# TRES MONTOSAS AEROMAGNETIC ANOMALY

Socorro County, New Mexico

May 16, 1969

by

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J. W. England

An aeromagnetic anomaly in the vicinity of Tres Montosas was discovered on a reconnaissance survey in August 1960. This survey was flown on one- and two-mile profile spacing at an elevation of 1,000 feet above the terrain, using a Varian M-49A magnetometer with a six-second readout (approximately 1,000 feet between readings). In January 1967 en route to another survey area, Tres Montosas was circled at an altitude of 500 feet, using a Varian V-4937A magnetometer with one-half-second readout to obtain additional data on the anomalous area. Several anomalies occur near the north flank of the mountain. The district has been programmed for a detailed aeromagnetic survey. The anomaly apparently extends from the north flank of Tres Montosas on a northeasterly trend for a distance of two miles.

A brief examination of the area was made on May 16, 1969, by R. G. Erickson and J. W. England. Due to limited time, only the west and north flanks of the mountain were investigated. Geochemical soil analysis and total intensity magnetic readings were taken on one-quarter-mile intervals, and a geiger counter was monitored continuously along the route shown on the appended map.

The New Mexico geologic map indicates that Tres Montosas consists of Tertiary rhyolites capped with Quaternary-Tertiary basalts or andesites. Bedrock surrounding the mountain is obscured by alluvium. Kelley [1949, p. 226] mentions Precambrian gabbro, alaskite, and pegmatites intruded by monzonite porphyry in this area, and a fifty-foot vertical shaft in granitic rock with vertical stringers of magnetite. Harrer [1963, p. 85] locates this prospect near the southeast corner of sec. 11, T-2-S, R-6-W, about four miles northeast of Tres Montosas. An aeromagnetic anomaly exists about a half mile west of this location. Dan Chamberlin of Magdalena, New Mexico, apparently sent a sample [No. 7130] from this prospect to CF&I in 1942. At a road junction about a mile northwest of Tres Montosas, a sign indicates that the north fork is the direction to the Big John mine (not investigated).

Since limestones reportedly occur below the volcanics at a copper prospect four miles southeast of Tres Montosas, a similar situation may exist near the magnetically-anomalous area. About five miles northeast of Tres Montosas, in the vicinity of Iron Mountain, over seventy mining claims were located in 1959-60 to cover an alluvial magnetite deposit. The Council Rock District

also has reported occurrences of lead-silver-gold veins in volcanic rocks; however, they have not been marked on maps published to date.

The alluvium on the west flank of the mountain consisted of a tan soil with some disseminated magnetite and boulders of pink-tan rhyolite porphyry, very slightly magnetic, with considerable biotite and occasional magnetite. On the north flank of the mountain, the alluvium consisted of a dark soil with boulders of dark greenish-gray, slightly-magnetic diorite porphyry.

The ground magnetic survey indicated a 1,000-gamma anomaly near the northeast flank of the mountain and a 1,100-gamma anomaly near the Pine Well. Radioactivity remained at background (.01-.03 M.R./hr.) across the area. The Apex geochemical samples for heavy metals only varied 5 to 15 ppm.

The anomalous area falls within the Cibola National Forest, and part of the area is probably leased by the Montosa Ranch. Warning signs are posted that restrict the area from 6 p.m. Thursday until 6 a.m. Friday as a rocket impact zone.

The district warrants a detailed aeromagnetic survey and a more extensive field evaluation. The northernmost aeromagnetic anomaly may outline a magnetite-bearing intrusive that could be the source of the extensive alluvial iron deposits in the vicinity of Iron Mountain.

References:

Lasky, Samuel G., 1932, *The Ore Deposits of Socorro County, New Mexico:* N.M.S.M., S.B.M. & M.R., Bull. No. 8

Kelley, V. C., 1949, *Geology and Economics of New Mexico Iron-Ore Deposits:* U. of N.M. Pub. in Geology, No. 2

Harrer, C. M., and Kelley, F. J., 1963, *Reconnaissance of Iron Resources in New Mexico:* U.S.B. of M. I.C.-8190

