

JAMES B. KOENIG (415) 524-9242
MURRAY C. GARDNER (503) 482-2605

21 January, 1977

Mr. Ron Barr, President
Earth Power Group
P.O.Box 1566
Tulsa, OK 74101

JAN 26 1977

Dr. Dean Pilkington
AMAX Exploration, Inc.
4704 Harlan Street
Denver, CO 80212

Dear Dean and Ron:

Enclosed are the temperature gradient survey records for the Bully Creek area, holes 15, 28, 29, 21, and 25 and for the North Vale area, holes 77-1 and 77-2. I have noted the gross lithology on the records for the convenience of Dean making preliminary heat flow estimations. I have also enclosed with Dean's material the daily driller's time charges with my approvals and indications of any disagreements.

The 5 additional holes drilled at Bully Creek in 1977 clearly confirmed the anomaly we had described after the December, 1976 drilling, as well as confirming southern limits of the anomaly. The data from holes 15 and 29 are indicative of high temperatures at reasonably shallow depths, less than 2 kilometers. The gradient of about 130°C/km at 29 is equivalent to greater than 6 HFU and the gradient at 15 of about 90°C/km is equivalent to about 6-HFU if K of 5 is used for the rocks at 29 and K of 6+ is used for the basalt at 15. However, these average and approximate HFU values should await verification by petrographic and/or thermal conductivity studies of the cuttings. I am shipping the cuttings from all holes to AMAX unless instructed otherwise during discussions with the recipients of this letter.

There does not appear any way in which the data from hole 28 can be reconciled with lithology to avoid a sharp termination of the anomaly towards the northeast. The temperature data from holes 21 and 25 also terminate the anomaly, toward the southwest. This was expected. The Chevron holes in T. 18 S. had low dTs and we anticipated a northwest trending anomaly.

The information obtained from the 2 holes drilled at the southwestern part of the North Vale-Stringer/Jackson property provided a pleasant surprise. While we cannot ignore the possibility that we are merely observing the near-surface effects of a shallow warm water flow, we should obtain more data to verify or dismiss the apparent strong anomaly.

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Barr and Pilkington, page 2 of 21 January, 1977.

Hole 77-2 has dT of more than 220°C/km in the lower part of the hole. Even if a mean K of 3 is used, more than 6 HFU obtain. It appears most important to examine the property northward from the holes at 77-1 and 77-2. I recommend that 3 new holes be sited in T. 16 S., R. 44 E., S. 26, 27, 28 and 34. An additional hole or holes may be planned elsewhere, depending upon the outcome of drilling and data collection in the initial holes. I have attached an overlay map with recommended new hole locations. Mr. Jackson (Sr.), whom I met in the field on 17 January, indicated that access would be possible for a drill if there was no additional significant snow or rain.

Please consider the program for adoption during the present dry winter or the warmer spring months. Leonard Justice, operating out of Meridian, Idaho, probably has the lowest mobilization charge. Ron would have figures for Justice's charges. On the other hand, you may want to schedule the work coincident with other planned activities at the western part of the Bully Creek property. In any case, GeothermEx would be available to supervise the operation and perform technical services should you require our assistance.

I will telephone to each of you on 26 January, after you have had time to consider the information herein, to answer questions and discuss any points you may raise. Please telephone to me at Ashland if you want to contact me before that date. I will be completing the Bully Creek report at my office.

Yours truly,


Murray C. Gardner

MCG:m

Enclosures

cc: J. B. Koenig

T. 16 S.

90 Access not known here
 18 17 16 15
 4

Property boundary, with broken lines where approximately known.

20 21 Section numbers

R. 44E.

3

28 27 26 25

110

2

1

67.6

33 34 35

77-2 220+

77-1 125+

- = Existing temperature gradient points, °C/Km.
- = Locations of newly completed holes 5
- = Locations of recommended additional holes; number in circle is priority order

