1985/37. Rare Earth Element patterns of Eocambrian-Cambrian basaltic suites, western Tasmania.

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Abstract

REE patterns are presented for twenty-one basaltic samples from three different lava phases formed during Eocambrian-Cambrian times. The analyses can be used to characterise the different basaltic phases such that they can be used as stratigraphic marker horizons within the successions of the mineralised Dundas Trough.

INTRODUCTION

Analyses of rare earth elements from representative samples of Eocambrian-Cambrian basaltic rocks from western Tasmania were obtained at the Geology Department of the University of Melbourne, courtesy of Ms H.M. Waldron.

The analyses were obtained in an attempt to find a simple chemical 'finger print' to characterise each of the three different basaltic suites distinguished during regional mapping and by major and trace element chemistry.

SAMPLES

Samples were selected from the following successions and areas:

(1) Extended type area of the Eocambrian Crimson Creek Formation, Mt Lindsay area: Samples 85-0001, 85-0002, 85-0004 (fig. 1).

(2) Correlate of the Crimson Creek Formation in the Cleveland area, "Deep Creek Volcanics": Samples 48302, 48332, 48333 (fig. 2). Sample numbers are University of Tasmania registered numbers, *in* Collins (1983). Samples provided by P.L.F. Collins.

(3) Lower Cambrian(?) high-magnesian andesite in the Magnet-Cleveland area: Samples 85-0023, 85-0025 (fig. 3).

(4) Middle-Middle Cambrian low titanium tholeiite basalt in the Dundas-Renison Bell area (Black Hill Volcanics): Samples 85-0032, 85-0033, 85-0034 (fig. 4).

(5) Low-titanium tholeiite basalts - Heazlewood River area. Samples 60900, 60903, 60919 (fig. 5). University of Tasmania registered numbers (Creenaune, 1980). Samples obtained from P. Creenaune.

(6) Correlates of the Crimson Creek Formation, Smithton Basin.
   (a) olivine phyric : Samples 85-0081, 85-0082, 85-0083 (fig. 6).
   (b) pyroxene/plagioclase phyric : Samples 85-0078, 85-0079, 85-0080, 85-0084 (fig. 7).

Also presented is a diagram (fig. 5) which compares all the patterns obtained.

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RESULTS

The patterns presented show that each phase has a characteristic REE pattern irrespective of which area in western Tasmania the samples came from.

(a) Eocambrian Crimson Creek Formation (figs 1, 2, 7, 8) for pyroxene-plagioclase phyric lavas and figs 6 and 8 for olivine phyric lavas.

(b) Lower Cambrian(?) high-magnesian andesite (figs 3, 8).

(c) Middle-Middle Cambrian low-titanium tholeiite basalts (figs 4, 5, 8).

The actual numerical results, method of analysis and petro-genetic interpretation will be presented elsewhere. Preliminary interpretation of the geochemistry of the lava suites and tectonic setting can be found in Brown and Waldron (1982*a*, 1982*b*), and the detailed geological settings of the lavas and a geochemical comparison in Brown (in press).

