

THE PENNSYLVANIAN SECTION AT BISHOP CAP, DOÑA ANA COUNTY, NEW MEXICO

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Bishop Cap is a miter-shaped peak that is a fault block outlier between the Organ and Franklin mountains in south-central Doña Ana County. Pennsylvanian strata form most of the peak, and previous workers assigned them to the La Tuna and overlying Berino formations, units originally defined in the Franklin Mountains. We reassign these strata to the Horquilla Formation and regard the La Tuna and Berino as possible members of the Horquilla. The Horquilla section at Bishop Cap is 256 m thick and rests disconformably on shale of the Mississippian Helms Formation. We divide this section into five informal units: A (= La Tuna Formation) overlain by B-E (= Berino Formation). Unit A is an ~ 80 m thick, cliff-forming interval of massive to indistinctly bedded limestone units that alternate with thin- to medium-, even- and wavy-bedded limestone intervals and covered intervals. One crossbedded, lenticular sandstone approximately 20 m above the base contains terrestrial plant debris. Most limestone beds contain chert nodules and thin chert lenses. Limestone has muddy textures throughout the unit, some of the limestone intervals are bioturbated, and many limestone beds contain crinoidal debris. Thick-bedded to massive limestone units contain solitary corals and brachiopods, and *Chaetetes* is present in a few intervals. One bed contains small coral colonies. Unit B is an ~ 84 m thick, slope-forming unit of limestone intervals alternating with abundant covered (shale) intervals. Limestone intervals are thin to medium bedded and mostly < 2 m thick. Even-bedded limestone commonly contains abundant crinoidal debris and rare chert. Wavy-bedded to nodular limestone is mostly cherty and rarely contains crinoid fragments and solitary corals. A distinctive fusulinid bed (*Fusulinella*) is intercalated in the lower part. One conglomerate bed in the upper part contains limestone clasts, abundant crinoid fragments and fragments of solitary corals and brachiopods. Unit C is ~ 23 m of cliff-forming, indistinctly medium- to thick-bedded and massive limestone containing abundant crinoidal fragments with intercalated wavy bedded to nodular limestone and a few thin covered intervals. Solitary corals are present in the basal nodular limestone unit, and brachiopods are present in a crinoidal limestone in the upper part. Chert is rare. Unit D is ~49 m of slope-forming cover/shale intercalated with thin- to medium-bedded limestone intervals and beds. Even-bedded limestone commonly contains abundant crinoid fragments, and wavy-bedded to nodular limestone is mostly cherty. Brachiopods and solitary corals are rare. Unit E is the summit of Bishop Cap and is ~ 21 m of mostly cherty nodular limestone and interbedded crinoidal limestone locally containing corals and brachiopods. Conodont biostratigraphy shows that the upper part of unit A (~65 m above base) is early Atokan, based on the presence of *Neognathodus nataliae*. The lowest Desmoinesian fauna, indicated by the appearance of *N. bothrops*, occurs ~60 m above the base of Unit B. Early Desmoinesian (Cherokee) conodonts range through Unit C and as least as high as the lower 10 m of Unit D. Less diagnostic Desmoinesian conodonts occur in the upper part of Unit D and Unit E.