UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Geologic map of the Lynndyl 30 x 60 minute quadrangle Tooele, Juab, Utah, and Millard counties, Utah

by

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Open-File Report 84-660

This map is preliminary and has not been edited or reviewed for conformity with Geological Survey editorial standards and stratigraphic nomenclature.

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1984

DESCRIPTION OF MAP UNITS

Qa ALLUVIUM (HOLOCENE)--Stream, river, and channel deposits consisting of clay- to cobble-size, poorly-sorted, crudely stratified, and generally undissected detrital material. Locally may include alluvial fan deposits and stream terrace deposits. Overlies Lake Bonneville shoreline features

Qt STREAM TERRACE DEPOSITS (HOLOCENE)--Unconsolidated, poorly sorted alluvial deposits of silt, sand, and gravel forming a crudely layered nearly flat-lying veener on older geologic units adjacent to modern drainage channels. Mapped only along the Sevier River near Leamington

Qf FAN DEPOSITS (HOLOCENE)--Unconsolidated, poorly sorted alluvial fan deposits of sand and gravel, largely derived from older alluvial and fan deposits. Deposits are crudely stratified, sub-horizontal to moderately dipping. Commonly overlie older alluvial deposits. Locally may include alluvium and older fan deposits. Generally undissected and smaller in areal extent and volume than old fan deposits

Qp PLAYA DEPOSITS (HOLOCENE)--Unconsolidated flat-lying deposits of silt and clay derived mostly from Lake Bonneville sediments that accumulated in closed basins in or near the Old River Bed

Qd EOLIAN SAND, UNDIFFERENTIATED (HOLOCENE)--Windblown loose to weakly consolidated, coarse- to fine-grained quartz sand and silt with some clay forming flat-lying and cross-bedded deposits, active dunes, and old stabilized dunes derived principally from Lake Bonneville deposits to the south-southwest

Qad ACTIVE DUNES--Loose sands in south-central part of map area, part of which is designated Little Sahara National Recreational Area. In places active dunes overtop bedrock ridges whose exposure varies with the amount of wind action, for example, the Sand Hills

Qod OLD DUNES--Weakly consolidated sand in dunes which appear to be stabilized, at least in part, by a light cover of vegetation

Qaf ARTIFICIAL FILL (HOLOCENE)--Man-made debris, slag heaps, mine dumps, mill tailings, and earthworks constructed from local materials. Some, such as embankments for dams, highway and railroad roadbeds, and engineering structures are engineered fills; others are random accumulations of various materials. Although not shown as artificial fill much of the Intermountain Power Project site is covered with graded and compacted local and imported earth materials

Qls LANDSLIDE DEPOSITS (HOLOCENE)--Irregular bodies of rock and soil that have moved downward and outward from an adjacent source area. Many more exist than are shown.

Qh HOT SPRING DEPOSITS (HOLOCENE AND PLEISTOCENE?)--Chiefly light-gray clay, silt, and sand and reddish-brown manganese-rich calcareous tufa in a spring mound. Mound has built up around hot springs in part by precipitation of minerals from spring water but largely by entrapment of eolian sediment by vegetation and wet ground. Mapped only at Baker Hot Spring on east side of Crater Bench

Qlb DEPOSITS OF LAKE BONNEVILLE (PLEISTOCENE)--Lake sediments which consist of interlayered white, light-gray, brown, tan, and yellowish-gray clay, silt, sand, marl, and gravel. The clay, silt and sand range in color from light-gray, yellowish-gray and tan to brown depending on exposure to dessication and weathering, the light colors prevailing in natural outcrops; the fine clastic sediments commonly occur as alternating layers. Well-exposed near Leamington where thickness exceeds 80 m. Marl, widely exposed in southwest quarter of map area, is yellowish-gray to white and composed almost entirely of ostracod shells; most of the marl is laminated and massive but some is fissile. In several places the marl is underlain by rusty-colored gravel, possibly an old soil horizon. Maximum thickness of exposed marl is 5 m on east side of Drum Mountains. Locally the land surface is strewn with ooliths formed of gastropod shells coated with calcium carbonate. Black basaltic ash is present in marl near Leamington (Varnes and Van Horn, 1961; 1984), and rhyolitic ash is present in lake beds west(?) of Lynndyl (Krusi and Patterson, 1980); radiocarbon age dates from shells adjacent to basaltic ash horizons range from about 11,000 to more than 32,000 y.b.p.; dates from shells west(?) of Lynndyl range from about 11,600 to 12,700 y.b.p. The rhyolitic ash correlates with the Bishop Tuff (700,000 y.b.p.) and fission-track dates from zircons give a date of 730,000 y.b.p. (Krusi and Patterson, 1980)