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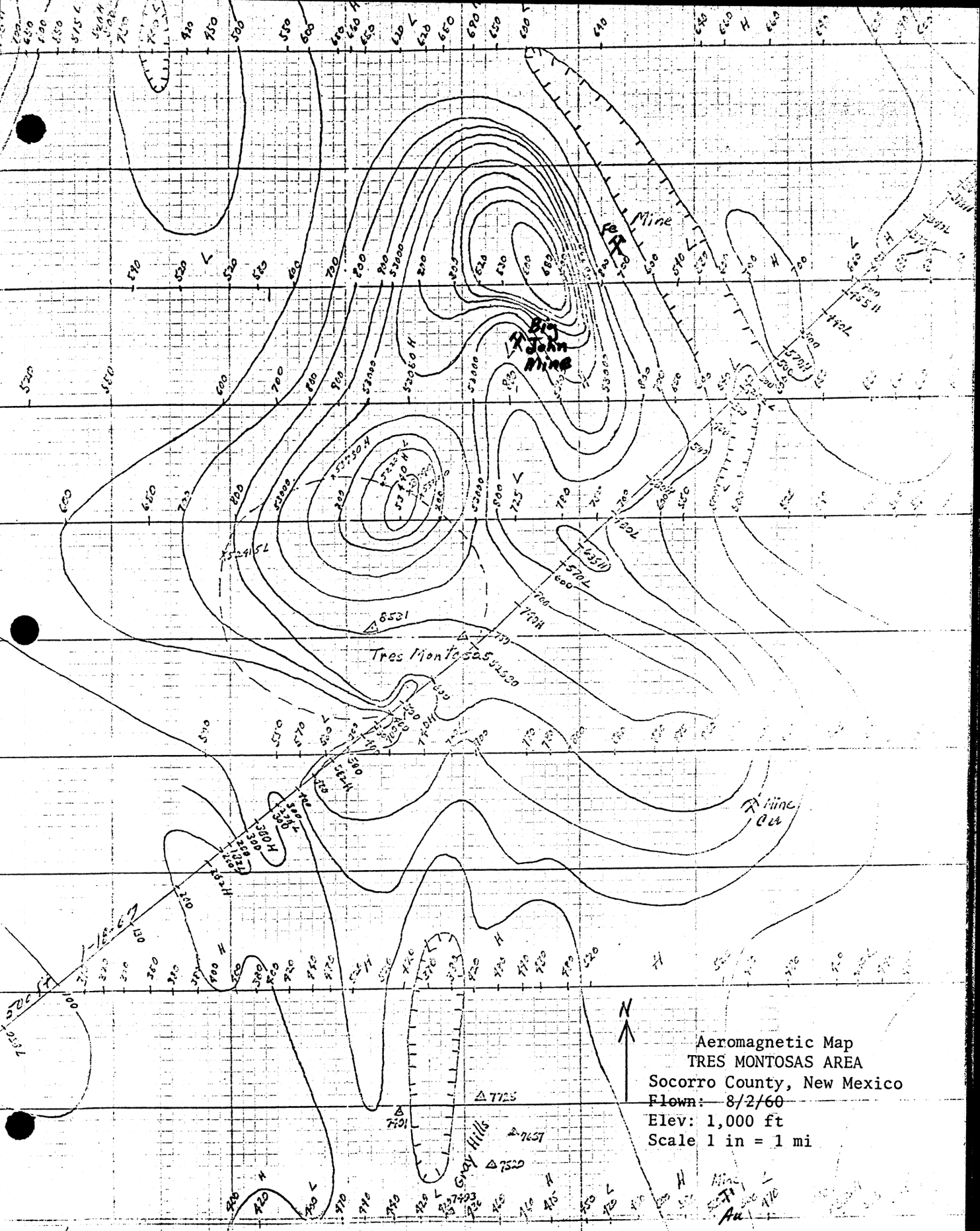
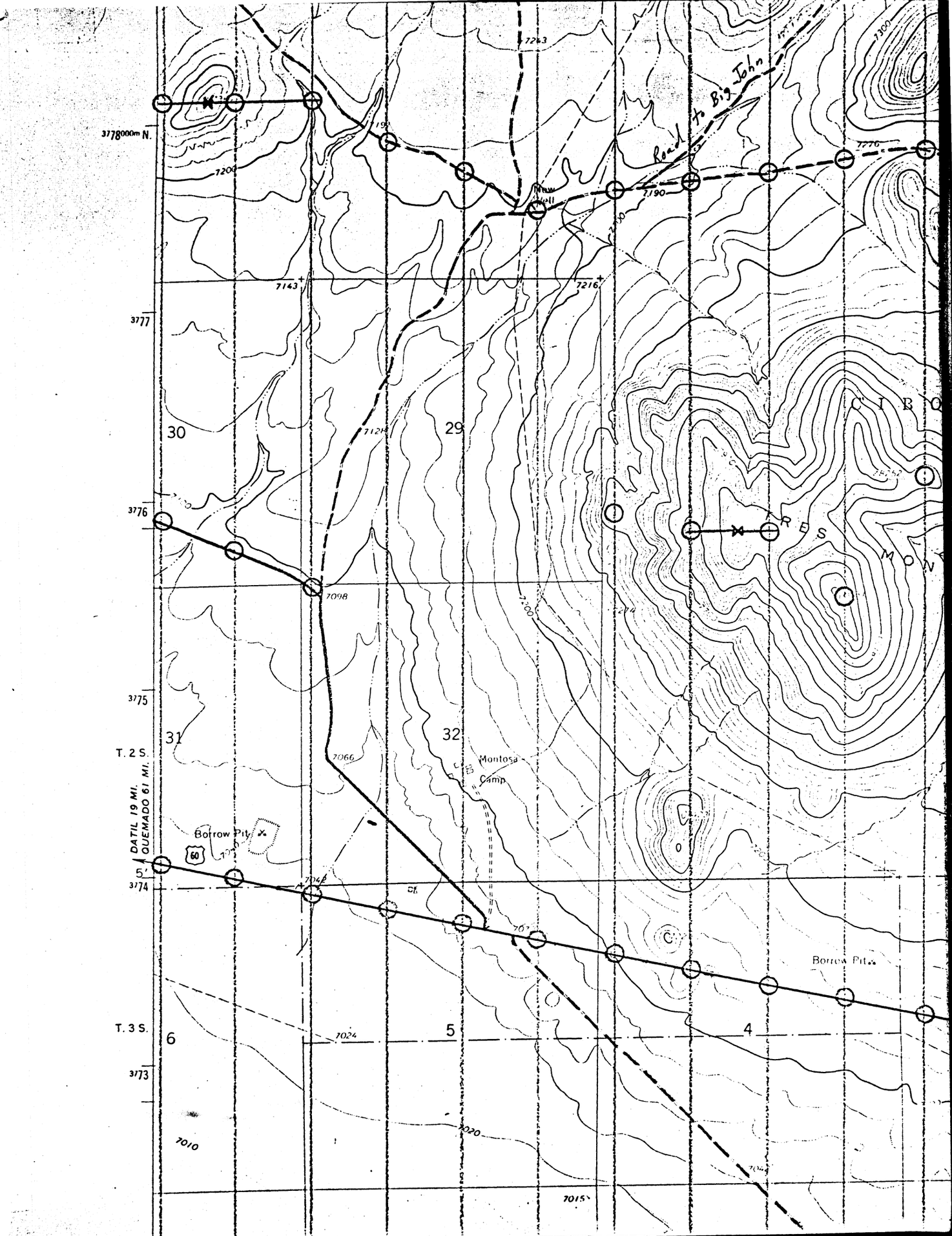
