



Industry Update 2016

Jacobs

New Zealand Geothermal Workshop 2016

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Jacobs in the Philippines - 2016

- 180 Staff, 10 geothermal. Strong ties to New Zealand.

Key Clients:

- Aboitiz
 - Technical Advisory
 - Engineering Design
 - Due Diligence
- PGPCI / Chevron
 - Master Planning
 - Engineering Design
- EDC
 - Master Planning
 - Risk Assessment

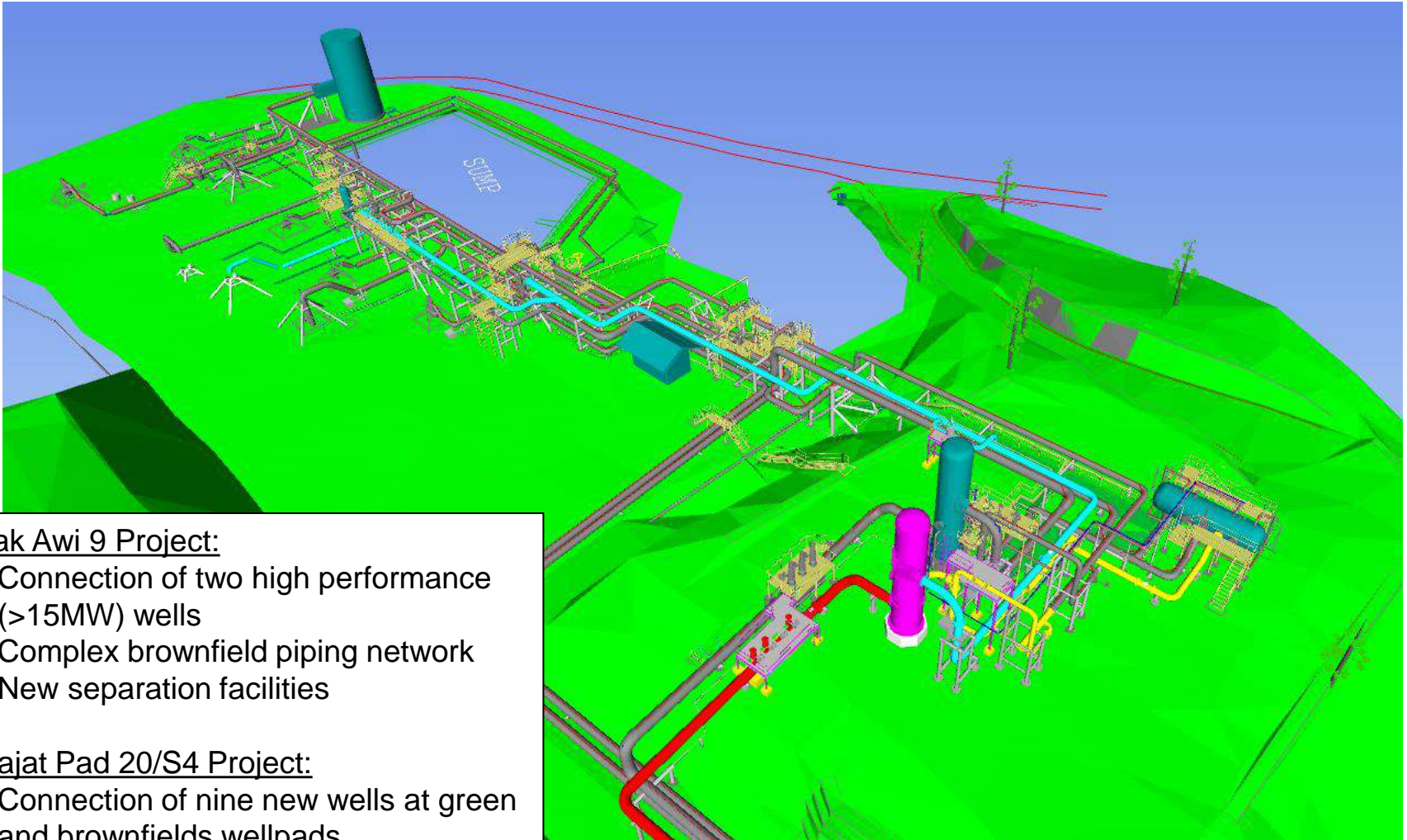


Industry Involvement – NZTE/NGAP Day



Sustaining Capital and Expansion Works

Chevron Indonesia



Salak Awi 9 Project:

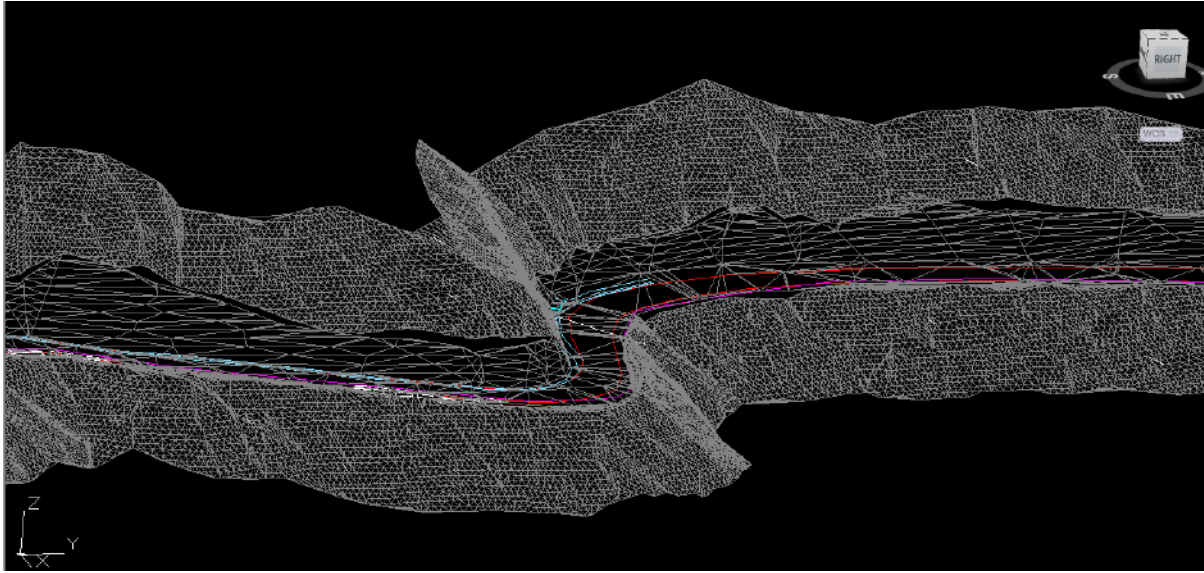
- Connection of two high performance (>15MW) wells
- Complex brownfield piping network
- New separation facilities

Darajat Pad 20/S4 Project:

- Connection of nine new wells at green and brownfields wellpads
- Design of steam delivery cross country piping

Karaha Bodas Piping and Road Alignment

GE Indonesia



- Widening of an existing road corridor to allow for piping and PP access
- Steep terrain with unstable slopes
- Use of drone LiDAR survey backed up by ground based equipment to quickly and effectively identify problem areas
- Staggered implementation to minimise interruption to plant construction and operation

Caribbean – NZ TA

- Support provided to five countries (SIDS) in Eastern Caribbean.
- Technical studies
- Peer review and Advisory
- Capacity Building
- Caribbean Geothermal Advisor in country since Nov 2014.

Comoros

- On-going technical assistance
- MFAT, Govt of Comoros, UNDP



Latin America

Nicaragua - **San Jacinto**



During 2016 Jacobs assisted PENSA with further enhancements to the San Jacinto Project, including:

- Design and implementation of a make up production well programme
- Design and implementation of injection well remediation works including mechanical cleanout and acid stimulation
- Well site geology and drilling engineering supervision
- Technical advice relating to the trial and implementation of silica inhibition options
- Assistance with the interpretation of changes in well performance and general resource characteristics
- Preliminary assessment of new binary plant project

Cosiguina – remote drilling engineering and geoscience support

Casita – exploration drilling and development program



Mexico – Domo San Pedro

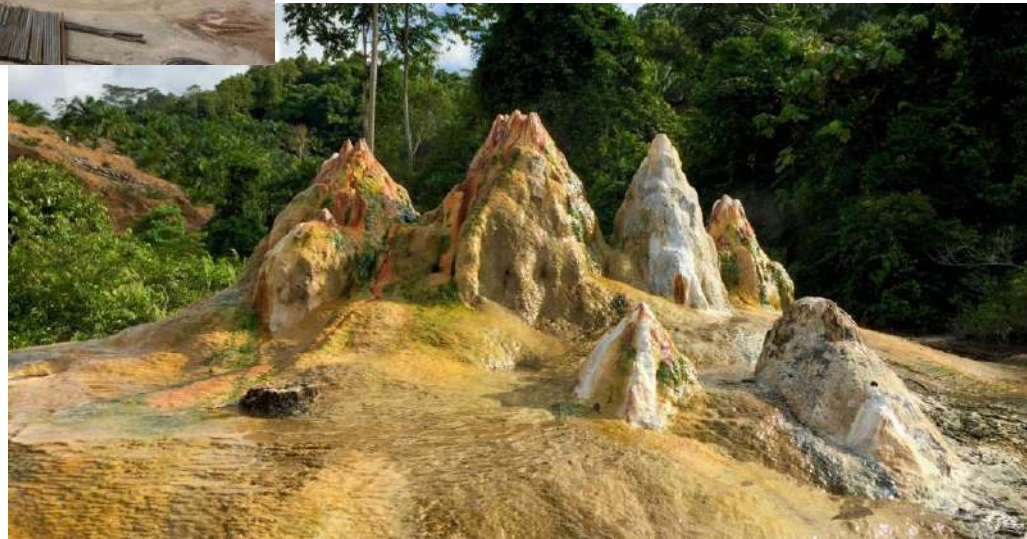
Grupo Dragon – drilling supervision, geoscience



Malaysia – Apas Kiri, Sabah Province



Tawau Green Energy (TGE)
First geothermal
development in Malaysia



New Zealand

- TAOM – drilling supervision and wellsite geological support

“The drilling was successful – we located the high-temperature fluid that will ultimately fuel the geothermal power plant, and the injection capacity necessary to manage the cooler fluids that have passed through geothermal power plant.” – Ben Gibson

<http://www.eastland.nz/2016/09/19/drilling-completed-at-te-ahi-o-maui/>

- Mercury – well integrity review





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