Qg GRAVEL AND SAND DEPOSITS (PLEISTOCENE)--Spits, bay-mouth bars, tombolos, cuspate forelands and bars, and crescent beaches present at or below the Bonneville shoreline, elevation 1559-1593 m (Currey, 1982), but especially well-developed in western half of map area. Consist largely of reworked old alluvial fan deposits and contain moderately well-sorted sand- to cobble-size rounded clasts. Mostly lacustrine bar deposits but includes some fluviatile stream terrace gravels interbedded in lake sediments along the Old River Bed and along the Sevier River between Leamington and Lynndyl (Varnes and Van Horn, 1961; 1984). Includes The Snowplow (southeast corner of Simpson Mountains), Reservoir Butte and Cup Butte of Gilbert (1890) and numerous other well-defined and well-preserved coarse shoreline deposits

in the Slow Elk Hills, west slope of the Simpson Mountains, Keg Mountains and adjacent to Desert Mountain, and the wave-bench deposits of Galyardt and Rush (1981) on The Hogback of Crater Bench

Qoa OLD ALLUVIUM (PLEISTOCENE)--Stream, river-channel, and basin deposits consisting of clay- to small boulder-size detrital material. Poorly sorted, crudely stratified, and moderately to deeply dissected. Locally includes old stream terrace deposits

Qof OLD FAN DEPOSITS (PLEISTOCENE)--Semi-consolidated, poorly sorted alluvial deposits of sand and gravel forming large fans bordering upland areas. Deposits are crudely stratified parallel to the sloping fan surface, and commonly are deeply dissected. Old fan deposits lower than the Bonneville shoreline (elevation about 1580 m) in many places are reworked by wave action and marked by strand lines. Locally includes coarse- and fine-grained deposits of Lake Bonneville, pediment gravels, colluvium and older alluvium. Includes talus deposits in the Sheeprock Mountains and wave-worked talus deposits surrounding Crater Bench. In northeast corner of map area includes loess, alluvium and colluvium, pre-Wisconsin soil, and landslides (Goode, 1961), and east of Homansville includes old stream terrace gravels (Morris and Lovering, 1979)

Qb BASALTS OF CRATER BENCH OF GALYARDT AND RUSH (1981) (PLEISTOCENE)--Black, fine-grained flows of basaltic andesite, grading from vesicular to non-vesicular upwards from base of flow units. Fumarole Butte flows of Hogg (1972). Overlies lacustrine deposits of the Salt Lake(?) Formation; overlain by Lake Bonneville deposits. K-Ar age determined as 0.88 m.y. (Peterson and Nash, 1980) and 0.95±0.1 m.y. (Galyardt and Rush, 1981). Maximum thickness estimated to be about 180 m near Fumarole Butte thinning to a few meters at the margins

Qbc CINDER CONE (PLEISTOCENE)--Remnant of cinder cone around a vent, presumed source of basalt flows. Consists of densely welded cinders intruded by fine-grained dense basalt and surrounded by non-welded cinders

Tsl SALT LAKE FORMATION (PLIOCENE)--Predominantly reddish-brown to grayish-orange, semi-consolidated, siltstone and calcareous clay, with lesser amounts of green and red tuffaceous bentonitic clay, light-gray to white marly limestone, and thin pebble to cobble gravel lenses. Includes a poorly exposed section of reddish-brown to pink sandy silt and clay more than 30 m thick unconformably overlain by Quaternary basalt at the south edge of Crater Bench. Some tuffaceous deposits thought to correlate with the Huckleberry Ridge ash dated at 2.02 m.y. (H.T. Morris, oral commun., 1983; Izett and Wilcox, 1982)

j JASPERIOD (MIOCENE?)--Silicified and opalized Tertiary volcanic and Paleozoic carbonate rocks. Includes silicified breccia on southeast side of Gilson Mountains on or near trace of Leamington transcurrent fault

Tyb BASALT OF THE HOGBACK OF GALYARDT AND RUSH (1981) (UPPER MIOCENE)--Black vesicular tholeiitic basalt flows as much as 45 m thick that form The Hogback of Crater Bench. The North Butte flow of Hogg (1972). K-Ar age 5.26±0.42 m.y. (Galyardt and Rush, 1981) and 6.03 m.y. (Peterson and Nash, 1980)

Tc CONGLOMERATE (UPPER MIOCENE)--Reddish-brown conglomerate and interlayered sandstone containing sand- to boulder-size clasts of white to pink quartzite and lesser amounts of limestone, pumice, rhyolite, and basalt. The conglomerate locally is cemented with calcium carbonate and resistant to erosion. Thickness of exposed section exceeds 229 m. A thin tuff bed is present near base of section and clasts of Topaz Mountain Rhyolite are present near top of section. Mapped only at north end of Crater Bench as Tertiary conglomerate by Hogg (1972), Peterson and Nash (1980), and Galyardt and Rush (1981)

Tya_{1-2} TOPAZ MOUNTAIN RHYOLITE (UPPER MIOCENE)--Chiefly light-gray alkali rhyolite flows with some black virtophyre at base of flow units and some white to tan interbedded stratified tuff. Tya, light-gray rhyolite of The Hogback of Galyardt and Rush (1981) at the north end of Crater Bench. Tya_1 and Tya_2 indicate successive flow units, one being the oldest, commonly separated by tuff and(or) vitrophyre. Includes Picture Rock quartz latite porphyry and Keg Mountain tuff of Staub (1975) and related rocks in the Keg Mountains, and rhyolite flows of Dommer (1980) in the Drum Mountains which are eastward and southward extensions of the Topaz Mountain Rhyolite. Fission-track and K-Ar dates for the type Topaz Mountain Rhyolite, about 10 km west of the Keg Mountains, range from 6.1±0.4 to 6.8±0.3 m.y. and two fission-track dates from similar flows in the Keg Mountains indicate an age of about 8 m.y. (Lindsey and others, 1975; Lindsey, 1979); K-Ar dates from rhyolite of the Hogback are 6.18 m.y. (Peterson and Nash, 1980) and 6.87±0.28 m.y. (Mehnert and others, 1978; Galyardt and Rush, 1981)