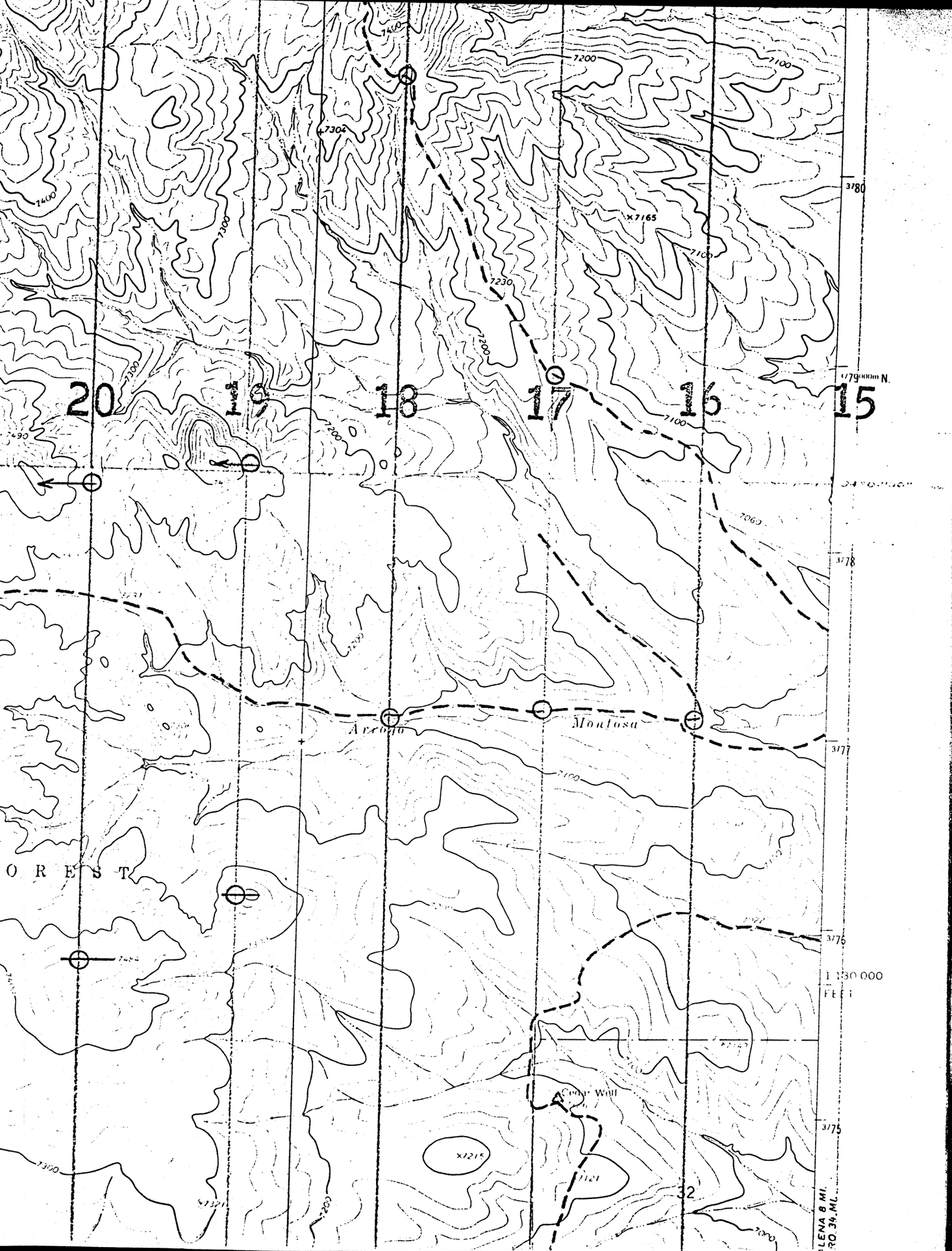
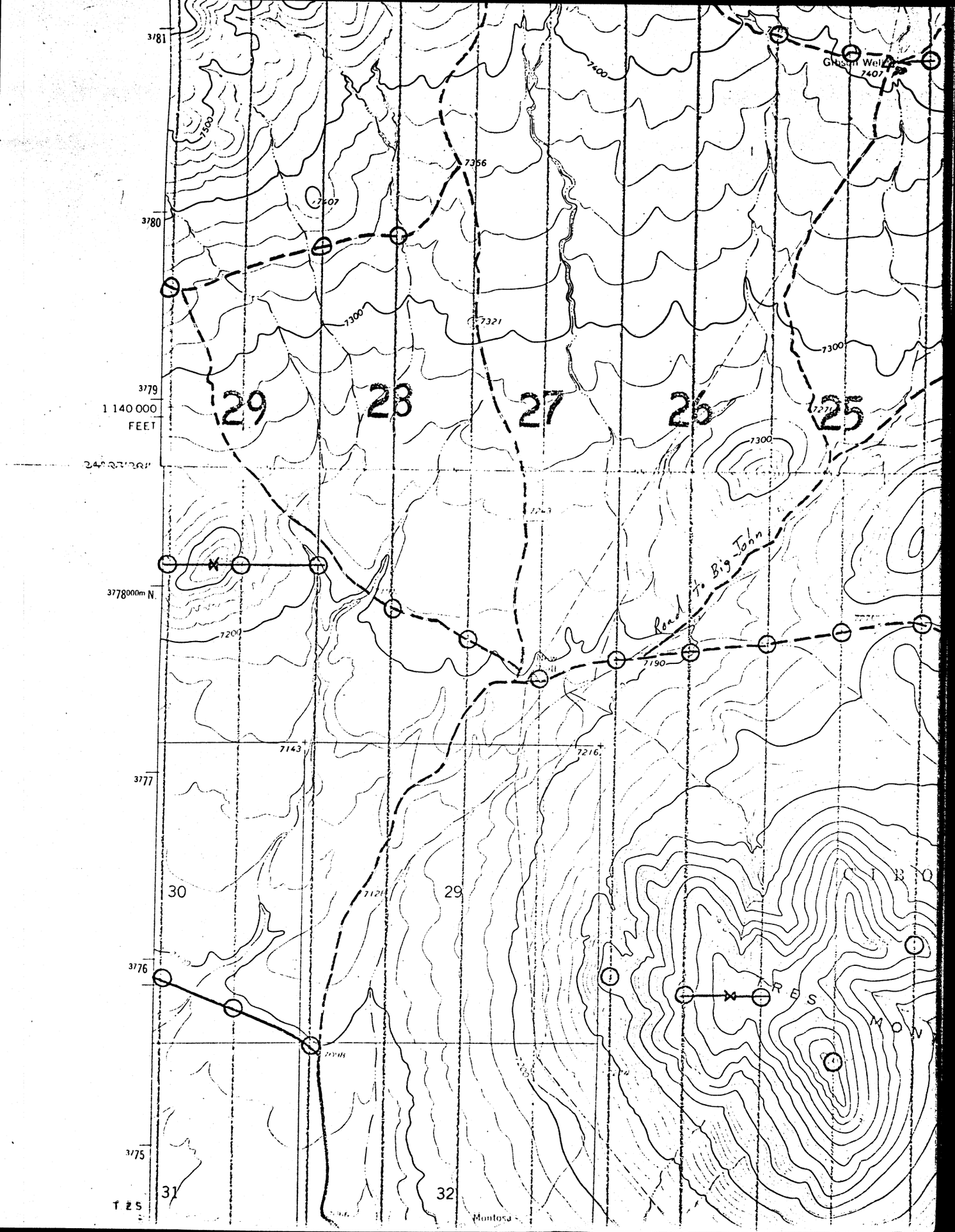