94.4

154

50.8

68.7

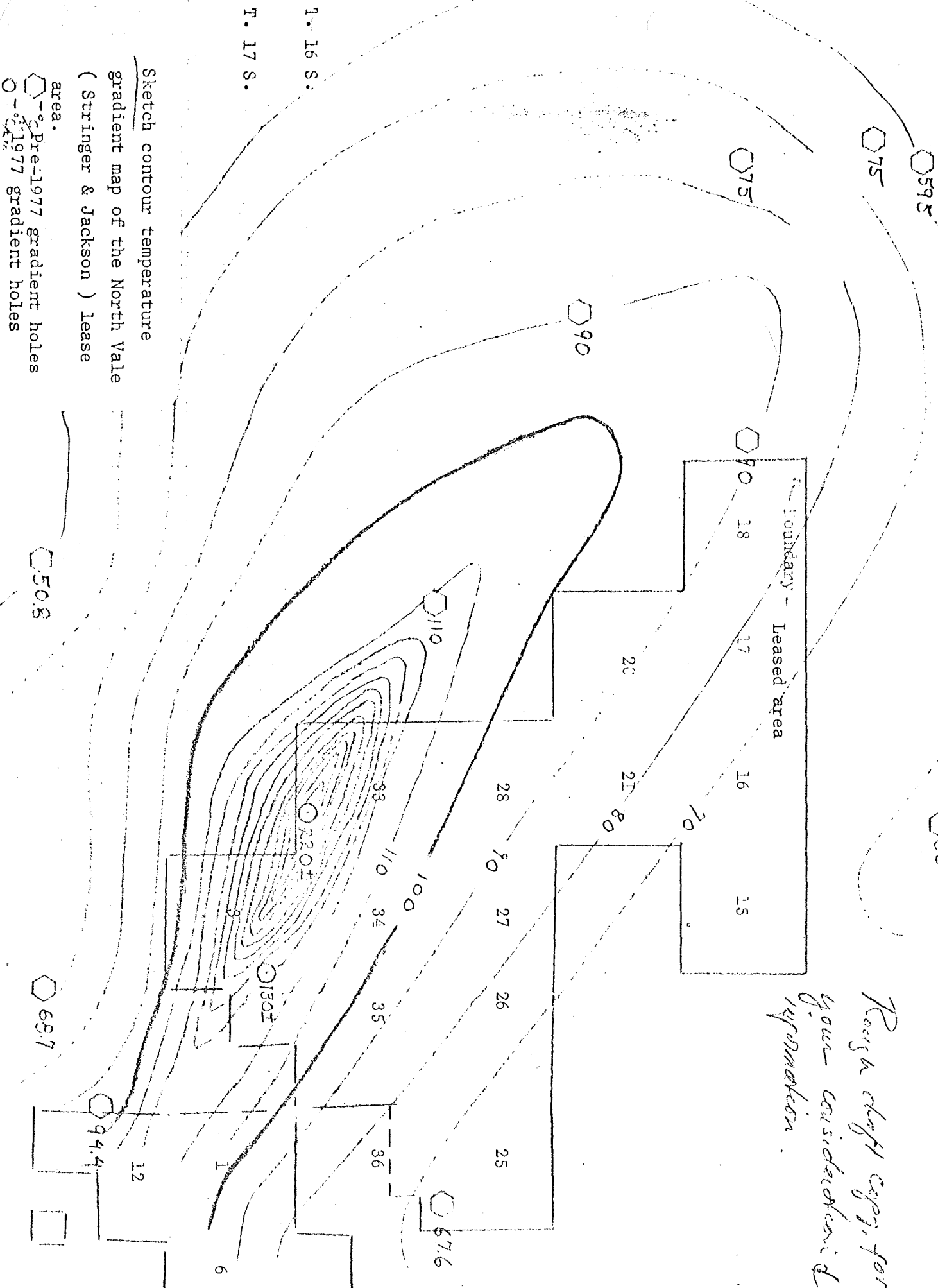
Map of the North Vale-Stringer/Jackson property showing existing temperature gradient information and locations of recommended additional temperature gradient holes.

R. 43 E. R. 44 E.

R. 44 E.

R. 45 E.

Rough draft copy, for your consideration & reparation.



