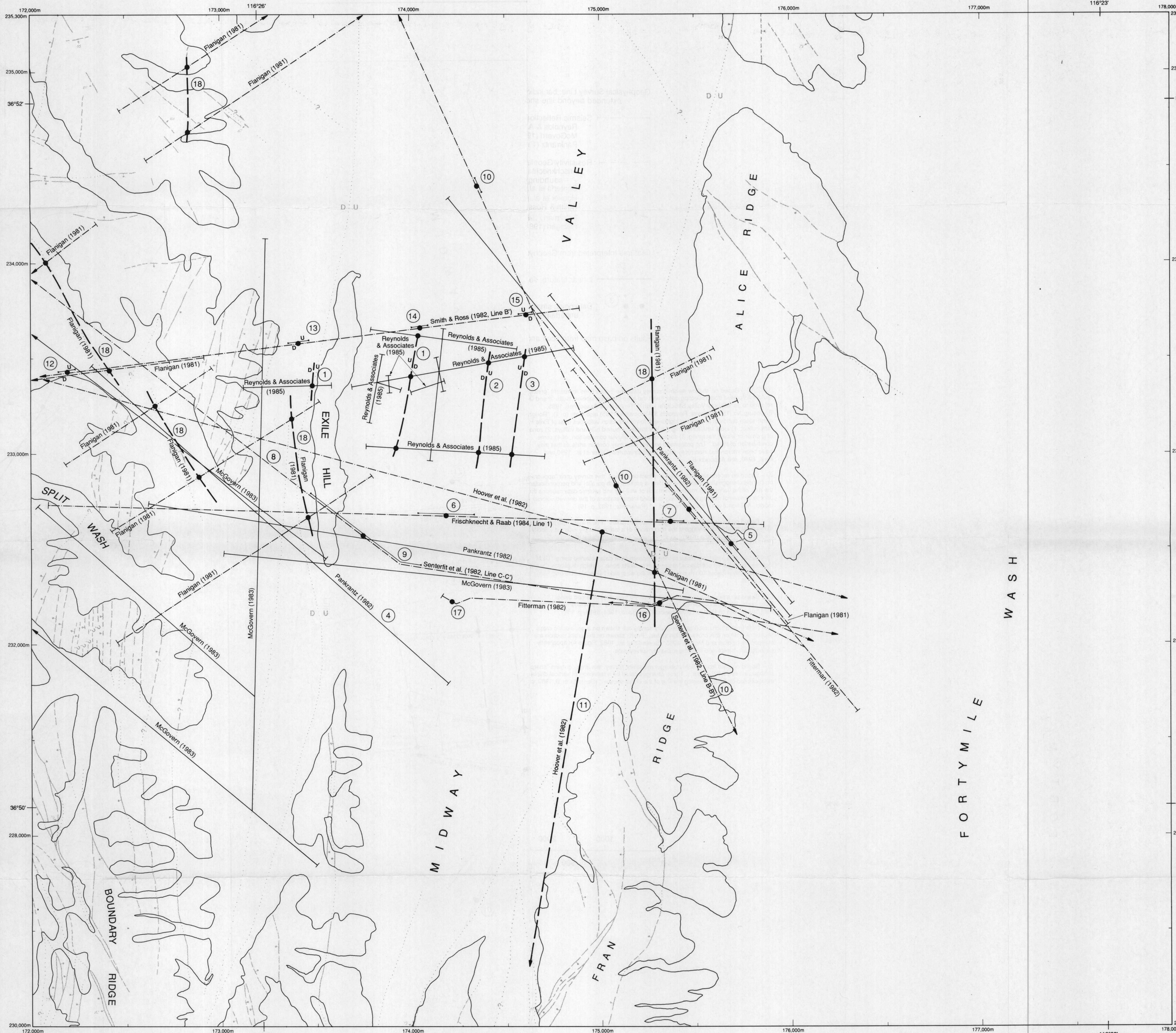

EXPLANATION

Geophysical Survey Line: bar indicates end of line; arrow indicates survey extended beyond line shown

Seismic Reflection and/or Refraction Survey Line:
- Reynolds & Associates (1985) - seismic reflection and refraction
- McGovern (1983) - seismic reflection only
- Pankrantz (1982) - seismic refraction only

Resistivity/Geoelectric Survey Line:
- Frischknecht & Raab (1984) - time-domain electromagnetic sounding
- Senterfit et al. (1982) - Schlumberger resistivity
- Hoover et al. (1982) - E-field ratio tellurics
- Smith & Ross (1982) - dipole-dipole resistivity
- Fitterman (1982) - magnetometric resistivity
- Flanigan (1981) - slingram

Features Interpreted from Geophysical Data

③ Linear feature; see notes for description

③ Data point; small triangles indicate width of feature and/or uncertainty in location; see notes for description

Faults on base map from Scott and Bonk (1984) (see Plate 1).