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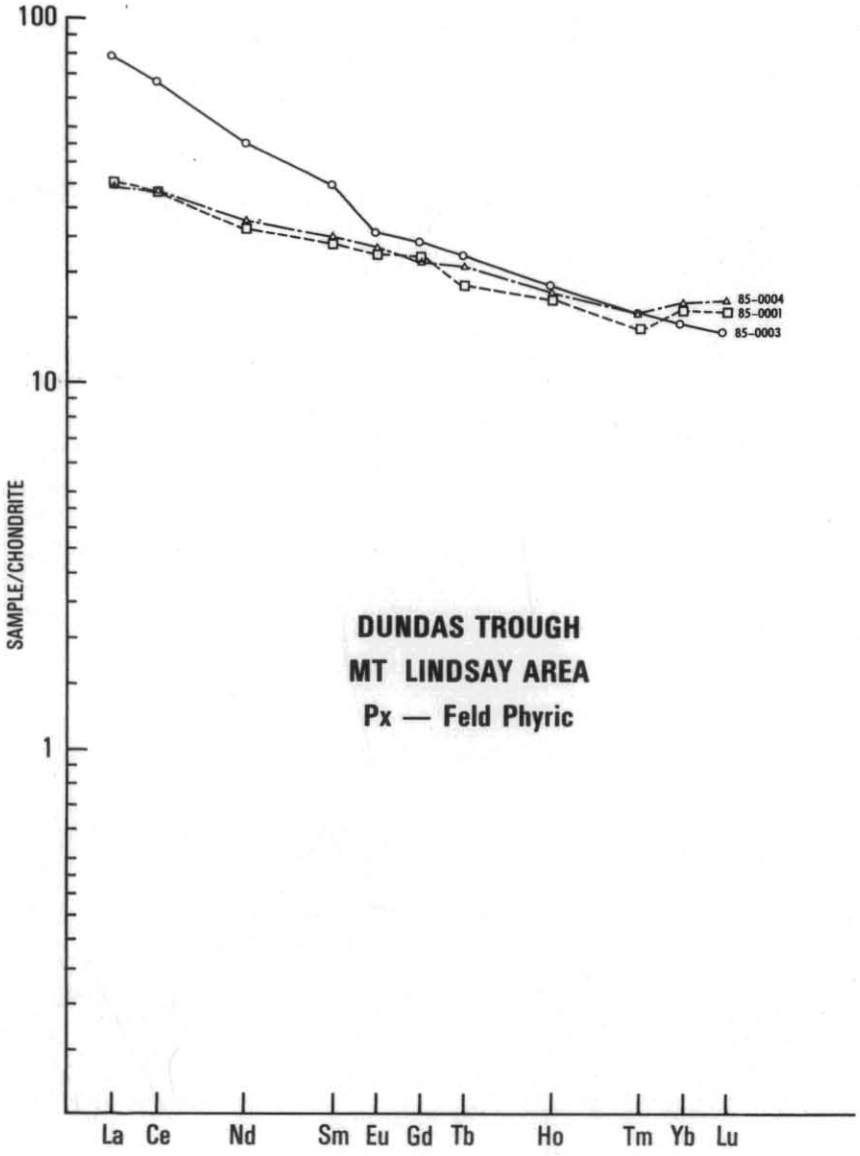
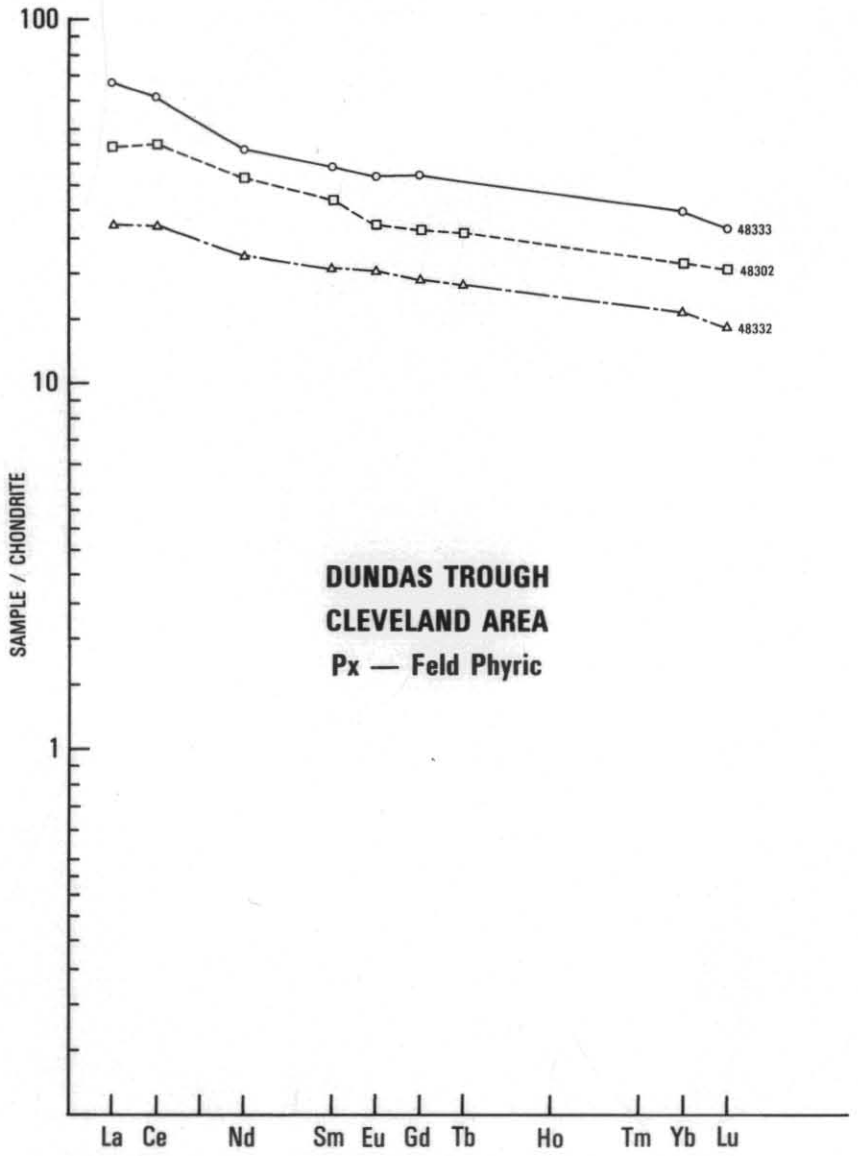