Tib INTRUSIVE BRECCIA (MIOCENE)--Breccia pipes in the West Tintic and Sheeprock Mountains containing minute fragments to large blocks of Precambrian to Tertiary sedimentary and igneous rocks in a matrix of intrusive arkosic tuff (Morris and Kopf, 1967), and in the East Tintic Mountains containing blocks of quartzite, limestone, and shale in a weakly pyritized matrix of shattered quartz, sanidine and plagioclase fragments and rock flour

Teb EXTRUSIVE BRECCIA (MIOCENE)--Material erupted from breccia pipes consisting of small fragments to large blocks of Precambrian to Tertiary sedimentary and igneous rocks in a matrix of tuffaceous breccia containing shattered crystals of quartz, feldspar, and biotite. Exposed in the southern Sheeprock Mountains; mapped as diatreme(?) complex in Desert Mountain by Rees and others (1973)

Tyg YOUNGER GRANITIC ROCKS (MIOCENE)--Porphyritic stocks, plugs, and large dikes. Chiefly Sheeprock granite of Cohenour (1959) in the Sheeprock Mountains but includes rhyolite dikes and plugs in the southern Keg Mountains (Staub, 1975). The Sheeprock granite has been dated as 15 and 17 m.y. (Cohenour, 1959) and 16.7±0.3 m.y. (Armstrong, 1970)

Tyi SILVER SHIELD QUARTZ LATITE (MIDDLE MIOCENE)--Medium- to dark-gray coarsely porphyritic flows and dikes in northeast corner of map. K-Ar dates range from 17.9±0.5 to 18.3±0.5 m.y. (Laughlin and others, 1969)

Tpc PINYON CREEK CONGLOMERATE (LOWER MIOCENE)--Grayish-tan to reddish conglomerate composed of sub-angular to rounded, pebble- to boulder-size monolitholigic volcanic clasts interlayered with silt- to grit-size volcanic debris. Conspicuously bedded; lensing and channeling are common. Individual beds may be poorly- or well-sorted. The Pinyon Creek Conglomerate is mapped only in the northeast corner of map, where it is more than 305 m thick

Tog_{1-3} OLDER GRANITIC ROCKS (OLIGOCENE)--Chiefly monzonite and quartz monzonite porphyry stocks, plugs, and large dikes. Tog, numerous small porphyritic intrusive bodies of diverse composition in the Simpson Mountains. Tog_1, consists of diorite porphyry and granodiorite porphyry in the Keg Mountains, granodiorite porphyry and adamellite in Desert Mountain, quartz monzonite, quartz monzonite porphyry, monzonite porphyry and intrusive latite porphyry in the southern Sheeprock and West Tintic Mountains, and Swansea Quartz Monzonite and latite plugs and dikes in the East Tintic Mountains. Tog_2, consists of intrusive quartz latite in the Keg Mountains, granite porphyry and quartz monzonite porphyry in Desert Mountain with K-Ar dates of 26.5±0.5 and 28.5±0.6 m.y. (Armstrong, 1970), andesite intrusion breccia in the southern West Tintic Mountains, and monzonite porphyry stock of Sunrise Peak in the East Tintic Mountains. Tog_3, is monzonite porphyry stock of Silver City in the East Tintic Mountains with a K-Ar age of 31.5±0.9 m.y. (Laughlin and others, 1969). Subscripts indicate relative age of units in any mountain range, one being the oldest

Togs OLDER GRANITIC SILLS (OLIGOCENE)--Thick and extensive sills of monzonite porphyry in the East Tintic Mountains. Equivalent to the monzonite porphyry stock of Sunrise Peak from which the sills originated

Toa OLDER ACIDIC VOLCANIC ROCKS (OLIGOCENE)--Chiefly rhyolitic and quartz latitic welded ash-flow tuff in the northern Keg Mountains (Shawe, 1972; Lindsey and others, 1975) and Red Mountain crystal tuffs of Staub (1975) in the southern Keg Mountains