Aeromagnetic Map
TRES MONTOSAS AREA
Socorro County, New Mexico
~~Flown: 8/2/60~~
Elev: 1,000 ft
Scale 1 in = 1 mi


3778000m N.
3777
3776
3775
3774
3773
T. 2 S.
T. 3 S.
DATIL 19 MI.
QUEMADO 61 MI.
Road to Big John
Montosa Camp
Borrow Pit
Borrow Pit
60
30
29
31
32
6
5
4
7263
7200
7190
7143
7216
7098
7066
7024
7020
7010
7015
CIBO
RES
MO


20
19
18
17
16
15
7400
7300
7200
7100
7230
7165
7069
3780
3779
3778
3777
3776
3775
Arroyo
Montosa
Cedar Well
32
1 330 000
FEET
LENA 8 MI.
RO 34 MI.


3781
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3778000m N.
3777
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28
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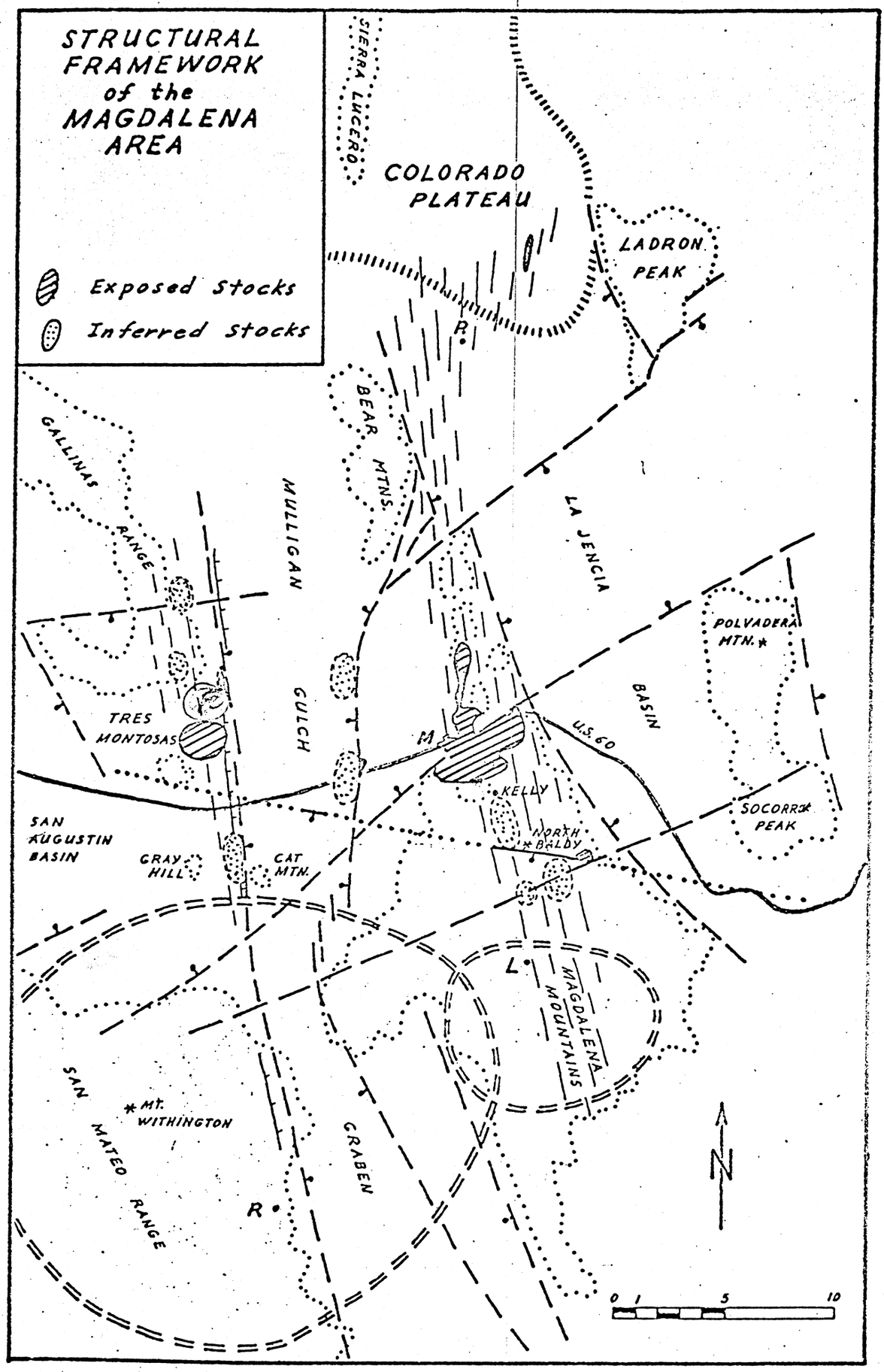
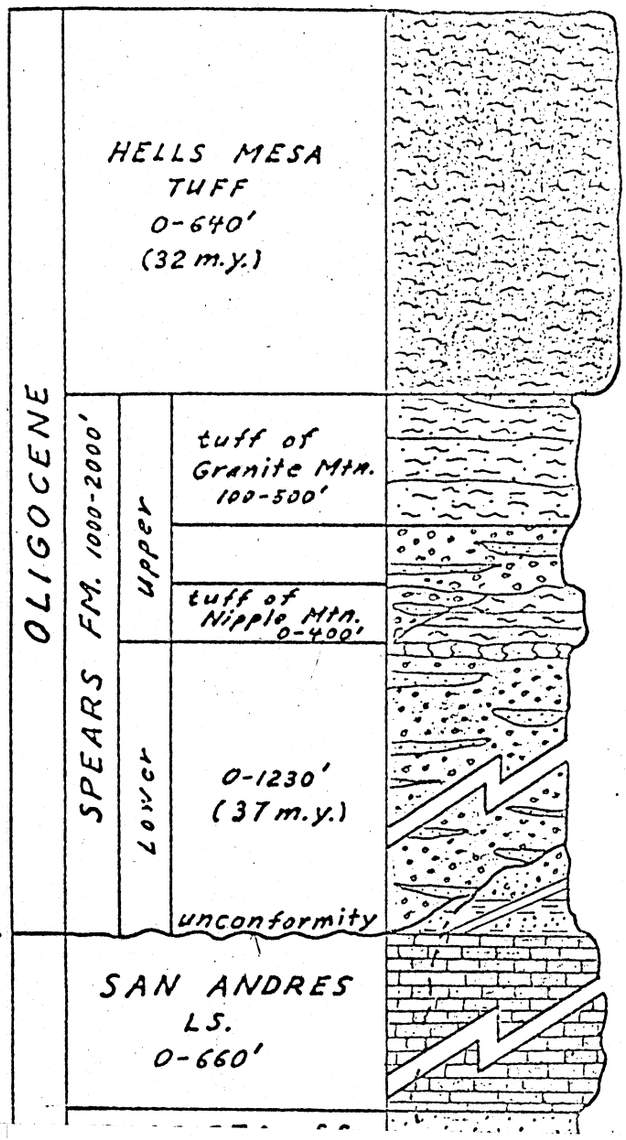
26
25
30
29
31
32
T 2 S
7400
7500
7356
7407
7300
7321
7200
7190
7143
7216
Road to Big John
Montosa
Gibson Well
7407

