FIELD STUDIES MAP 1 GEOLOGIC MAP OF THE BETTLES WELL QUADRANGLE, NEVADA **NEVADA BUREAU OF MINES AND GEOLOGY** B, Qac ALLUYIUM AND COLLUVIUM (Quaternary)
Unconsolidated sand and gravel, alluvial fan, talus, Qac and slopewash deposits. Qt Qls Qt TALUS DEPOSITS (Quaternary) Unconsolidated sandy to gravelly talus deposits. unconformity Ols Unconsolidated landslide deposits generally QTac composed of underlying or adjacent units. QTac OLDER ALLUVIUM AND COLLUVIUM (Quaternary and/or Tertiary) Consolidated and unconsolidated sand and gravel, alluvial fan, talus, and slopewash deposits. unconformity Tb BASALT AND BASALTIC ANDESITE (Pliocene and/or Miocene) Dark-gray to black aphanitic flows; phenocryst-poor lavas contain small (1 mm or less) Citac plagioclase phenocrysts. Ta Ts SEDIMENTARY ROCKS (Pllocene and/or Miocene) Fine-grained volcanogenic lacustrine sediments and partially consolidated fluvial gravels and unconformity Tr RHYODACITE (Pliocene and/or Miocene) Intrusive rhyodacite, locally massive and locally containing ТЫ Ttgm well-developed cooling joints. Ttu UNDIFFERENTIATED TUFF (Miocene) ТКр Ta ANDESITE (Miocene) Extrusive andesite flows, breccia, lahars, and local hypabyssal intrusive bodies. Locally interbedded with thin volcanogenic Kg₁ Kg₂ sedimentary units. Tts SINGATSE TUFF (Oligocene) Brown to red brown, moderately to densely welded, and crystal Jd rich; contains abundant lithic fragments. Crystals are plagioclase, quartz, sanidine, biotite, and hornblende. Dated locally with K-Ar (biotite) as 27.2 ± 1.1 Ma (Proffett, 1977). GUILD MINE MEMBER OF THE MICKEY PASS Ttgm TUFF (Oligocene) Dense to moderately welded, basal vitrophyre. The tuff typically contains abundant pumice fragments throughout. Crystals are plagioclase, quartz, sanidine, and biotite. Dated locally with K-Ar (biotite, sanidine) as 27.1 ± 0.9 Ma and 28.0 ± 1.0 Ma (Proffett, 1977), and 27.6 \pm 0.8 Ma (Ekren and others, 1980). Tbl BETTLES LAVA (Ollgocene) Siliceous lava underlying andesite unit (Ta). Stratigraphic relationship with the Singatse and Guild Mine tuffs unknown. Dense, well-foliated, crystal-rich lava containing sparse lithic fragments. Crystals are plagioclase and biotite. Undated. MAP SYMBOLS TKp FELDSPAR PORPHYRY (Tertiary and/or Cretaceous) Light-gray porphyry intrusive rocks containing phenocrysts of feldspar. GRANITOID (Cretaceous) Granite to quartz mon-Contact Dashed where approximately located. Kg₂ GRANITIC INTRUSIVE (Cretaceous) Undifferentiated and undated granitic intrusive rocks. High-angle Fault Dashed where approximately located, Jd DUNLAP FORMATION (Jurassic) Terrigenous dotted where concealed; ball on downthrown side where clastic rocks and locally minor interbedded carbonate relative displacement known; arrows indicate relative lateral displacement when known; A and T indicate away and toward rocks. Terrigenous clastic rocks are characterized by coarse relationships of strike slip faults on cross sections. chert breccia, carbonate breccia, volcanic breccia, and abundant quartz and/or feldspar sandstone in an argillite matrix. The formation resides in numerous thrust nappes and -----may represent diverse ages and sites of deposition (Oldow and Bartel, 1987). Thrust fault Teeth on upper plate; dashed where approximately located, dotted where concealed. LUNING FORMATION (Upper Triassic) Consists of interbedded members of carbonate and terrigenous clastic rocks (Oldow, 1981). Carbonates are Strike and dip of bedding generally thin- to medium-bedded gray to black timestone and locally dolomite. Terrigenous clastic rocks are interbedded chert-quartz sandstone, chert-pebble conglomerate, and argillite. Three stratigraphic members, (in descending stratigraphic order; Talu, Talm, and Tall) are recognized in parts of the map area. In other areas, lithologic divisions have no stratigraphic significance (Tilc and Tils). Tilu Upper Member: medium bedded carbonate (80%), consisting of limestone passing upward into dolomite, with about 20% interbedded argillite. ---- Axial-trace D₁ fold Middle Member: chert-pebble and boulder conglomerate, chert-quartz arenite and wacke, and massive sandy mudstone. ----- Axial-trace D₂ fold Lower Member: thin- to thick-bedded limestone, commonly very fossiliferous, with up to 80% interbedded argillite. Talc Undifferentiated carbonate rocks of the Luning Formation. Undifferentiated siliciclastic rocks of the Luning REFERENCES Ekren, E. B., Byers, F. M., Jr., Hardyman, R. F., Marvin, R. F., and Silberman, M. L., 1980, Stratigraphy, preliminary 1 KILOMETER petrology, and some structural features of Tertiary volcanic rocks in the Gabbs Valley and Gillis Ranges, Mineral County, Nevada: U.S. Geological Survey Bulletin 1464, Oldow, J. S., 1981, Structure and stratigraphy of the Luning allochthon and the kinematics of allochthon emplacement, Pilot Mountains, west-central Nevada: Geological Society of America Bulletin, v. 92, Part I, p. 888-911, Part II, p. Oldow, J. S., and Bartel, R. L., 1987, Early to Middle(?) Jurassic extensional tectonism in the western Great Basin: Growth faulting and synorogenic deposition of the Dunlap Formation: Geology, v. 15, p. 740-743. Proffett, J. M., Jr., 1977, Cenozoic geology of the Yerington Scale 1:24,000 district, Nevada, and implications for the nature and origin of Basin and Range faulting: Geological Society of America Bulletin, v. 88, p. 247-266. CONTOUR INTERVAL 40 FEET Base map: U.S. Geological Survey Bettles Well 71/21 Draft reviewed by: R. F. Hardyman, USGS L. J. Garside, NBMG D. A. Davis, NBMG Quadrangle, 1980 First edition, first printing, 1992, 500 copies Printed by A. Carlisle, Reno, NV Edited by Dick Meeuwig Cartography by Kris Pizarro Typography by Rayetta Buckley and Kris Pizarro Nevada Bureau of Mines and Geology University of Nevada, Mail Stop 178 Reno, Nevada 89557-0088