Toi_{1-3} OLDER INTERMEDIATE VOLCANIC ROCKS (OLIGOCENE)--Chiefly latite or quartz latite flows. Toi, is the Judd Creek latite of Thomas (1958) on the east side of the Simpson Mountains but includes several small isolated volcanic outcrops on the west side called pitchstone and trachyte by Gilbert (1890). Toi_1, consists of the Packard and Fernow Quartz Latites in and south of the East Tintic Mountains, latite and quartz latite flows cut by olivine basalt dikes in the West Tintic Mountains, quartz latite in the western Sheeprock Mountains, rhyolitic to quartz latitic volcanic rocks in Desert Mountain, and latitic, andesitic, and basaltic flows and agglomerates in the Keg Mountains. Biotite and sanidine from the Packard Quartz Latite yielded isotopic ages of 32.8 ± 1.0 and 32.7 ± 1.0 (Laughlin and others, 1969). Toi_2, consists of andesite or latite in the southern Sheeprock Mountains, rhyolite porphyry and quartz latite in Desert Mountain, latitic volcanic rocks in the Keg Mountains, and latites of the Tintic Mountain Volcanic Group in the East Tintic Mountains. A whole-rock age determination of the Big Canyon Latite of the Tintic Mountain Volcanic Group yielded an anomolus age of 35.3 ± 1.4 m.y. (Morris and Lovering, 1979). Toi_3, consists of latites of the Laguna Springs Volcanic Group in the northern East Tintic Mountains. Apparent isotopic age of the Tintic Delmar Latite, youngest extrusive unit of the Laguna Springs Volcanic Group, from K-Ar analysis of coexisting biotite and hornblende, is 32.2 ± 1.0 and 32.3 ± 1.0 m.y. (Laughlin and others, 1969). Subscripts indicate relative age of units in any mountain range, one being the oldest

$Tovs_{1-2}$ OLDER VOLCANO-SEDIMENTARY ROCKS (OLIGOCENE)--$Tovs_1$, chiefly weakly cemented volcanic cobble conglomerate of the Golden's Ranch Formation of Muessig (1951) in southeast corner of map. Approximately equivalent in age to the Tintic Mountain Volcanic Group (Toi_2), some of the Laguna Springs Volcanic Group (Toi_3), and possibly some of the Fernow Quartz Latite (Toi_1). Includes pinkish-gray andesite crystal tuff of Higgins (1982) which rests unformably on Tertiary and (or) Cretaceous conglomerate (TKc). $Tovs_2$, light- to medium-gray medium bedded limestone lenses of the Sage Valley Limestone Member of Muessig (1951) in the volcanic conglomerate. Conglomerate cut by numerous east-trending manganese-bearing carbonate veins

Tob OLDER BASIC VOLCANIC ROCKS (OLIGOCENE)--Undivided andesite flows and breccias of Dommer (1980) in the Drum Mountains, and glassy basaltic sills of Higgins (1982) at southeast edge of Gilson Mountains

Ts PREVOLCANIC SEDIMENTARY DEPOSITS (OLIGOCENE)--Chiefly fanglomerate and alluvium on east side of the Canyon Range and west side of Long Ridge but also includes small patches of conglomerate and volcanic gravels in the West Tintic Mountains and the Apex Conglomerate in the East Tintic Mountains. Locally exceeds 91 m in thickness

Tf FLAGSTAFF LIMESTONE (EOCENE AND PALEOCENE)--Cream-colored algal limestone and sandstone present only in extreme southeast corner of map where a tongue of red, well-cemented cobble conglomerate is interlayered with the limestone

TKn NORTH HORN FORMATION (PALEOCENE AND UPPER CRETACEOUS)--Brick-red conglomerate, sandstone, siltstone and some silty and sandy limestone. Present only in extreme southeast corner of map

TKc CANYON RANGE FORMATION OF STOLLE (1978) (PALEOCENE AND(OR) UPPER CRETACEOUS)--Synorogenic poorly-sorted, red-weathering, weakly-cemented, pebble to cobble conglomerate with brick-red sandstone and shale interbeds overlain by an interbedded sequence of yellowish-orange to purplish-gray coarse to fine clastic and limestone strata. Correlated with the Flagstaff, North Horn, and Price River Formations farther east. Present along east side of the Canyon Range. Originally mapped by Christiansen (1952) as Upper Cretaceous Indianola(?) Group. Called Paleocene and Upper Cretaceous North Horn Formation, Price River Formation and Indianola Group undivided by Campbell (1979), and mapped by Higgins (1982) as Tertiary and Cretaceous Conglomerate of Leamington Pass. Locally contains large slide blocks of limestone

Pp PARK CITY FORMATION (UPPER AND LOWER PERMIAN)--Chiefly gray, medium-bedded cherty dolomite of the Franson and Grandeur Members of the Park City Formation separated by a brownish-black, thin-bedded cherty phosphatic mudstone tongue of the Meade Peak Member of the Phosphoria Formation. Exposed in southern East Tintic and Gilson Mountains

Pdc DIAMOND CREEK SANDSTONE (LOWER PERMIAN)--Largely white to red, massive, friable, cross-bedded, calcareous sandstone with interlayered gray to pink dolomite, limestone, and sandy dolomite. Exposed in southern East Tintic and eastern Gilson Mountains

PPo OQUIRRH GROUP (LOWER PERMIAN TO LOWER PENNSYLVANIAN)--Blue-gray, medium-bedded cherty silty limestone, gray, medium-bedded to massive, medium-grained cherty dolomite, red-brown-weathering, fine-grained sandstone and quartzite, medium- to dark-gray, medium-bedded cherty and silty limestone, and medium-blue-gray, thin- to medium-bedded silty and sandy limestone interlayered in various combinations. Includes the West Canyon, Butterfield Peaks, Bingham Mine, and Furner Valley Formations in the southern East Tintic

Mountains (Morris and others, 1977). Exposed in east half of map area.