Figure 1.



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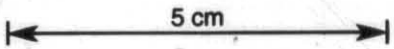

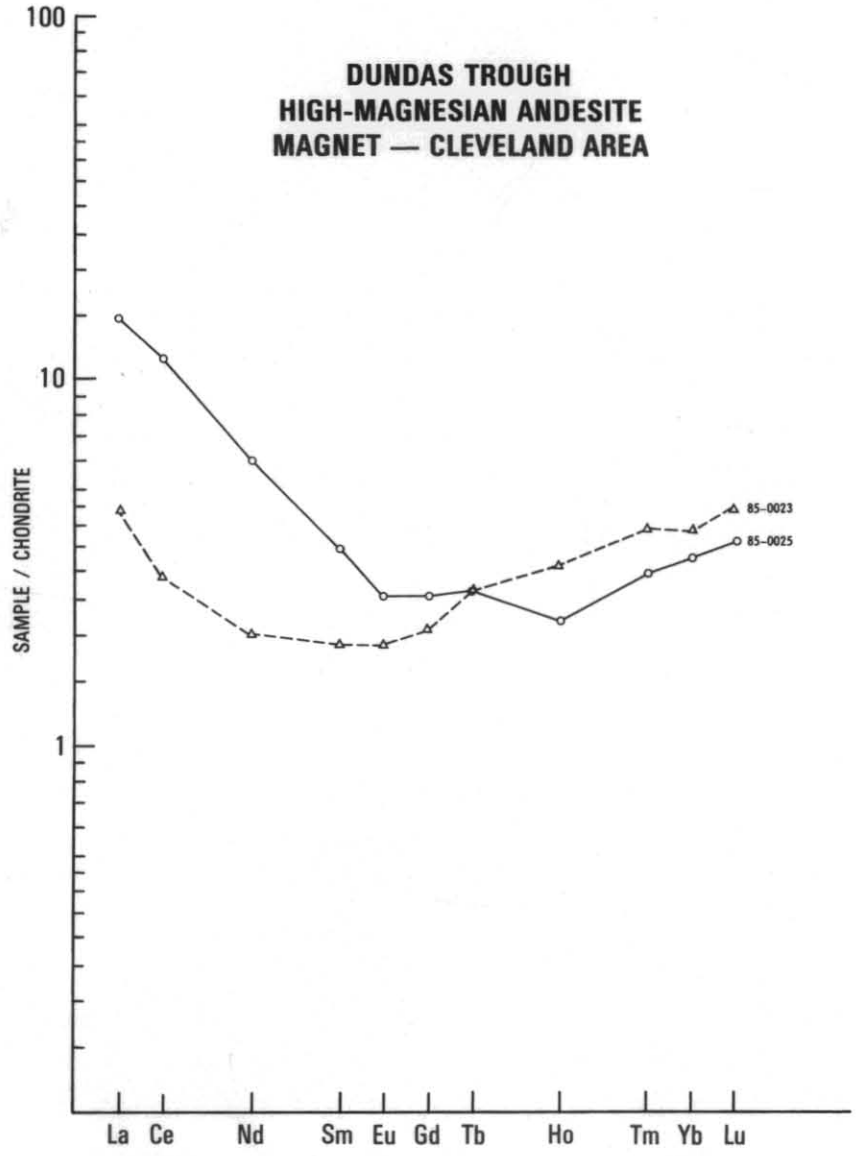

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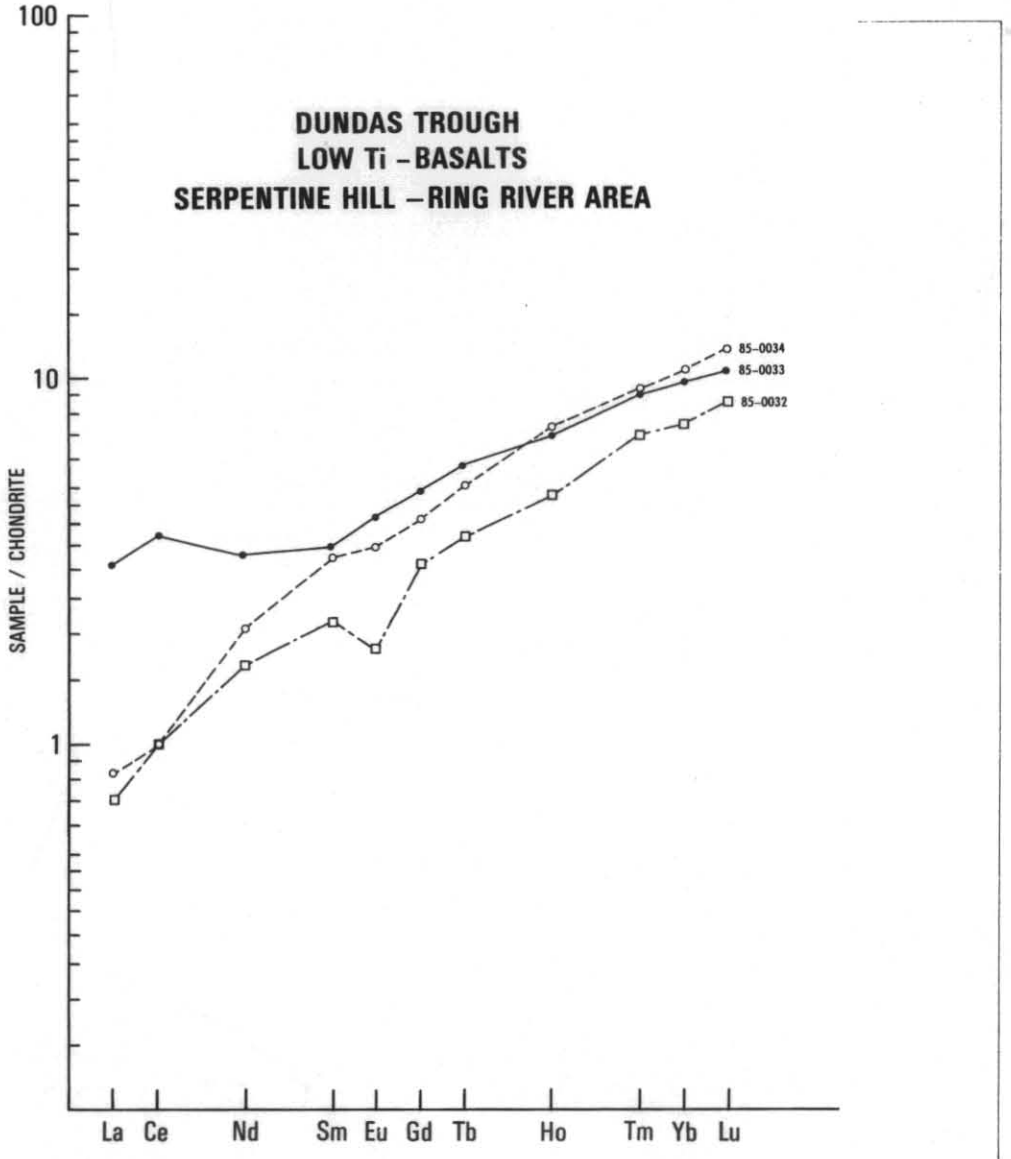