Tres Montosas
Socorro Co., N.M.


STRUCTURAL FRAMEWORK of the MAGDALENA AREA
Exposed Stocks
Inferred Stocks
SIERRA LUCERO
COLORADO PLATEAU
LADRON PEAK
BEAR MTNS.
GALLINAS RANGE
MULLIGAN GULCH
LA JENCIA BASIN
POLVADERA MTN.
TRES MONTOSAS
KELLY
U.S. 60
SOCORRO PEAK
SAN AUGUSTIN BASIN
GRAY HILL
CAT MTN.
NORTH BALDY
MAGDALENA MOUNTAINS
SAN MATEO RANGE
MT. WITHINGTON
GRABEN
N
0 1 5 10

# COMPOSITE STRATIGRAPHIC COLUMN of the MAGDALENA AREA




ASH-FLOW TUFFS: qtz. latite (chem. rhyolite), multiple-flow, simple cooling unit of densely welded, crystal-rich, qtz.-rich, massive tuffs; pk. to rd.-brn. when fresh, gry. when propylitically altered; forms cliffs and talus-covered slopes; weathers to blky. bldrs. rather than to grus; abrupt change from latite to qtz. latite 10-25 ft. above base; basal tuffs strongly resemble underlying tuffs in Spears Fm.; formation boundary placed at abrupt increase in qtz. when cgl. is absent; mapped as rhyolite porphyry sill by Loughlin and Koschmann.

ASH-FLOW TUFFS: latite (chem. qtz. latite), multiple-flow, simple cooling unit of densely welded, crystal-rich, lithic-rich, massive tuffs; rd.-brn. when fresh, dk. grn. gry. when propylitically altered; mapped as upper latite tuff by Loughlin and Koschmann; overlain by distinctive hem.-stnd. cgl. N. of Magdalena; grades into mud-flow breccias at base.

VOLCANICLASTIC and VOLCANIC ROCKS: latitic to andesitic conglomerates, sandstones, mud-flow breccias, and lava flows.