Mu GREAT BLUE AND HUMBUG FORMATIONS, AND DESERET LIMESTONE (UPPER MISSISSIPPIAN)--Fissile black shale interlayered with some olive-drab, medium-grained quartzite beds, medium-bedded, medium-grained, blue-gray cherty limestone, light-gray limestone interlayered with medium- to coarse-grained quartzitic sandstone, blue-gray, medium- to thick-bedded cherty limestone, and some sandstone and carbonaceous and phosphatic shale. Present in east half of map area

MD GARDISON LIMESTONE AND FITCHVILLE FORMATION (LOWER MISSISSIPPIAN AND UPPER DEVONIAN)--Chiefly prominantly bedded, dark- to medium-blue-gray partly cherty limestone with abundant well-preserved fossils, and some blue argillaceous limestone, massive light-gray to white medium-grained limestone, blue-gray, thin-bedded shaly limestone, dusky-blue-gray, massive cherty dolomite, quartzite, pinkish-gray lithographic limestone, and medium- to dark-gray, dense stromatolitic limestone. Present in east half of map area. The Gardison is wholly Lower Mississippian. The Fitchville, as exposed in the East Tintic Mountains, is Lower Mississippian and Upper Devonian. In the Gilson and southern Sheeprock Mountains the Fitchville was thought to be wholly Lower Mississippian but may contain Upper Devonian strata. No Fitchville is present in map unit MD in the southern West Tintic Mountains

Du PINYON PEAK LIMESTONE AND VICTORIA FORMATION (UPPER DEVONIAN)--Light-blue-gray to dark-blue, fine-grained, thin-bedded to massive, silt-streaked limestone, buff to light-brown, medium-grained, massive sandstone and quartzite, and medium-gray, medium-bedded interlayered dolomite and sandstone. Mapped as Pinyon Peak Limestone and Victoria Formation in East Tintic and Gilson Mountains and Pinyon Peak Limestone in southern Sheeprock Mountains where the Victoria is absent

Dm SIMONSON FORMATION (MIDDLE DEVONIAN)--Medium- and dark-brownish-gray, coarse- to medium-grained, color-banded dolomite. Present in the southern Sheeprock Mountains, where it contains a significant dolomite megabreccia lens, and in the Gilson and eastern Simpson Mountains. Unconformity at top cuts out Guilmette Dolomite

Dl SEVY DOLOMITE (LOWER DEVONIAN)--Grayish-white-weathering, light-gray, fine-grained to dense dolomite, containing scattered grains of frosted clear quartz. Present in the east side of the Simpson Mountains, Sheeprock, Black and Gilson Mountains

Sm LAKETOWN DOLOMITE (MIDDLE SILURIAN)--Gray, aphanitic to coarse-grained, medium- to thick-bedded, faintly laminated

dolomite, dark- to medium-gray, medium- to coarse-grained, thin-bedded crystalline cherty dolomite containing one or more stromatolitic horizons. Present west of the East Tintic Mountains

DOb BLUEBELL DOLOMITE (UPPER, MIDDLE, AND LOWER DEVONIAN, MIDDLE SILURIAN, AND UPPER ORDOVICIAN)--Medium- to dark-gray, medium- to thick-bedded, medium- to coarse-grained, moderately fossiliferous, locally mottled and cherty dolomite, with a prominant stromatolitic horizon near the middle, and medium-gray, thin- to medium-bedded, fine-grained laminated dolomite. Lithologically similar to the Fish Haven Dolomite. Silurian portion of Bluebell directly equivalent to the Laketown Dolomite. Formation is mapped only in the East Tintic Mountains

Ou FISH HAVEN DOLOMITE (UPPER ORDOVICIAN)--Light- to dark-gray, thin- to massive-bedded, medium- to coarse-grained cherty dolomite, with a massive ledge-forming mottled granular dolomite bed at top. Present in eastern two-thirds of map area

Om SWAN PEAK FORMATION (MIDDLE ORDOVICIAN)--Chiefly white to tan, medium-grained, well-sorted quartzite, with some beds and pockets of sandstone and some reddish and greenish phosphatic quartzite at the base. Present only in the Simpson and Sheeprock Mountains, above Sheeprock thrust

Ol POGONIP GROUP AND OPOHONGA LIMESTONE (LOWER ORDOVICIAN)--Chiefly light-blue-gray, thin- to medium-bedded, fine-grained, silt-streaked limestone containing flat-pebble conglomerate layers, and locally an upper unit of shale. Mapped as the Pogonip Group in and near the Sheeprock Mountains, above the Tintic Valley thrust, and equivalent Opohonga Limestone in the East Tintic Mountains

Ꞓu UPPER CAMBRIAN STRATA--Medium- to dark-gray, partly mottled, medium-bedded cherty dolomite, creamy-white, medium- and coarse-grained massive dolomite, medium- to dark-gray, massive-bedded cherty dolomite, and light-gray, thin-bedded limestone, shale, sandstone and dolomite. Mapped as the Ajax Dolomite and Opex Formation in northeast corner of map, beneath the Tintic Valley thrust; in the Sand Hills and Black Mountains equivalent to the Notch Peak, Orr, and Weeks formations