Figure 4.

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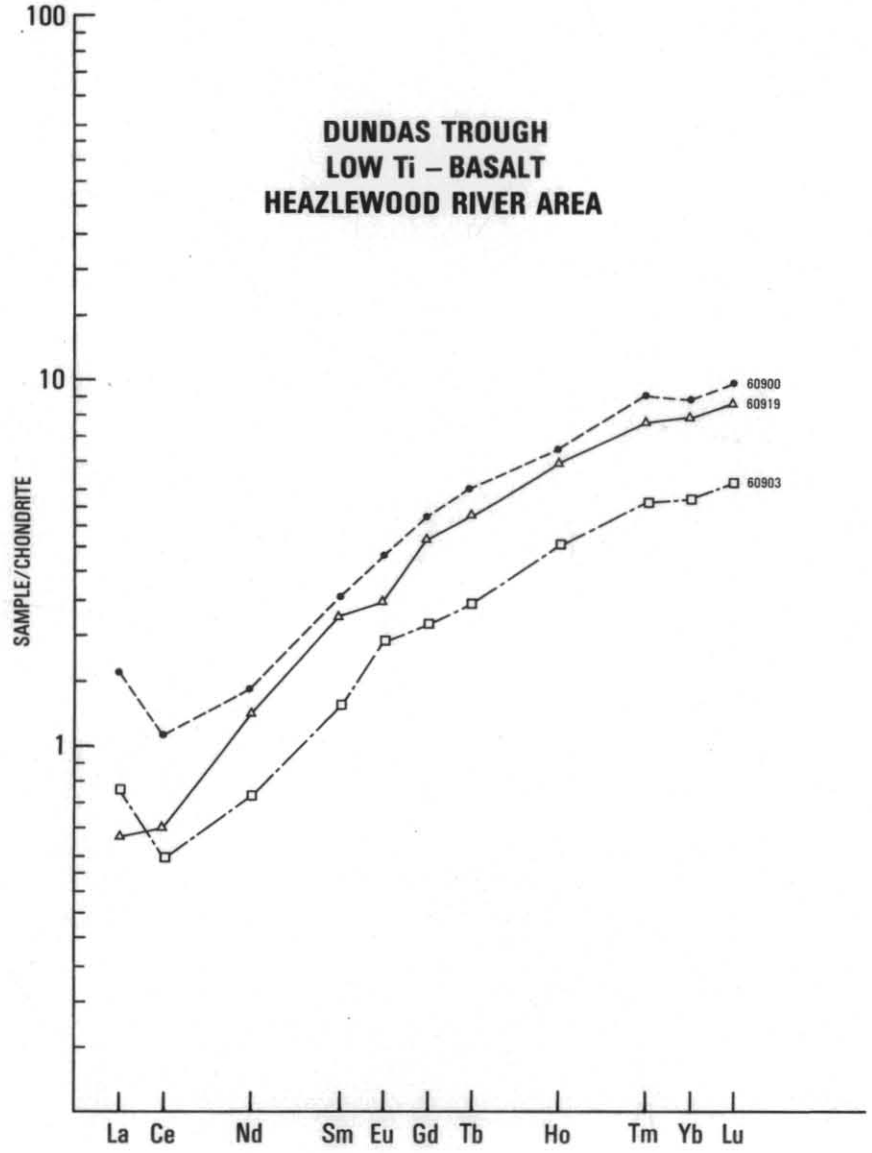

