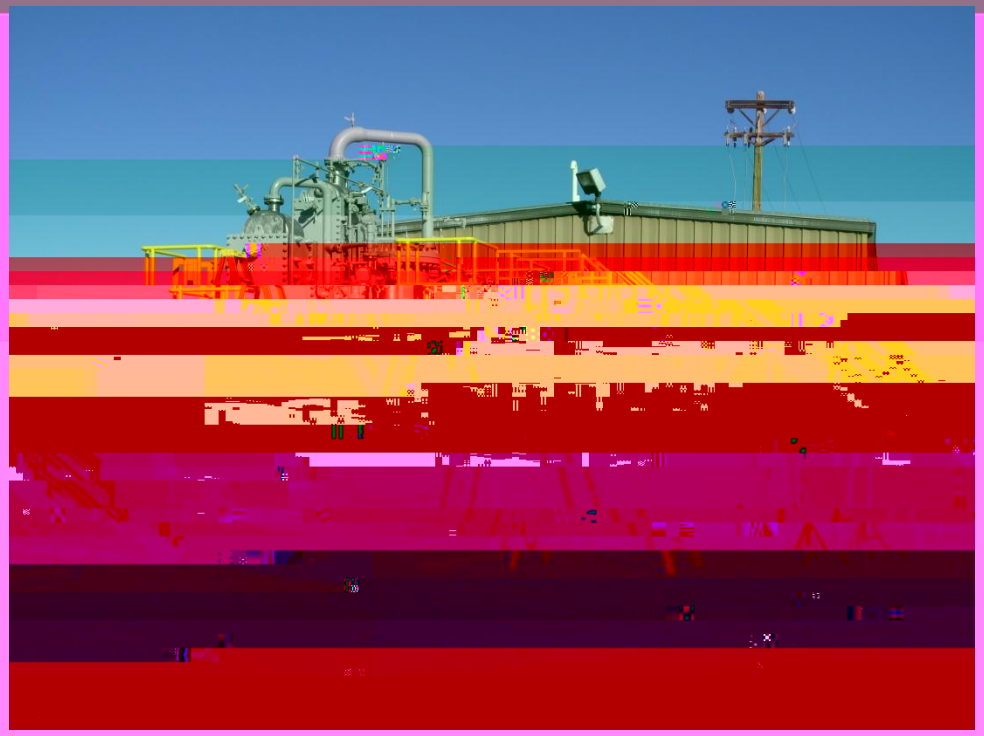
- Continue operation of the air-cooled unit for a minimum of 2 more years
- Finalize installation and commence operation of a water-cooled power generation unit of a nominal 250 kW capacity for three years
- Perform data collection, data analysis and information dissemination for both units. Integrate non proprietary data into the National Geothermal Data System (NGDS)
- Evaluate system improvements that increase system efficiency and provide better system economics. Seek improvements suggestions from other sources.
- During this time, RMOTC will also be operating a test facility for smaller geothermal systems and is developing plans for EGS applications and testing

RMOTC

Project Plans

- Continuously monitor/record data on the Ormat and UTC unit
- Collect/analyze data:
- Power output
- Parasitic losses
- Ambient weather effects
- System temperatures, pressures and flow rates
- Modeling system parameters to evaluate system improvements: system efficiency, LCOE, base load power offset.
- Integration of non proprietary data into the National Geothermal Data System (NGDS)
- Data display screens of non proprietary data will be made available to the public

- Evaluation of hybrid cooling technologies and other power output improvement technologies



Thank You

SMU Geothermal Energy Utilization Associated with Oil and Gas
Dallas, Texas, June14, 2011