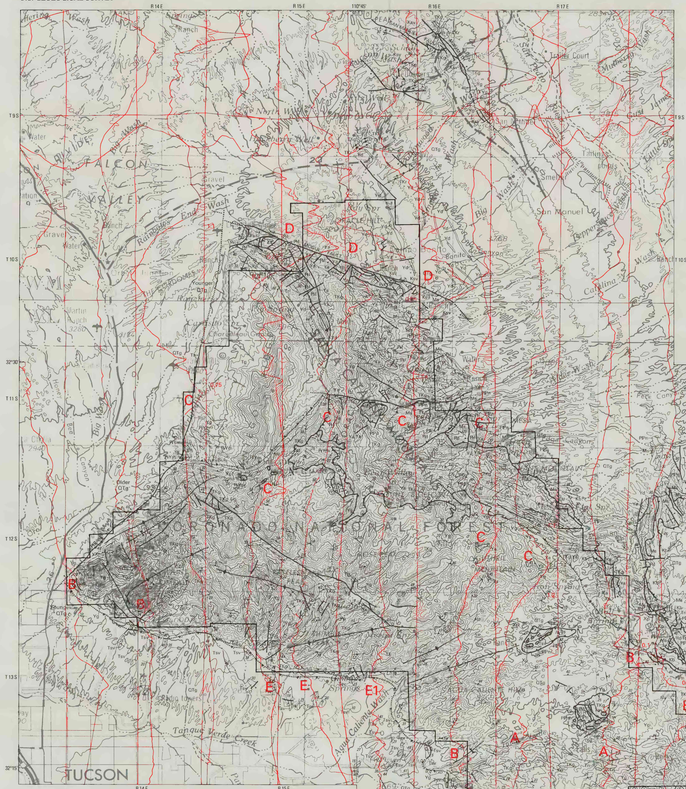
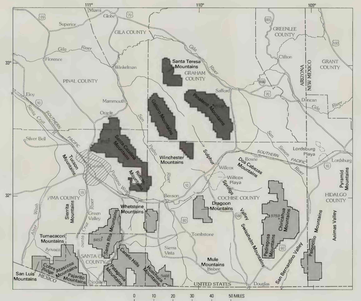
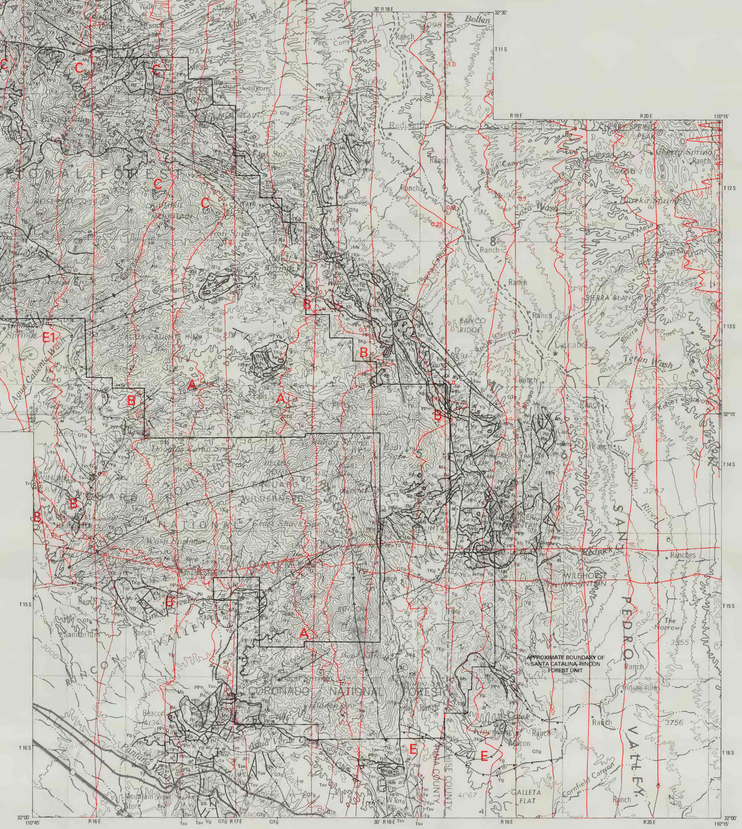
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY





INDEX MAP SHOWING LOCATION OF CORONADO NATIONAL FOREST (GRAY AREAS).
Forest units shown on this plate are dark gray.