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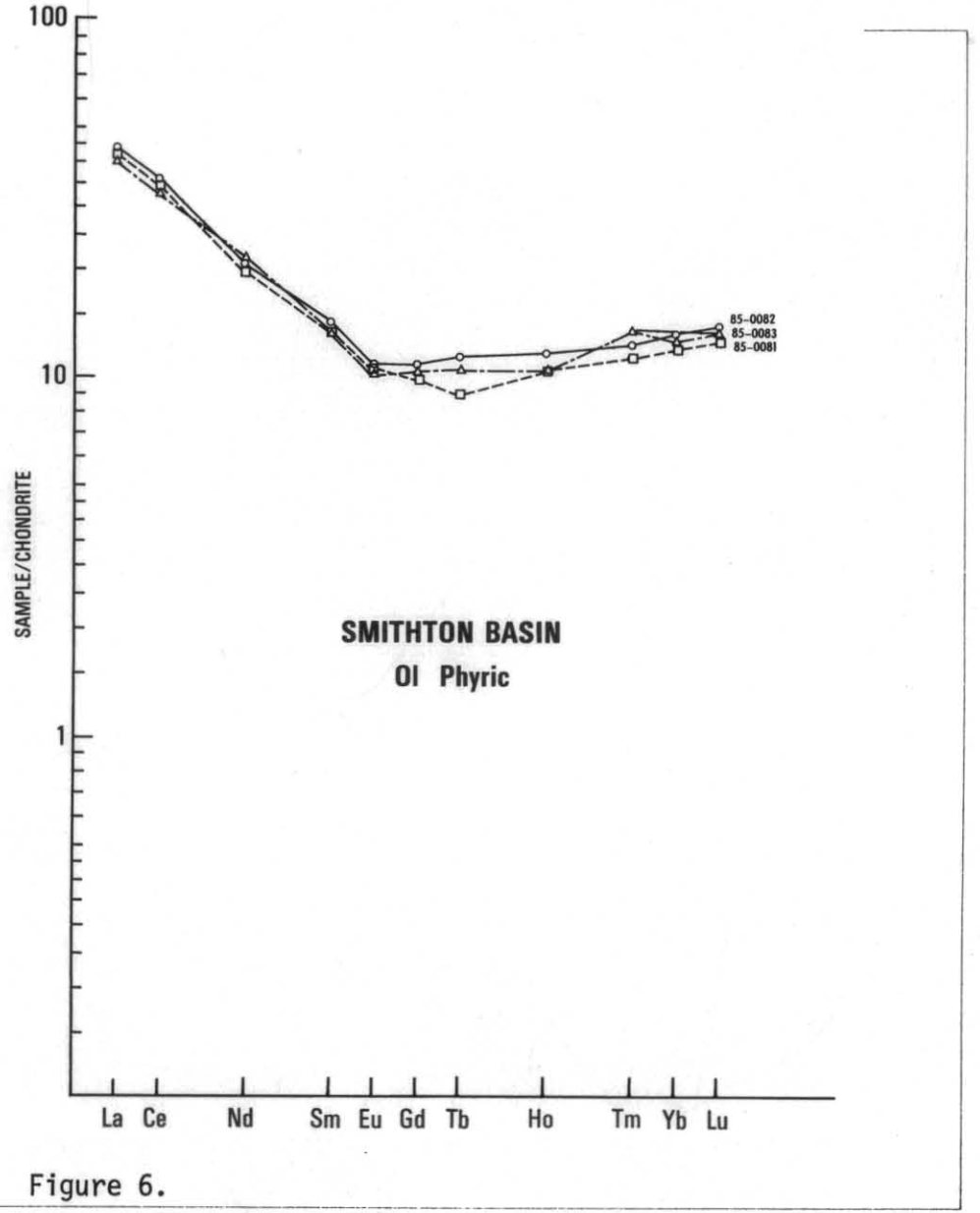