Ꞓm MIDDLE CAMBRIAN STRATA--Chiefly light- to dark-gray limestone and dolomite with some shale intervals. Consists of the Pierson Cove Formation, Wheeler Shale, Swasey Limestone, Whirlwind Formation, Dome Limestone, Chisholm Formation, Howell Limestone, and Tatow Member of the Pioche Formation in the western and southern parts of map area (Dommer, 1980; Higgins, 1982), all or part of the Cole Canyon Dolomite, Marjum Formation, Wheeler Formation, Swasey

Limestone, Whirlwind Formation, Dome Limestone, Chisholm Shale, Howell Limestone, Tatow Formation and Pioche Shale in the Sheeprock Mountains (Christie-Blick, 1983), and the Cole Canyon Dolomite, Bluebird Dolomite, Herkimer Limestone, Dagmar Dolomite, Teutonic Limestone and Ophir Formation in the East Tintic Mountains (Morris and Lovering, 1979)

Cl PROSPECT MOUNTAIN AND TINTIC QUARTZITES (LOWER CAMBRIAN)--Chiefly white to buff, medium-grained, prominantly bedded to massive quartzite, shaly at top and locally conglomeratic at base. Mapped as Tintic Quartzite in East Tintic Mountains and Prospect Mountain Quartzite and all (Blick, 1979; Thomas, 1958) or the lower part (Dommer, 1980) of the Pioche Formation in the remainder of map area

PZ PALEOZOIC STRATA, UNDIFFERENTIATED--Present as a small thrust slice in the West Tintic Mountains

Zmi MUTUAL AND INKOM FORMATIONS (PRECAMBRIAN Z)--Light-pink to purple, poorly-sorted, cliff-forming grit and pebble quartzite conglomerate with lenticular bedding, and grayish-green, slope-forming silty shale and siltstone. Well exposed in the Drum, Simpson, Sheeprock Mountains, and Canyon Range

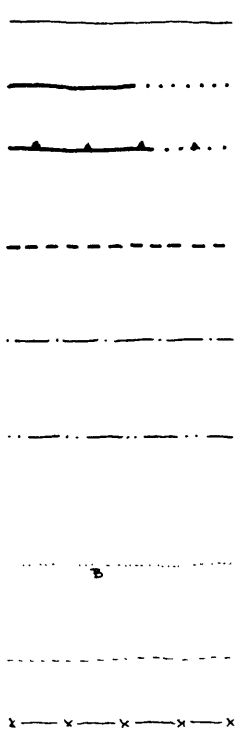
Yu SHEEPROCK SERIES OF COHENOUR (1959), UNDIFFERENTIATED (PRECAMBRIAN Y)--Olive-green to brown phyllitic shale and medium- to coarse-grained quartzite. Includes strata mapped as Big Cottonwood Formation in the East Tintic Mountains

Ysu UPPER PART OF SHEEPROCK SERIES--Chiefly buff to white, fine- to medium-grained vitreous quartzite with some olive-green to purple phyllitic argillite and siltstone, and olive-green to gray, locally micaceous shale, siltstone and fine-grained sandstone and quartzite. Present in the Drum, Sheeprock, and Gilson Mountains; sections exposed in Drum and Gilson Mountains are less-well-sorted and coarser-grained being largely grit and pebble conglomerate. Mapped as Caddy Canyon Quartzite in the Drum (Dommer, 1980) and Gilson (Higgins, 1982) Mountains, and Caddy Canyon and Kelley Canyon Formations in the Sheeprock Mountains (Christie-Blick, 1982)

Ydp DUTCH PEAK FORMATION OF CHRISTIE-BLICK (1982)--Chiefly dark-olive-green to brown diamictite, graywacke and conglomerate with some interbeds of slate, argillite, quartzite, and grit. Clasts in the diamictite range from sand- to boulder-size, commonly are rounded, and consist mainly of granitic and carbonate rocks, quartzite, and schist.Exposed only in the Sheeprock Mountains. Equivalent to the Dutch Peak Tillite of Cohenour (1959)

Ysl LOWER PART OF SHEEPROCK SERIES--Chiefly gray to tan, fine- to medium-grained vitreous quartzite with interbeds of

conglomerate and grit and some diabase sills, green to black diamictite, and silver-gray to greenish-black phyllitic agrillite containing some sandstone interbeds. Equivalent to the Otts Canyon formation of Christie-Blick (1982). Extensively exposed in the Simpson and Sheeprock Mountains and Allison Knolls. Includes small quartzite exposures on east side of Desert Mountain questionably assigned to the lower Sheeprock Series by Kattelman (1968)



Contact

Fault, dotted where concealed

Thrust fault, saw-teeth on upper plate. Dotted where concealed

Open fissure in Basalt of Crater bench, commonly fault-associated. Partly filled with lake deposits (Qlb)