T. 16 S.
T. 17 S.

Sketch contour temperature

gradient map of the North Vale
(Stringer & Jackson) lease

Area.
○ Pre-1977 gradient holes
⊗ 1977 gradient holes

50.8

68.7

94.4

12

1

6

36

67.6

25

28

30

27

26

25

20

21

80

18

17

16

15

12

75

75

90

110

38

110

34

35

36

220.4

130.4

9

59.8

56

94.4

6

R. 42 E. R. 43 E.

NV4 58.8

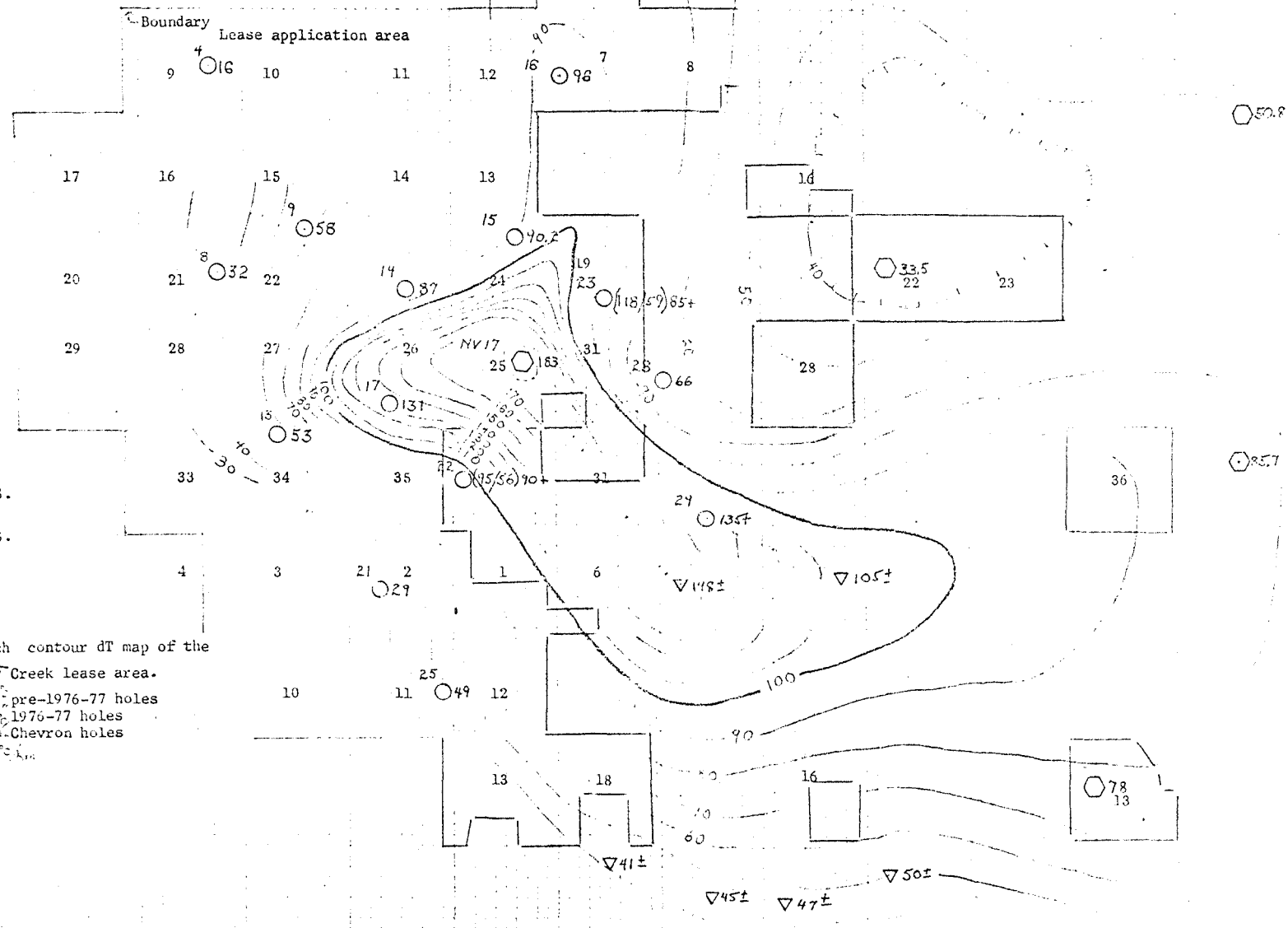
110

T. 16 S.

DRAFT COPY - FOR YOUR INFORMATION

T. 17 S.

Boundary Lease application area



T. 17 S.

T. 18 S.

Sketch contour dt map of the Bully Creek lease area.

- pre-1976-77 holes
- 1976-77 holes
- Chevron holes
- ▽

41

857

67