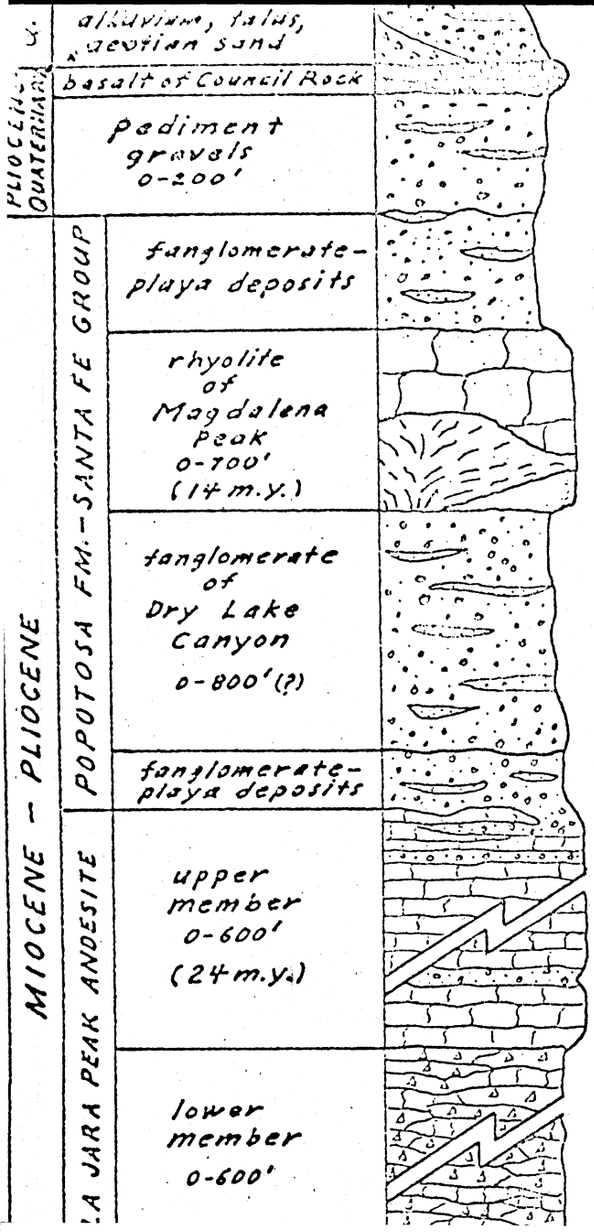
ASH-FLOW TUFFS: latite, multiple-flow, compound cooling unit of moderately to densely welded, crystal-poor, pumiceous tuff; pk. when fresh, buff to wht. when altered; distinctive "turkey track" andesite at base; interbedded andesite flow near Tres Montosas; mapped as white felsite tuff by Loughlin and Koschmann.

CONGLOMERATES and SANDSTONES: volcaniclastic apron of early latitic phase of Datil-Mogollon field; fluvial deposits of latitic to andesitic debris; crs. sandstones to pbl. and bldr. conglomerates; purp.-brn. when fresh, grn.-gry. when propylitically altered.

BACA FM (Eocene)<br>MESOZOIC ROCKS } Present in Baca basin north of Magdalena area; position of basin margin uncertain due to burial by Tertiary volcanic rocks.

LIMESTONES: blk., fetid, v.-thk.-bdd., homogeneous, sparsely fossil., dolomicrites; weathers to rough, hackly sruface; mapped as Madera Limestone by Loughlin and Koschmann.

SANDSTONES: lt. to med.-gry., v. thk. bdd., med.-gnd. v. well srt. calc.,




ALLUVIUM, TALUS, and AEOLIAN SAND: sand exclusive N. of Hwy. 60 and N. of La Jencia Creek.

BASALT FLOWS and DIKES: thin flows of dk. gry., dense to vesicular basalt; dikes near Council Rock apparent source; widely scattered remnants west of Magdalena.

PEDIMENT GRAVELS: coarse, heterogeneous gravels and thin sands grading laterally into alluvial fans; caliche deposits and aeolian sand at top; dissected as deep as 200 ft. by arroyos.

FANGLOMERATE - PLAYA DEPOSITS: similar to below but with increasing amounts of detritus from units lower in section; overlain with angular unconf. by buff, poorly indur., deposits of upper Santa Fe Group containing abun. detritus from Paleoz. & Precambrian rocks and by pediment gravels.

