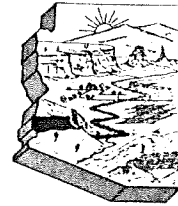


State of Arizona
Bureau of Geology and Mineral Technology

Geological Survey Branch
Geothermal Group

2045 N. Forbes Blvd., Suite 106
Tucson, Arizona 85705
(602) 626-4391



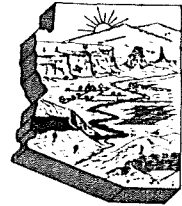
GEOHERMAL ENERGY EXPLORATION PROGRAM FOR
WILLIAMS AIR FORCE BASE
MARICOPA COUNTY, ARIZONA

Williams Air Force Base comprises approximately six square miles in southeastern Maricopa County, Arizona. The base is located thirty miles S.45°E. of Phoenix, Arizona.

The major exploration constraint is to locate geothermal energy on the base; namely, the production and reinjection wells must be situated on the base. Maximum utilization and development of the land within the boundaries of the base by the Air Force greatly limits areas where the wells may be sited.

Geothermal Kinetics, Inc. drilled two wells, GKI #1 in the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$, Section 1, T25, R6E, and GKI #2 in the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$, Section 1, T25, R6E (see accompanying map) about 2,000 feet off the base to the southwest. The wells, drilled to depths of approximately 9,200 and 10,400 feet respectively, encountered high temperatures at depth, between 150°C and 200°C, with an apparently producing reservoir. Temperature logs furnished by GKI indicate that temperatures in excess of 100°C can be expected below depths of 7,000 feet (2134 m). However, the major heat zone, +150°C, appears to be in the vicinity of 10,000 feet (3048 m) and is also coupled with a probably producing reservoir. Geothermal Kinetics, Inc. did considerable exploration prior to siting their wells.

GEOHERMAL ENERGY EXPLORATION PROGRAM FOR
WILLIAMS AIR FORCE BASE
MARICOPA COUNTY, ARIZONA



It is recommended that no additional exploration work for geothermal energy be conducted at Williams Air Force Base. It is recommended that no slim hole tests be drilled at Williams Air Force Base.

The constraints on the exploration program discussed above dictate that the primary production well, WP-1, be sited as reasonably close to GKI's holes as possible.

The energy and reservoir will either be there, or they won't. No amount of exploration will show fracture porosity in a dacite volcanic sheet at 10,000 feet. GKI's nearby holes strongly infer that temperatures suitable for electrical generation will be encountered at depths of 10,000 to 10,500 feet.

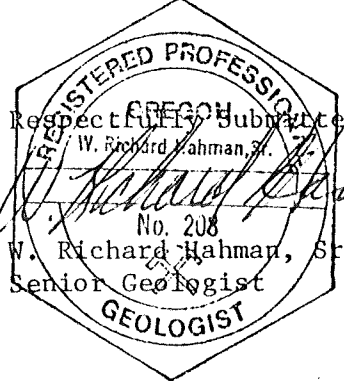
*Fractures in dacite
2nd possibility by column
low thermal efficiency
flow unobtainable*

WP-2 has been located as near as possible to the area of use to reduce pipe transmission costs. Again, the geothermal energy and reservoir will either be there, or they won't.

The reinjection well, WR-1, has been located as far from the production wells as possible to prevent contamination of the hot reservoir by the cooler reinjection fluid.

WR H- Sperry now planning to market a down hole heat exchanger to generate 465 Mwe

GKI-2 well instead dacite - argillaceous zone not conglomerate but pebbles, like 10,500, 10,440



Respectfully Submitted:
W. Richard Wahman, Sr.