Santa Catalina–Rincon Forest unit

EXPLANATION OF AEROMAGNETIC DATA

Residual aeromagnetic field plotted as deflection off flight path—Base value—140 nT in the Santa Catalina–Rincon Forest unit, –250 nT elsewhere, scale factor 250 nT/minute of latitude or longitude

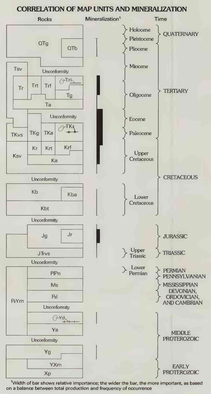
A–G — **Aeromagnetic anomaly discussed in chapter D, this volume**

0.75

Depth estimate (km)—Elevation difference between flight line and magnetic rock; estimate derived from the horizontal-extent-of-steepest-gradient method

INTRODUCTION

Residual NURE aeromagnetic field data (observed field minus the International Geomagnetic Reference Field evaluated at survey points on the survey data) minus base value) plotted as a deflection off the flight path, in the direction of the flight line, are shown in figure 1. Positive and negative anomalies, respectively. For east-west lines, deflections above (north) and below (south) of flight lines are positive and negative anomalies, respectively. A value near the mean anomaly for the data set was chosen as the base value, that is, the anomaly value that would plot on the flight path, and the scale factor was usually chosen to be about twice the standard deviation of the data. The scale factor is the number of anomaly units (nT, nanoteslas) per minute of latitude or longitude on the map. Scale factors were chosen such that plotted profiles are easily read and display as much detail in the data as possible. For the 5-km-spaced NURE data and the 1:126,720-scale maps, a scale factor equivalent to two standard deviations proved satisfactory.



DESCRIPTION OF MAP UNITS

(All units may not appear on all maps)

GTg — **Gravel, sand and conglomerate (Holocene to Miocene)**—Alluvium filling intermontane basins, on pediments, in alluvial aprons and stream terraces, and along watercourses

GTb — **Basalt (Pleistocene to Miocene)**—Lava flows and cinder deposits

Tsv — **Sedimentary and volcanic rocks, undivided (Miocene to Eocene)**—Rhyolitic to andesitic lava and tuff, and some interbedded conglomerate, sandstone, and shale

Tr — **Rhyolite (Miocene and Oligocene)**—Includes lava flows, tuffs, and subvolcanic rocks

Trt — **Rhyolitic tuffs (Miocene and Oligocene)**—Airfall tuff, ash-flow tuff, tuff breccia, welded tuff, and some sedimentary rocks

Trf — **Rhyolitic lava flows (Miocene and Oligocene)**—May include some intrusive bodies

Intrusive rocks (Miocene and Oligocene)

Rhyolite (Miocene and Oligocene)—Dikes and plugs

Tg — **Granite (Oligocene)**—Stocks

Ta — **Andesitic rocks (Oligocene)**—Lava flows, breccia deposits, and interbedded sedimentary rocks

TKg — **Intrusive rocks (Eocene to Late Cretaceous)**—Mainly Eocene to Late Cretaceous granite, monzonite, granodiorite, and diorite; some Oligocene to Late Cretaceous peraluminous two-mica and garnet-bearing granite. Includes Copper Creek Granodiorite

TKvs — **Volcanic and sedimentary rocks (Eocene to Upper Cretaceous)**—Andesitic lava flows and breccia sheets, rhyolitic tuff and welded tuff, and volcaniclastic sedimentary rocks

TKa — **Andesite (Eocene to Late Cretaceous)**—Plugs, dikes, and stocks

TKr — **Rhyolite (Eocene to Late Cretaceous)**—Plugs and dikes

Ksv — **Sedimentary and volcanic rocks, undivided (Upper Cretaceous)**—Volcaniclastic conglomerate, sandstone, lacustrine shale, and some andesitic and rhyolitic tuff

Kr — **Rhyolite (Upper Cretaceous)**—Lava flows, tuffs, and interbedded conglomeratic and sandstone

