Newberry Volcano of central Oregon is located in a complex, extensional tectonic setting at the intersection of the Basin and Range, High Lava Plains, and Cascade Arc provinces (Figure 1). Several major fracture systems surround and converge near Newberry, including the Bootstrap (northeast-westsouth trending), Tumalo (northnorthwest-southsouthwest trending), and Walker Rim (northeast) fault zones. With a volume of greater than 450 km$^3$, Newberry ranks among the largest volcanic systems in the contiguous United States and is associated with over 400 basaltic and andesite fissure vents along the Lake Pleasant rift (Figure 3). McAlester and Shroder (1988) observed that the linear distribution of fractures and fissures was the result of a linear trend and they noted that these fractures form a single continuous system. They also observed that these fractures are the result of some factors that control magma emplacement. The structure-controlled, eruptive fissure system identified by McAlester and Shroder (1988) and Shroder (1976) has significant merit, supporting statistical analysis of the fracture distribution patterns and regional trends in the area. McAlester and Shroder (1988) observed that the linear distribution of fractures and fissures was the result of a linear trend and they noted that these fractures form a single continuous system. They also observed that these fractures are the result of some factors that control magma emplacement. The structure-controlled, eruptive fissure system identified by McAlester and Shroder (1988) and Shroder (1976) has significant merit, supporting statistical analysis of the fracture distribution patterns and regional trends in the area.

2. INTRODUCTION

CLD cones are potential geologic features that provide a surface record of magmatic emplacement processes through time. Numerous workers have described that CLD cones commonly occur in sets with clustered or aligned spatial patterns, rather than being distributed uniformly. The interaction of CLD cones with their environment has been studied extensively, but recent studies have focused on the geologic setting of CLD cones and on the mechanisms that control their formation. In this study, we explore the influence of CLD cones on the geologic setting of Newberry Volcano and on the mechanisms that control their formation. We use a combination of geologic, geophysical, and geochemical data to map the CLD cones and to determine their spatial relationships to the geologic setting of Newberry Volcano.

3. GEOLOGIC SETTING

Newberry Volcano is an elongated shield that extends 60 km in a north-south direction and 30 km from east to west. Covering an area greater than 1,000 km$^2$, it is the largest volcanic system in the United States. The volcano is located in the Cascade Arc, which is a series of volcanic peaks that extend from northern California to British Columbia. The Cascade Arc consists of a series of volcanic peaks that extend from northern California to British Columbia. The Cascade Arc consists of a series of volcanic peaks that extend from northern California to British Columbia. The Cascade Arc consists of a series of volcanic peaks that extend from northern California to British Columbia. The Cascade Arc consists of a series of volcanic peaks that extend from northern California to British Columbia.

4. METHODOLOGY

Numerous workers have observed that patterns in the distribution of linear features are common in many volcanic regions. For example, Newberry Volcano is located in a complex, extensional tectonic setting at the intersection of the Basin and Range, High Lava Plains, and Cascade Arc provinces (Figure 1). Several major fracture systems surrounding and converging near Newberry, including the Bootstrap (northeast-westsouth trending), Tumalo (northnorthwest-southsouthwest trending), and Walker Rim (northeast) fault zones. With a volume of greater than 450 km$^3$, Newberry ranks among the largest volcanic systems in the contiguous United States and is associated with over 400 basaltic and andesite fissure vents along the Lake Pleasant rift (Figure 3). McAlester and Shroder (1988) observed that the linear distribution of fractures and fissures was the result of a linear trend and they noted that these fractures form a single continuous system. They also observed that these fractures are the result of some factors that control magma emplacement. The structure-controlled, eruptive fissure system identified by McAlester and Shroder (1988) and Shroder (1976) has significant merit, supporting statistical analysis of the fracture distribution patterns and regional trends in the area. McAlester and Shroder (1988) observed that the linear distribution of fractures and fissures was the result of a linear trend and they noted that these fractures form a single continuous system. They also observed that these fractures are the result of some factors that control magma emplacement. The structure-controlled, eruptive fissure system identified by McAlester and Shroder (1988) and Shroder (1976) has significant merit, supporting statistical analysis of the fracture distribution patterns and regional trends in the area. McAlester and Shroder (1988) observed that the linear distribution of fractures and fissures was the result of a linear trend and they noted that these fractures form a single continuous system. They also observed that these fractures are the result of some factors that control magma emplacement. The structure-controlled, eruptive fissure system identified by McAlester and Shroder (1988) and Shroder (1976) has significant merit, supporting statistical analysis of the fracture distribution patterns and regional trends in the area. McAlester and Shroder (1988) observed that the linear distribution of fractures and fissures was the result of a linear trend and they noted that these fractures form a single continuous system. They also observed that these fractures are the result of some factors that control magma emplacement. The structure-controlled, eruptive fissure system identified by McAlester and Shroder (1988) and Shroder (1976) has significant merit, supporting statistical analysis of the fracture distribution patterns and regional trends in the area. McAlester and Shroder (1988) observed that the linear distribution of fractures and fissures was the result of a linear trend and they noted that these fractures form a single continuous system. They also observed that these fractures are the result of some factors that control magma emplacement. The structure-controlled, eruptive fissure system identified by McAlester and Shroder (1988) and Shroder (1976) has significant merit, supporting statistical analysis of the fracture distribution patterns and regional trends in the area. McAlester and Shroder (1988) observed that the linear distribution of fractures and fissures was the result of a linear trend and they noted that these fractures form a single continuous system. They also observed that these fractures are the result of some factors that control magma emplacement. The structure-controlled, eruptive fissure system identified by McAlester and Shroder (1988) and Shroder (1976) has significant merit, supporting statistical analysis of the fracture distribution patterns and regional trends in the area. McAlester and Shroder (1988) observed that the linear distribution of fractures and fissures was the result of a linear trend and they noted that these fractures form a single continuous system. They also observed that these fractures are the result of some factors that control magma emplacement. The structure-controlled, eruptive fissure system identified by McAlester and Shroder (1988) and Shroder (1976) has significant merit, supporting statistical analysis of the fracture distribution patterns and regional trends in the area. McAlester and Shroder (1988) observed that the linear distribution of fractures and fissures was the result of a linear trend and they noted that these fractures form a single continuous system. They also observed that these fractures are the result of some factors that control magma emplace...