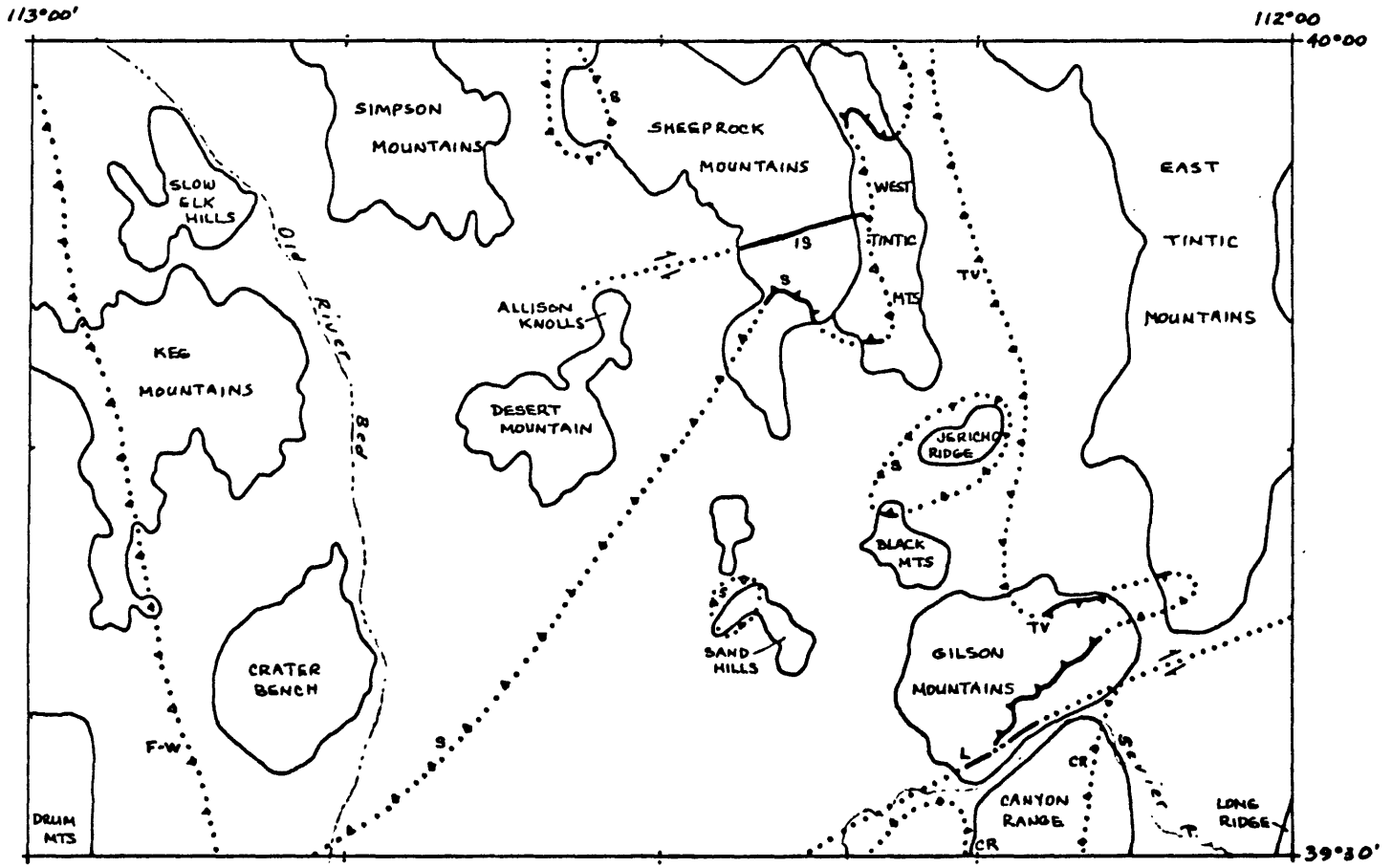
Lineament, from aerial photographs; hachures on down side. Origin unknown but may be fault-associated

Inferred boundary of caldera in East Tintic Mountains believed to have formed following eruption of Packard and Fernow Quartz Latites