Krt — **Rhyolitic tuff (Upper Cretaceous)**—Includes airfall and ash-flow tuffs, tuff breccia, welded tuff, and sedimentary rocks

Krf — **Rhyolite lava flows (Upper Cretaceous)**—Includes some tuff and sedimentary rocks

Ka — **Andesite (Upper Cretaceous)**—Lava flows, breccia sheets, and interbedded conglomeratic and sandstone

Kb — **Bisbee Group (Lower Cretaceous)**—Mainly gray shale and siltstone, and some sandstone, conglomerate, and limestone

Kba — **Basaltic andesite and andesite (Lower Cretaceous)**—Lava flows, clastic deposits, and some dikes, sills, and plugs

Kbt — **Bathtub and Temporal Formations, undivided (Lower Cretaceous)**—Andesitic to rhyolitic rocks, conglomeratic, and sandstone

Intrusive rocks (Jurassic)

Jg — **Granite stocks**

Jr — **Rhyolite plugs**

JRvs — **Volcanic and sedimentary rocks (Jurassic to Upper Triassic)**—Rhyolitic welded tuff and lava flows; andesitic lava flows, eolian sandstone, and redbeds. Includes Walnut Gap Formation, Canelo Hills Volcanics, and Gardner Canyon and Mount Wrightson Formations

RYm — **Metamorphic rocks (Paleozoic or Middle Proterozoic)**—Metaquartzite, hornfels, and calc-silicate carbonate rocks

PPu — **Naco Group (Lower Permian and Pennsylvanian)**—Mainly limestone and dolomite; some siltstone, sandstone, and mantstone

Mu — **Sedimentary rocks (Mississippian)**—Generally cerly Escabrosa Limestone; to the east unit also includes Paradise Formation, mostly shale

Pzl — **Lower Paleozoic formations, undivided (Upper Devonian to Middle Cambrian)**—Mainly limestone and dolomite; some siltstone, shale, and conglomeratic. Includes Percha Shale, Portal, Swisshelm, Martin, El Paso, and Abrigo Formations, Coronado Sandstone, and Bolsa Quartzite

Ybas — **Diabase (Middle Proterozoic)**—Includes some metadiorite; in sills, dikes, and plugs; few shows more acidic rock

Ya — **Apache Group (Middle Proterozoic)**—Sandstone, shale, argillite, some conglomeratic, and possibly some limestone

Yg — **Intrusive rocks (Middle Proterozoic)**—Granite, granodiorite, and some alaskite, aplite, and lamprophyre

YXm — **Gneissic rocks (Middle and Early Proterozoic)**—Metamorphosed granite and older schist or gneiss

Xp — **Pinal Schist (Early Proterozoic)**—Schist, phyllite, metaquartzite, metagraywacke, and meta-igneous rocks

Contact—Dotted where concealed, queried where uncertain

Fault—Showing slip, dotted where concealed or intruded, queried where uncertain. Where solid line becomes dotted line within a map unit, that unit is a composite of several formations, of which a younger one conceals faulting in an older one

Normal fault—Ball and bar on downthrown side, dotted where concealed, queried where uncertain

Thrust fault—Sawteeth on upper plate

Glide fault—Open sawteeth on glide plate

Complex fault—Earlier thrust fault on which later glide (gravity) faulting took place

Strike-slip fault—Arrow-couple shows relative movement; queried where uncertain

Oblique-slip fault—Composite of strike-slip and normal movement likely, but either type of movement may have occurred without the other

Fold axis—Dotted where concealed; arrow shows direction of plunge

Anticline

Anticline in foliation

Overturned anticline—Side of closure of arrow ends is side of fold crest relative to fold axis

Syncline

Syncline in foliation

Overturned syncline—Side of closure of arrow ends is side of fold trough relative to fold axis