W. Richard Wahman, Sr., CPG
Senior Geologist

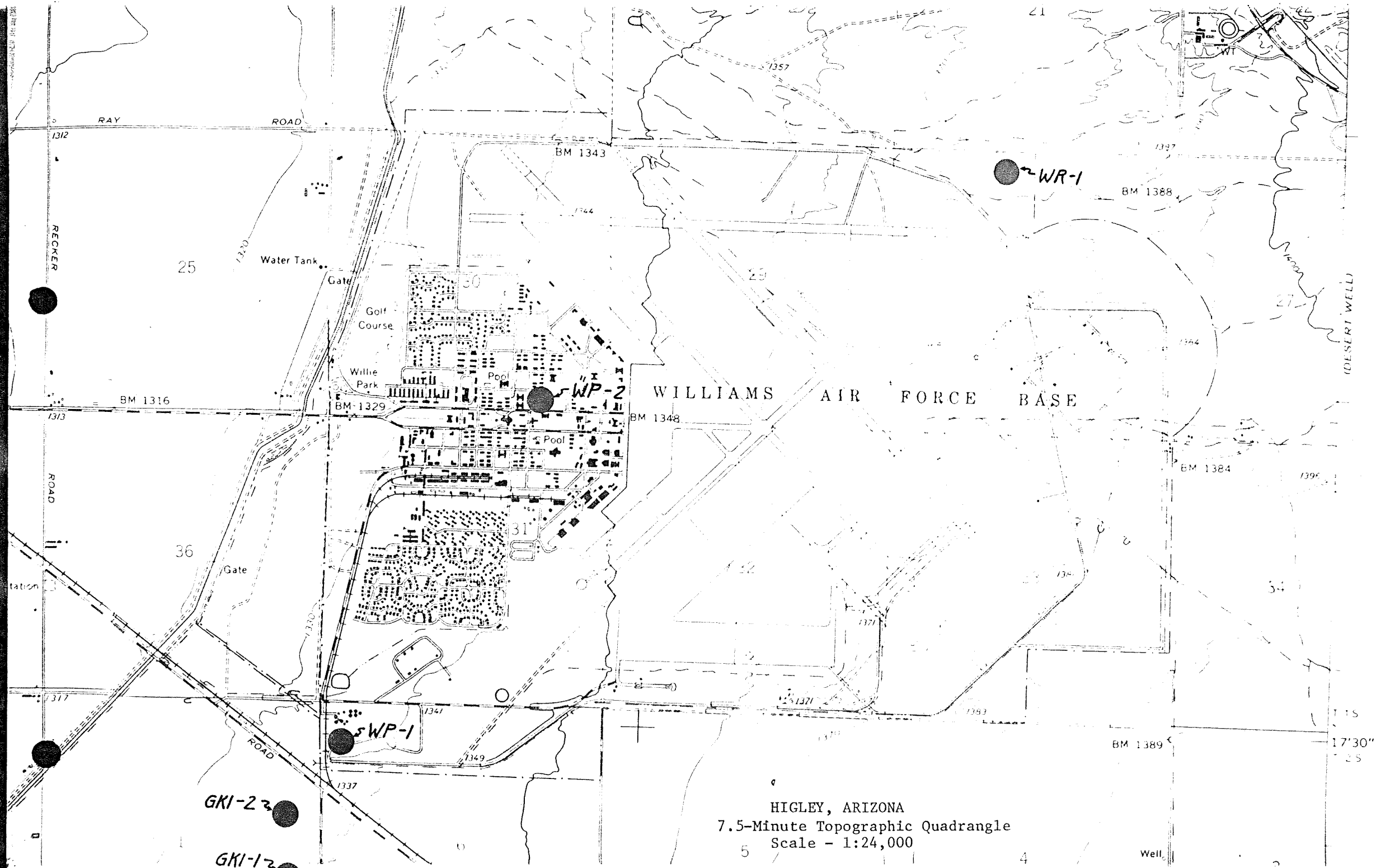
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5-29-79

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5 mile radius of center of base
- no account for
Volcanic Sequence
5% Porosity
Assume specific yield of 0.5%

Phillips.
{ Bill Berger used 2.6%

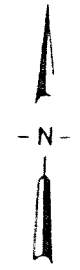


WILLIAMS AIR FORCE BASE

HIGLEY, ARIZONA
7.5-Minute Topographic Quadrangle
Scale - 1:24,000

BM 1389

Well



RAY ROAD

RECKER ROAD

ROAD

tation

ROAD

Water Tank

Gate

Golf Course

Willie Park

Pool

Pool

25

29

36

31

34

BM 1343

BM 1388

BM 1316

BM 1329

BM 1348

BM 1384

BM 1389

1357

1337

1312

1313

1317

1337

1344

1344

1396

1370

1371

1371

1383

1349

1341

1315

17'30"

17'25"

(DESERT WELL)

GKI-2

GKI-1

WP-2

WR-1

WP-1