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The early Mesozoic Cimmerian orogeny in the Alborz mountains, Iran

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The Alborz mountains are located in north Iran between the city of Teheran and the South Caspian basin. The belt developed during the Tertiary along the Mesozoic suture between the Cimmerian block of North Iran and Eurasia, here represented by the Turan plate. Although most of the authors agree on the location of the suture zone in the eastern Alborz-Mashad area, where Permo-Triassic ophiolitic slivers of the Paleotethys are well exposed, its continuation to the west across central and western Alborz (Talesh mountains) is still strongly debated. Docking of the Iranian block to Eurasia occurred in the Late Triassic and is marked by a strong unconformity between the late pre-Cambrian to middle Triassic successions of North Iran and the Norian to Early Jurassic Shemshak Formation, a thick terrigenous succession which is considered the "Cimmerian molasses".

We suggest, on the basis of our original observations, that five major tectonic units related to the Cimmerian orogeny can be distinguished in the Alborz region form north to south. The Eurasian margin, represented by the Turan Plate, is bordered by a Triassic volcanic arc (Aghdarband, Dzulfah). A complex belt of poorly metamorphosed ophiolites related the Paleotethys suture zone (Aghdarband and Binalood-Virani regions) separate previous complexes from the Iranian block. Their continuation to the west can be represented by the metamorphics of the Rasht region, including the Gasht and Shanderman Complexes. Our work in the latter unit demonstrates that both rep-

resent fragments of deeply metamorphosed continental crust. Eclogite found in the Shanderman Complex clearly indicate subduction of continental crust, possibly occurring during the Triassic Cimmerian collision. Radiometric ages are absolutely necessary to confirm this idea. Alternatively, the eclogites could be related to the Paleozoic structuration of the southern margin of the Eurasian plate, and thus represent European-related nappes. A continuous belt formed by poorly metamorphic or not metamorphosed but strongly deformed units belonging to the northern margin of the Iran block occurs south of the metamorphic belt. A section across this zone has been observed in the Neka Valley of the East Alborz, just south of the town of Gorgan. The Paleozoic units of the Boghrov and Masuleh dagh of the Talesh mountains probably correspond to this belt in the west. The stable foreland of North Iran is present southward. Its northern part is well exposed in the central Alborz. In this area the Shemshak Fm. covers the successions of North Iran with a regional low angle unconformity. Extensional structures, graben and half grabens, predating the deposition of the Cimmerian molasses, have been here identified around Shemshak within this stable part of the Iranian block. Positive inversion of these structures, occurring during Neogene, can be responsible for many of the peculiar characters of this belt. This work was supported with MEBE grants (proposal n. 02-26).