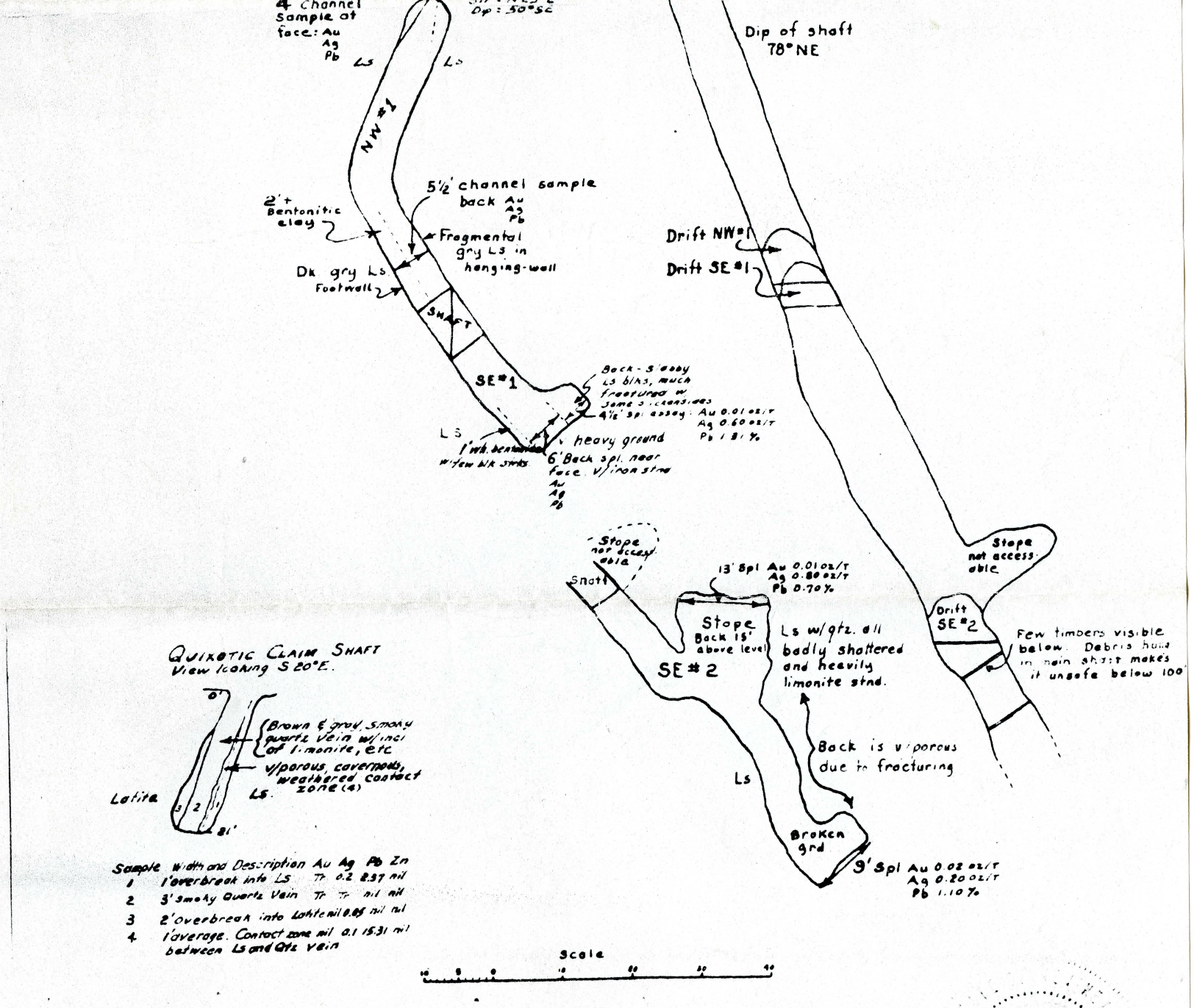
RHYOLITE FLOWS and DOMES: pk., dense slightly porphyritic flow-banded rhyolite; vitrophyric and perlitic zones present locally; thin interbedded tuffs; Magdalena Peak dome main eruptive center.

FANGLOMERATES: buff to gry., well-indurated andesitic cgls., thin ss., and mud-flow deposits derived from erosion of La Jara Peak Andesite; other detritus absent to sparse; forms clastic wedge along west side of Bear Mtns.; locally interbedded with uppermost La Jara Peak Andesite; unique facies of Popotosa Fm.

FANGLOMERATE - PLAYA DEPOSITS: rd.-brn. to gry., well-indurated, volc. cgls., thin ss., and mud-flow deposits derived from erosion of volcanic pile during block faulting; A-L Peak, Potato Canyon, and La Jara Peak detritus especially abun.; fangls. grade laterally into rd., poorly indur., siltstones and mudstones of playas.

ANDESITE FLOWS: gry., locally rd., dense, basaltic andesite characterized by abun. small, rd. hematized pyroxene and/or olivine phenocrysts and lack of plagioclase phenocrysts; lower member mostly thin autobrecciated flows that weather to slopes and rounded hills; upper member consists of cliff-forming vesicular flows with fresh pyroxene phenocrysts; amygdules of silica and/or calcite abun. in lower member; upper member interbedded with Popotosa Fm.

TRES MONTOSAS AREA
Socorro County, New Mexico
Date: May 16, 1969
Scale: 1:24,000 or 1 in. = 2,000 ft.
(Aeromagnetic values flown 8/2/60 &
Ground Magnetic Survey
CIRCULAR MONTOSAS
Dark Porphyry
Road To Big John Mine
Big John Mine
Pine Well
Montosa Camp
Borrow Pit
Borrow Pit
Evans Ranch
Water Wells
Magnetite fines in soil
Tan rhyolite
1-18-67
N






ASSAY MAPS SHOWING
UNDERGROUND DEVELOPMENT AND PROSPECT WORK

PLATE 5 (?)