A Research Observatory for a Sustainable Future

Newberry Geothermal Energy

Establishment of the Frontier Observatory for Research in Geothermal Energy (FORGE) at Newberry Volcano, Oregon

Appendix B

Update on Characterization Data Uploaded to the GDR Archive

April 27, 2016

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Acronyms and Abbreviations

EGS	enhanced geothermal system(s)
FORGE	Frontier Observatory for Research in Geothermal Energy
GDR	Geothermal Data Repository
LiDAR	light detection and ranging
NEGSD	Newberry Enhanced Geothermal Systems Demonstration
NEWGEN	Newberry Geothermal Energy

Appendix B

Update on Characterization Data Uploaded to the GDR Archive

B.1 Summary

Newberry Geothermal Energy (NEWGEN) presents an update on the characterization data uploaded to the U.S. DOE Geothermal Data Repository (GDR) in support of the establishment of the Frontier Observatory for Research in Geothermal Energy (FORGE) at Newberry Volcano. The Newberry Volcano is one of the most extensively characterized enhanced geothermal system (EGS) sites in the country, making it an ideal location for the NEWGEN FORGE project. Through more than 40 years of characterization activities, multiple terabytes of high quality geologic, geophysical, geomechanical, and geochemical data have been collected at the Newberry Volcano. These data have been transferred to the GDR and are now associated, through keywords, to the FORGE effort and specifically to NEWGEN. Further, these data were used to update the initial NEWGEN FORGE geologic model, perform uncertainty quantification for key parameters within the geologic model, and advance our understanding of the NEWGEN FORGE site.

B.2 Characterization Data Upload to GDR Goals

The NEWGEN characterization data uploaded to GDR supports the FORGE goal to "accelerate breakthroughs" in EGS. Uploading site characterization data to the GDR will assist in accomplishing this goal by:

1. Describing all data collected and data products developed during Phase 1 that were made available to the public through the GDR.
2. Ensuring that all data conform to the submission guidelines and data content models as provided by the GDR, and include all data contributing to the Phase 1 geologic model and updated Site Characterization Data Inventory submitted as part of the Phase 1 Topical Report.
3. Ensuring the data is properly "tagged" so that they can be readily transferred to the FORGE Data System upon its availability.

B.3 Inventory List of Data Uploaded to GDR

The extensive suite of data uploaded to GDR by the NEWGEN team during Phase 1 is captured as a comprehensive list in the Table B.1. In summary, the data include physical property characterization (e.g., lithology, permeability, porosity) and geophysical survey data for 13 wells in the Newberry Caldera area, including the two full-sized EGS wells within the proposed NEGWEN FORGE site; magnetotelluric and gravity used to develop the conceptual geologic model; microseismic and borehole televiewer data used to define the regional stress regime; thermal data that support the three-dimensional thermal model for the site; light detection and ranging (LiDAR) data used to create a digital elevation map for the site; and operational test data from the previous EGS demonstration project (Newberry Enhanced Geothermal Systems Demonstration [NEGSD]) at the Newberry site.

Table B.1. Data Uploaded to the Geothermal Data Repository

DATA	GDR TRANSFER COMPLETE	SATISFIES DELIVERABLE	DESCRIPTION OF DATA
3D Gravity Density Model for Newberry Volcano	3/17/2016	"geophysical datasets"	3D density model obtained through inversion of all available gravity data
4D MT OSU	4/13/2016	"geophysical datasets"	MT data collected on the west flank of Newberry Volcano for the EGS demonstration at 55-29 in 2014-2015
Newberry EGS Datasets	4/23/2016	"well data"	Datasets and information used to characterize the subsurface of Newberry and support modeling efforts. Includes sources for well logs, earthquakes, maps & cross sections, and LiDAR/digital elevation model
Newberry Combined Gravity	4/10/2016	"geophysical datasets"	Newberry combined gravity from Zonge Int'l, processed for the EGS stimulation project at Well 55-29
MT Data: Newberry 4D EGS Project	4/23/2016	"geophysical datasets"	Links to EDX for the MT data collected in support of the DOE Geothermal Technologies Office 4D EGS monitoring project.
Publication NEWGEN FORGE Paper	4/20/2016	"extensive literature"	NEWGEN FORGE paper presented at the 2016 Stanford Geothermal Workshop
Newberry EGS Literature References	4/23/2016	"extensive literature," "geologic cross-sections"	Research references to literature about the Newberry geothermal area
Gravity results 3D EGS Monitoring project at Newberry	4/3/2016	"geophysical datasets"	Initial 3D gravity results from Zonge Int'l recorded for the 4D EGS Monitoring project at Newberry
Publication: A Conceptual Geologic Model for the Newberry Volcano EGS Site	4/22/2016	"extensive literature"	Publication: A Conceptual Geologic Model for the Newberry Volcano EGS Site in Central Oregon: Constraining Heat Capacity and Permeability through Interpretation of Multicomponent Geosystems Data
Newberry Conceptual Model: Geologic	4/1/2016	"geophysical datasets"	Conceptual model for the Newberry Caldera geothermal area
Newberry Conceptual Model: Geophysical	4/1/2016	"geophysical datasets," "LiDAR and elevation files"	Conceptual model for the Newberry Caldera geothermal area

Table B.1. (contd)

DATA	GDR TRANSFER COMPLETE	SATISFIES DELIVERABLE	DESCRIPTION OF DATA
Newberry Thermal Model	3/24/2016	"geophysical datasets"	Final results of a 3D finite difference thermal model of Newberry Volcano
Preliminary Analysis of Stress in the Newberry EGS Well NWG 55-29	3/26/2016	"extensive literature," "stress analysis"	high-resolution borehole televiewer (BHTV) log acquired using the ALT ABI85 BHTV tool in 55-29
Publication: Thermal-Hydrological-Chemical Model	4/20/2016	"extensive literature"	A Thermal-Hydrological-Chemical Model for the EGS Demonstration Project at Newberry Volcano
Newberry EGS Demonstration Phase 2.1 Report	4/18/2016	"extensive literature"	Status report for the EGS Demonstration Project Phase 2.1
Newberry EGS Demonstration Phase 2.2 Report	4/18/2016	"extensive literature"	Status report for the EGS Demonstration Project Phase 2.2
Well 55-29 Stimulation Data	12/4/2013	"well data"	Well data from 55-29 in the Newberry Caldera area