

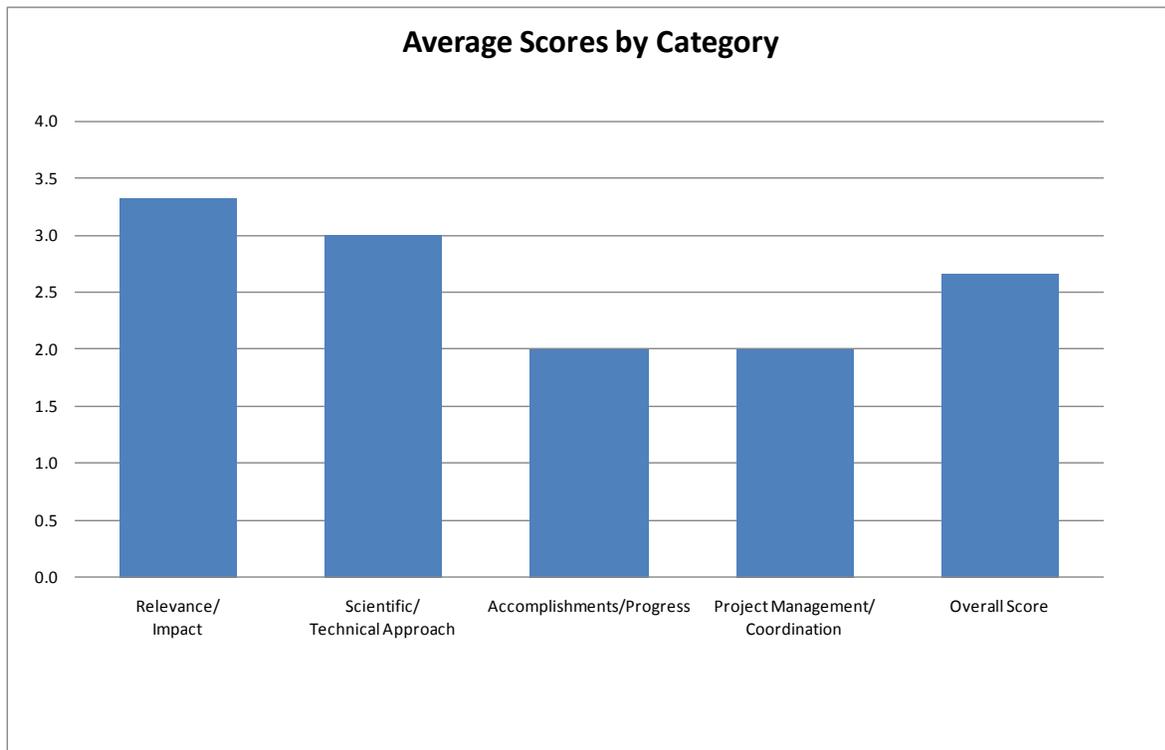
### 4.1.3 Desert Peak East EGS Project

**Presentation Number:** 008

**Investigator:** Zemach, Ezra (ORMAT Nevada, Inc.)

**Objectives:** Stimulate permeability in tight well 27-15 and improve connection to rest of the field; improve overall productivity and injectivity.

**Average Overall Score:** 2.7/4.0



**Figure 7: Desert Peak East EGS Project**

#### 4.1.3.1 Relevance/Impact of the Research

Ratings of Three-member Peer Review Panel: Good (3), Outstanding (4), Good (3)

#### Supporting comments:

- Good science and engineering have come out of this project but the project setbacks have had a significant impact on the Program. The location for stimulation appears to have been a compromise in a well that was also a compromise. Again, the team has done an admirable job but the outcome of the project was compromised by events in the field.
- This project is important for developing EGS technology and demonstrating EGS development in rocks peripheral to a known hydrothermal resource. It has developed, and will continue to develop, information pertinent to EGS projects.
- This Desert Peak EGS demonstration project, if successful, will make an important contribution to the Geothermal Program mission. The project activities will illuminate (not necessarily solve)

known technical barriers such as stimulating permeability in tight wells and improving connectivity. If this project is successfully completed, this reviewer is confident that the EGS program will benefit greatly and that the results will surely add to the EGS technology knowledge base and toolbox.

