STOP DESCRIPTIONS

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STOP 1—REID'S PIT

Relationships among Glen Mountains Layered Complex, Glen Creek Gabbro, Cold Springs Breccia, and late diabase. Secs. 13–14, T. 4 N., R. 17 W., Kiowa County, Oklahoma. **B. N. Powell** and **M. C. Gilbert**.

Introduction

This stop beautifully displays many key relations within the Raggedy Mountain Gabbro Group. Deep Permian weathering in a coarsely recrystallized zone along the upper intrusive contact of the Glen Creek Gabbro with the host Glen Mountains Layered Complex has provided material useful for road bases and drilling pads. Excavation over the past 20 years has exposed many intrusive and structural relations. In order to simplify the discussion, and to key the illustrations to exposures within the excavated area, the pit has been arbitrarily divided into reference segments as shown in figure 73. The geology is shown in figures 74 and 75, with the approximate outline of the excavated area. The "west" pit is that part in sec. 14 west of Glen Creek. This is the oldest area of excavations, where attention was centered on a magnetite prospect. There are now 11 separate pit centers in the west segment alone.

The "east" pit represents all the excavated area east of Glen Creek. This is the most recently excavated, with the latest activity far to the east in sec. 13. E–14 refers to the segment east of Glen Creek that lies in sec. 14. Three distinct levels of quarrying require additional breakdown into lower, middle, and upper sections. The lower E–14 is almost at the level of Glen Creek. E–13 refers to the rest of the pit area, where removal is still in progress, and where, in general, less impressive features are seen. Figure 76 is the view westward from E–13 showing the excavated contact between the underlying darker, intrusive Glen Creek Gabbro and the overlying slightly altered and whiter M Zone of the Glen Mountains Layered Complex, dipping to the north.

The area shown in figure 74 was originally mapped and described by Chase (1950a), followed by Gilbert (1960), Hiss (1960), and Spencer (1961). The nomenclature used in the lithostratigraphy has been revised by Powell and others (1980) and is given in table 2. The Glen Mountains Layered Complex is the oldest formation in the Raggedy Mountain Gabbro Group, and both the L and M Zones of the complex are exposed in the area. The complex is the host rock into which the Glen Creek Gabbro intruded. Two modifications of the geologic relations have been made since the original mapping: (1) what we now recognize as the Glen Creek Gabbro was called "olivine diallage gabbro" by Chase, and was called the "biotite–olivine facies of the L Zone" by Gilbert, and (2) a "basic pegmatite" recognized by Gilbert may be a late-stage offshoot of the hydrous Glen Creek Gabbro or local, remelted pods of the layered complex.

Most of the terrane is in the M Zone, dominated by plagioclase and olivine cumulates. Layering is commonly defined by plagioclase lamination and by alternating bands of anorthosite and gabbro (grating structure). Finely ophitic augite, which may stand out in relief, and olivine, which weathers to pits, dominate the surface features of the outcrops. These textures are well displayed on the north-dipping, dip slope exposed in SW$\frac{1}{4}$ sec. 14. Loose boulders of M Zone rock are found in the E–14 middle section of the pit, where these features can be studied in three dimensions (figs. 77, 78). Clumps of ophitic pyroxenes may represent paths of migrating liquid through the accumulating magmatic deposit.

Modal data on the rocks of the area were extracted from Hiss (1960) and are presented in table 19. Chemical and modal data from outcrops of the M Zone were taken from Alipouraghtapeh (1979) and are shown in table 20. The significance of bulk chemical determinations from rocks that are highly

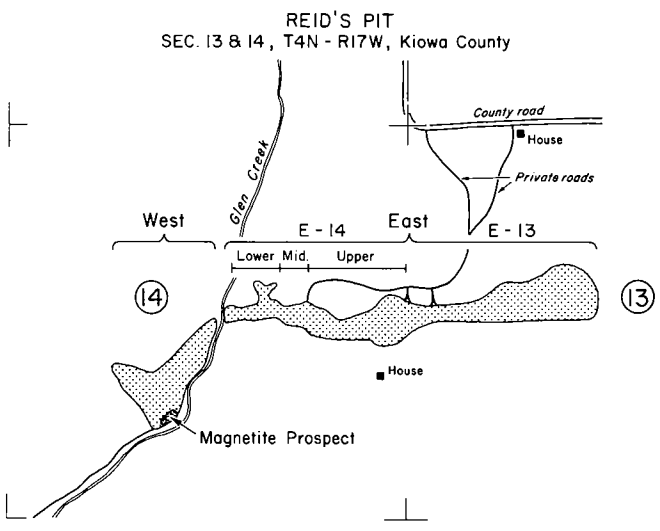

Figure 73. Location map for features in Reid's Pit.