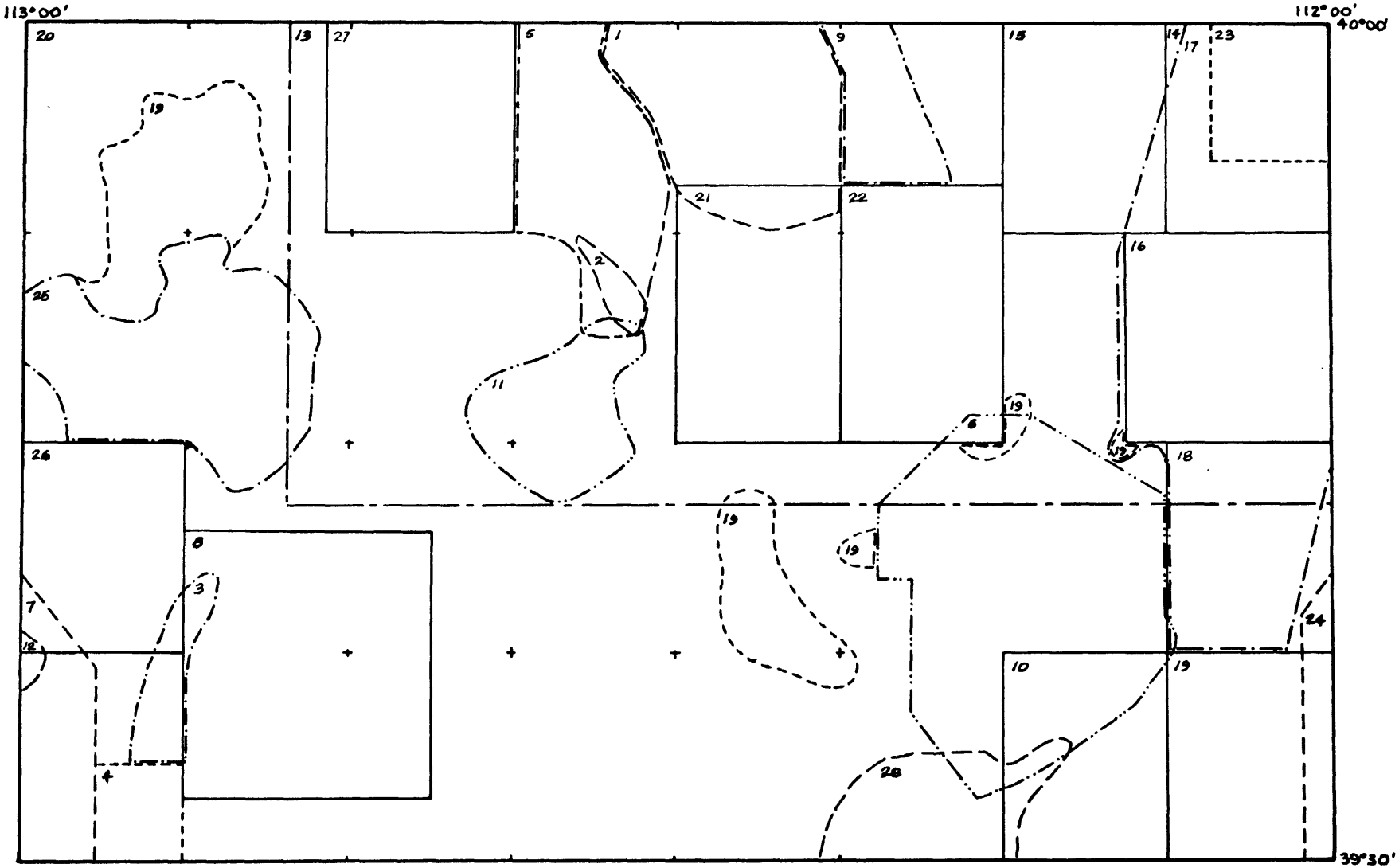
Lake Bonneville shoreline: B, Bonneville stage, 1559-1593 m; P, Provo stage, 1462-1477 m

Strandlines of Pleistocene lakes

Boundary of Intermountain Power Project site



Generalized map showing structural framework of the Lynndyl quadrangle as determined from distribution of pre-Tertiary sedimentary rocks. F-W, Frisco-Wah Wah thrust; IS, Indian Spring transcurrent fault; L, Leamington transcurrent fault; S, Sheeprock thrust: TV, Tintic Valley thrust. Faults are dotted where concealed; sawteeth are on upper plate of thrust fault; arrows indicate relative movement. After Morris (1983).



INDEX TO GEOLOGIC MAPPING, LYNNDYL 30x 60 MINUTE OUADRANGLE, UTAH

INDEX TO GEOLOGIC MAPPING, LYNNDYL 30 x 60 MINUTE QUADRANGLE, UTAH

(Bedrock--and locally surficial--geology compiled or adapted from these sources)

1. Blick (1979) and Christie-Blick (1982; 1983)
2. Blick (1979)
3. Faults from Bucknam and Anderson (1979) and R. C. Bucknam, unpubl. data, 1982, with additions
4. Faults from Bucknam and Anderson (1979) and Crone (1983), with additions
5. Cohenour (1959), modified by Morris (1978), with additions
6. Costain (1960) and Morris (1978)
7. Dommer (1980), with additions and modifications
8. Galyardt and Rush (1981), with additions and modifications
9. Groff (1959) modified by Morris (1978), with additions
10. Higgins (1982)
11. Kattelman (1968) and Rees and others (1973), modified by Morris (1978)
12. Lindsey (1979)
13. Mabey and Morris (1967) and Morris (sketch map, 1977)
14. Morris (1964a)
15. Morris (1964b)
16. Morris (1975)
17. Morris (sketch map, 1975)
18. Morris (1977)
19. Morris (1978), with additions and modifications
20. Morris (1983) and H. T. Morris, oral commun., 1984
21. Morris and Kopf (1970a), with modifications
22. Morris and Kopf (1970b; 1967), with modifications
23. Morris and Lovering (1979)

24. Muessig (1951)

25. Shawe (1972) and Lindsey and others (1975), modified by Morris (1978), with additions

26. Staub (1975) modified by Morris (1978), with additions

27. Thomas (1958) modified by Morris (1978)

28. Varnes and Van Horn (1984; unpubl. data, 1981)

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CORRELATION OF MAP UNITS