

Snow-avalanche occurrences across the main Andean corridor between Argentina and Chile: Determination of the principal avalanche paths and description of the *Arroyo Negro* avalanche event

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Several studies are presently conducted to reduce the avalanche-related risk on the high-mountain sector of National Route 7 (RN7), the main corridor between Argentina and Chile connecting the cities of Mendoza and Santiago de Chile. The traffic in RN7 has steadily increased since 1994, reaching almost 400,000 vehicles during 2006. The fact that approximately 45% of this traffic is constituted by cargo trucks, points out the economical and strategic importance of the road.

Almost every year, the RN7 is blocked by snow avalanches and/or snow storms which accumulate large amounts of snow on the route. On the Argentinean sector of the Andes, these events commonly occur between Puente del Inca (2740m) and the entrance to the International Tunnel (at the border between Argentina and Chile; 3300m). Thousands of trucks are blocked every winter during several days -or even weeks- with a subsequent deterioration of their cargo, causing loses of millions of dollars. The route has been closed in average 29 days per year during the last 20 years.

A combination of historical documents and avalanche records provided by the Road National Administration (DNV) and available at the Railway Company archives (Ferrocarril Trasandino), were used to determine the avalanche paths affecting the RN7 during most of the 20th century. Based on these documents, the avalanche frequency at individual points was also determined. The most destructive avalanche paths were selected for further studies, including the determination of run-out distances and impact avalanche pressures.

In the year 1986, a high-magnitude snow avalanche at the *Arroyo Negro* destroyed the route and a railway bridge. Fortunately, no human loses were reported. Different control alternatives are suggested for this particular avalanche path.