NOTES

①, ②, ③ -- Based on shallow seismic survey data, the heavy lines represent "principal faults interpreted from reflection data," with the area between labeled faults ② and ③ referred to as "Midway Valley Structural High?" (Reynolds & Associates, 1985, Enclosure No. 15). However, Reynolds & Associates (1985) also state (p. 1), "Roughly north-south bands of alternating higher and lower refraction velocities east of Exile Hill may reflect: 1) local structurally high or low trends or buried hills and valleys, 2) zones of greater or lesser fracturing, 3) zones of varying alluvial composition, or 4) some combination of these." The processed seismic data may contain artifacts that may have been interpreted incorrectly as geologic structures (Oliver et al., 1990 and Neal, 1986; see Appendix B).

④ -- Based on reconnaissance seismic refraction studies, this survey area "appears to be complex, suggesting that some faulting is present both parallel and perpendicular to the axis of the valley. The relative mismatch of well-log and seismic data cautions the user to beware of making excessively detailed interpretations of the derived velocity model. Additional work is vitally needed...." (Pankrantz, 1982, p. 19).

⑤ -- Based on reconnaissance seismic refraction studies, "Preliminary interpretations of the most reliable data suggest the occurrence of a major, steeply inclined velocity interface.... This interface may represent a major fault or erosional feature.... " (Pankrantz, 1982, p. 3).

⑥ -- Based on a resistivity cross section prepared from data obtained using TDEM techniques, this area contains a "major fault or faults zone.... which displaces the lower conductive layer about 400 m downward on the west side." (Fischknecht and Raab, 1984, p. 987).

⑦ -- Based on a resistivity cross section prepared from data obtained using TDEM techniques, this area contains a "major lateral discontinuity.... probably due to the Paintbrush Canyon fault.... " (Frischknecht and Raab, 1984, 1984, p. 987).

⑧ -- Data from a Schlumberger resistivity survey are shown on a geoelectric cross section. A note on this cross section states, "Faults shown on this cross section are mapped by Lipman and McKay, 1965" (Senterfit et al., 1982, Figure 4); apparently no faults are interpreted from the resistivity survey data.

⑨ -- Based on data from a Schlumberger resistivity survey, this area contains "sharp changes in resistivity values.... These changes could be a reflection of vertical displacement caused by faults crossing the line of the cross-section." (Senterfit et al, 1982, p. 3).

⑩ -- Based on data from a Schlumberger resistivity survey, "several areas of high or low resistivity are seen along cross section.... indicating significant lateral variations in rock resistivity.... changes are attributed to differences in fracturing, faulting, and lithology of the tuffs throughout the area, and to varying amounts of clay and other fine-grained materials in the alluvium" (Senterfit et al., 1982, p. 2). Features indicated along this survey line represent faults shown on a geoelectric cross section (Senterfit et al., 1982, Figure 3).

⑪ -- Based on electric-field ratio telluric field observations, this line indicates "the location of faults inferred from the telluric data" (Hoover et al., 1982, Figure 3).

⑫ -- Based on dipole-dipole resistivity/IP data, this area contains "important vertical resistivity contrasts indicative of faulting" on the west and, in the adjoining area to the east, "a pronounced low resistivity (200 ohm-m) zone" (Smith and Ross, 1982, p. 15). The vertical discontinuity is down-on-the-west, and the low-resistivity zone is described as a "fracture zone?" (Smith and Ross, 1982, Plate IV).

⑬ -- Based on dipole-dipole resistivity/IP data, this area contains a down-on-the-west vertical discontinuity (Smith and Ross, 1982, Plate IV).

⑭ -- Based on dipole-dipole resistivity/IP data, this area contains a "fault or alteration?" (Smith and Ross, 1982, Plate IV).

⑮ -- Based on dipole-dipole resistivity/IP data, this area contains a down-on-the-west vertical discontinuity (Smith and Ross, 1982, Plate IV).

⑯, ⑰ -- Based on a magnetometric resistivity survey, an "interpreted contact" (Fitterman, 1982, p. 7) is identified between a high-conductivity zone on the west and a low-conductivity zone on the east (⑯). The western edge of the high-conductivity zone (⑰) possibly coincides with the Midway Valley fault as mapped by Lipman and McKay (1965) (Fitterman, 1982, p. 15).

⑱ -- Based on electromagnetic slingram survey data, these heavy lines represent the location of "interpreted EM conductors" (Flanigan, 1981, Figure 2).

0 1000 2000 3000 4000 5000 Feet

0 500 1000 1500 Meters

D-04

Plate 4

Geophysical Survey Lines and Features Interpreted from Geophysical Data in Midway Valley

Sandia National Laboratories and Geomatrix Consultants, Inc.

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