Strike and dip of beds

Horizontal

Inclined

Vertical

Overturned

Strike and dip of foliation

Inclined

Vertical

Cinder cone—Queried where uncertain

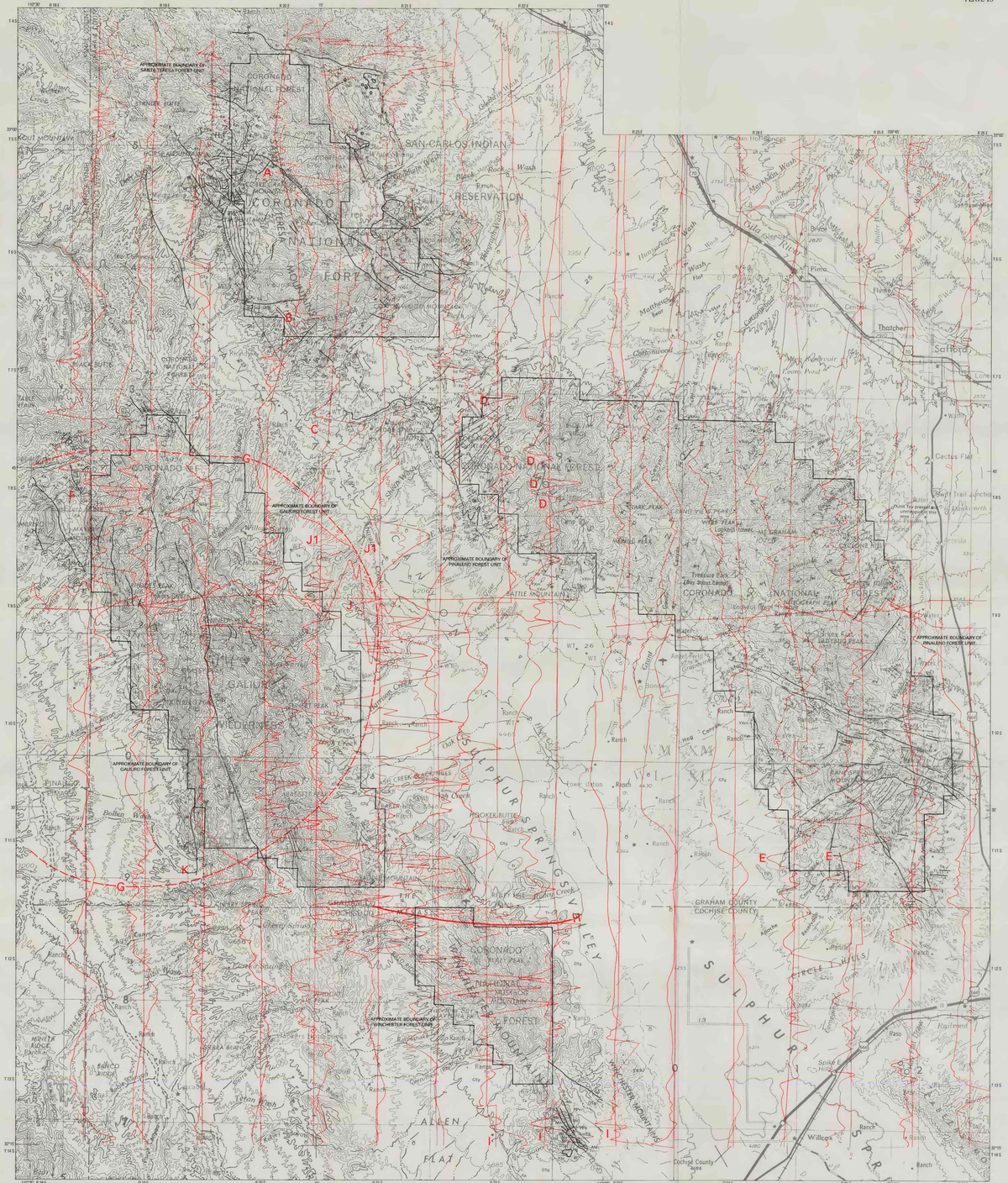
SCALE 1: 126 720

1 0 1 2 3 4 5 6 7 8 9 MILES
1 0 1 2 3 4 5 6 7 8 9 10 11 12 KILOMETERS

CONTOUR INTERVAL 200 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

NURE AEROMAGNETIC-ANOMALY PROFILES FOR THE NORTHERN PART OF CORONADO NATIONAL FOREST AND ADJACENT AREAS, SOUTHEASTERN ARIZONA AND SOUTHWESTERN NEW MEXICO

Compiled by
Mark E. Gettings
1996



Santa Teresa, Galiuro, Winchester, and Pinaleno Forest units

Geology compiled by Harold Drewes 1981