#### ***4.1.3.2 Scientific/Technical Approach***

Ratings of Three-member Peer Review Panel: Good (3), Good (3), Good (3)

##### **Supporting comments:**

- The approach is well thought out and deliberate with real world applications to the development of EGS. While the science is sound, this is a demonstration project and to some level the project seems to have lost focus on that fact.
- The technical approach to this project is sound, designed by a well qualified team. The PI notes the challenge of coordinating the efforts of diverse people from diverse organizations, but this has been done well.
- There has been a lot of work done at Desert Peak and the overall technical approach looks good but was not clearly presented. This work is not state-of-the-art R&D but rather applied technology, which is appropriate for a demonstration project. There are adequate resources and more than sufficient rigor of the work elements, procedures and methods that, if followed, should achieve the project objectives. The design of the project was not presented directly but was inferred from the list of accomplishments. The inferred plan was deemed reasonable. The technical approach was not clearly described nor clearly laid-out. Tasks yet to be done were not provided nor was a project timeline presented. Also, there was no discussion about why it took almost 7 years to do the stimulation.

#### ***4.1.3.3 Accomplishments, Expected Outcomes and Progress***

Ratings of Three-member Peer Review Panel: Fair (2), Fair (2), Fair (2)

##### **Supporting comments:**

- The quality of the people and resources involved are outstanding but the overall productivity and execution of the project is poor. This project needs to be completed.
- Progress seems to have lagged since the project was initiated in 2002, has an end date in July 2010, and is only 65% complete. The PI did not present the project schedule versus the original plans. It is evident that during the impending stimulation of well 27-15, the rate of expenditure will increase dramatically. The project team includes people with worldwide geothermal energy experience – it is an impressive team.
- The overall quality of the research team, equipment and facilities is good. The reviewer does not know the PI but some of the researchers on this team are known to this reviewer and are of the highest caliber. Relevant experience and the balance of appropriate skills of the research team are of excellent quality. I was not able to ascertain the cost or schedule variance to date since

current costing and original schedule were not supplied. Clearly, the most important task in this 7+ year project, the stimulation, has not been done yet for some reason.

#### ***4.1.3.4 Project Management/Coordination***

Ratings of Three-member Peer Review Panel: Fair (2), Fair (2), Fair (2)

##### **Supporting comments:**

- The project has suffered from numerous setbacks, but that alone does not explain the slow progress. The cause(s) of delays are not completely obvious to the reviewer but it appears from the noted challenges that coordination of resources was an issue.
- No chart of project schedule or specification of decision points was presented. From the work done so far on the project, well 27-15 still appears to be a viable candidate for stimulation.
- The technical, policy, business, and spend plans for the project were not presented and therefore this reviewer was not able to provide an assessment. In addition, there are no decisions points presented in the schedule.

#### ***4.1.3.5 Overall***

Ratings of Three-member Peer Review Panel: Fair (2), Good (3), Good (3)

##### **Supporting comments:**

- The project has a strong team, producing good science but the execution has been lacking. The team should focus on completing this project without further delays.
- This is an important project for developing technology and demonstrating EGS reservoir development in the near-field of an operating hydrothermal system developed in indurated shale and mudstones.
- Overall, this seems like a good project but it is behind schedule. However, this reviewer recommends that the project proceed. The report was not made available to the reviewer, only the presentation. Critical project schedule and costs information was not provided in the presentation, information needed in order to assess schedule and cost variance. It is recommended that the Program Manager request the PI to develop a fully resource loaded Gantt chart for this project before proceeding and demand an explanation as to schedule variances.

#### ***4.1.3.6 PI Response***

No response.