



White Apatite from the Palermo No. 1 mine, North Groton, New Hampshire,

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In the late 1990's a large mass (2 meters in diameter) of apatite was discovered between the core and core margin of the pegmatite at the 153 foot (47 meter) level of an inclined shaft at the northern portion of the mine. The apatite was white to light tan in color and occurred with colorless to white quartz and albite. Well crystalized apatite occurred in pockets containing a clay that was identified as illite in 1971. Brown stains and small altered cubes on many of the specimens suggest pyrite crystals were present but have altered with most completely dissolving. The apatite crystals occurred in many habits including spherical, tabular, vermiform and complex intergrowths. Many forms exhibit hollow tubes suggesting the apatite crystals formed on another species that was later dissolved.

Collectors, through the years, identified this white apatite as carbonate apatite (francolite) or hydroxyl apatite. In 1971 an analysis determined that the apatite was a near end member fluorapatite with strontium substituting for calcium up to approximately 1.2 weight percent SrO.

The purpose of this paper is to more thoroughly analyze white apatite crystals from Palermo No. 1 mine determining their composition and including the extent of a carbonate substitution for phosphate.

References: Late stage pocket apatite from the Palermo No. 1 mine, North Groton, New Hampshire. S. L. Hanson, R. Whitmore, D. A. Dallaire, A. U. Falster, and W. B. Simmons. *Rocks & Minerals* vol. 66 p. 41