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Seymareh (Saidmarreh) landslide, Zagros Mountains, Iran

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Gigantic ($> 0.5\ \mathrm{Gm}^3$) landslides are infrequent globally, but due to extreme magnitude dramatically affect mountain topography and pose potentially high risks to exposed mountain communities. Despite these important impacts few gigantic landslides have been studied in detail, owing largely to their enormous scale and low accessibility. In the early Holocene, a 15 x 6 km rockmass on the flank of the Kabir Kuh anticline above the Seymareh Valley, Zagros Mountains failed catastrophically. The resulting rock avalanche crossed two valleys and the intervening drainage divide. The Seymareh (Saidmarreh) landslide is recognized as the largest rock avalanche in the world and one of the largest sub-aerial landslides of any type. Unique aspects of the landslide include anomalously high mobility, a high degree of structural control, and uncharacteristic dimensional proportions. Although extremely important with respect to scale, geometrics and mobility, the Seymareh landslide is acutely under studied. Existing reports (1937, 1938, 1965 & 1969) on the landslide are outdated; all four predate the dawn of modern geotechnical engineering and major developments in orbital remote sensing. Major developments in regional engineering and structural geology, remote sensing, and local field documentation (related to petroleum exploration and hydroelectric development) provide the basis for a new look at the Seymareh landslide. Results of a rigorous examination of the Seymareh landslide based on field investigation and analysis of remotely sensed data from multiple platforms are presented. Findings include gross underestimation by published volumes, explanation of volume and source area morphology by geomechanical and structural controls, explanation of

debris run out and morphology, and added failure age constraint.