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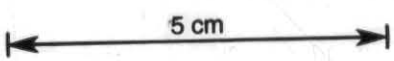

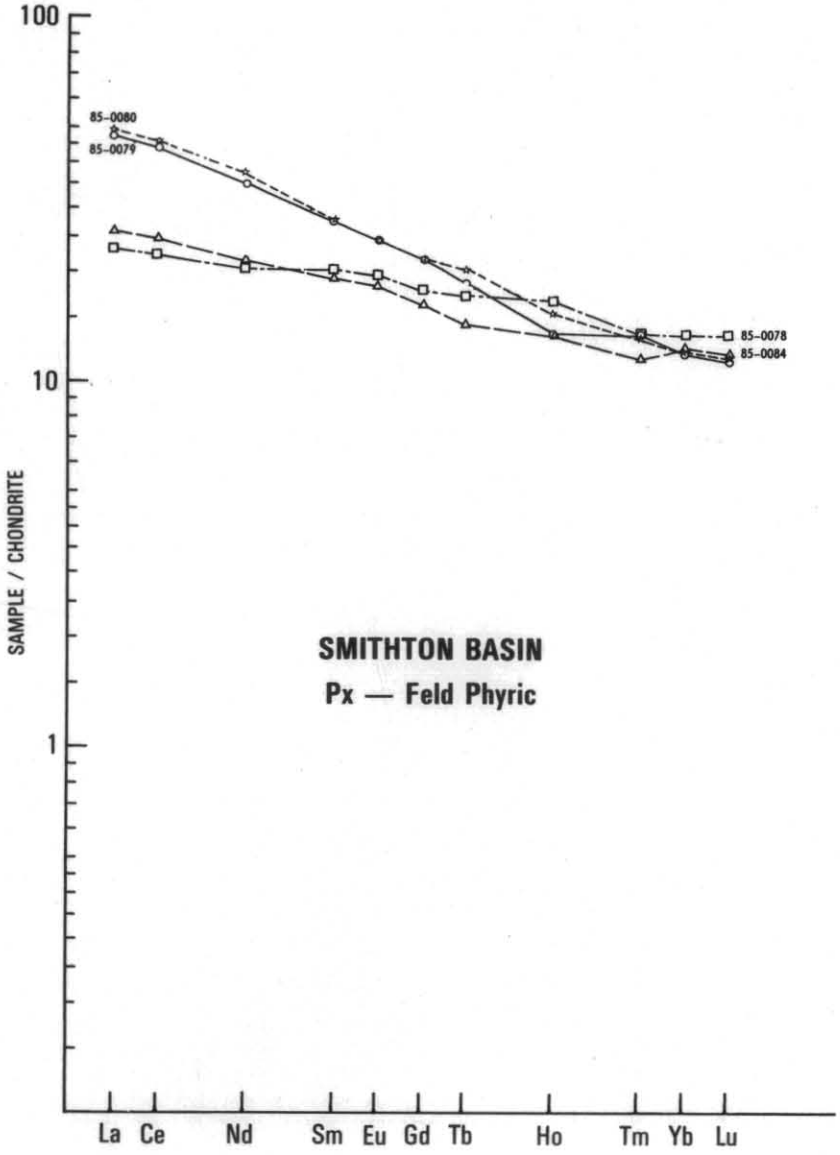

Figure 7.

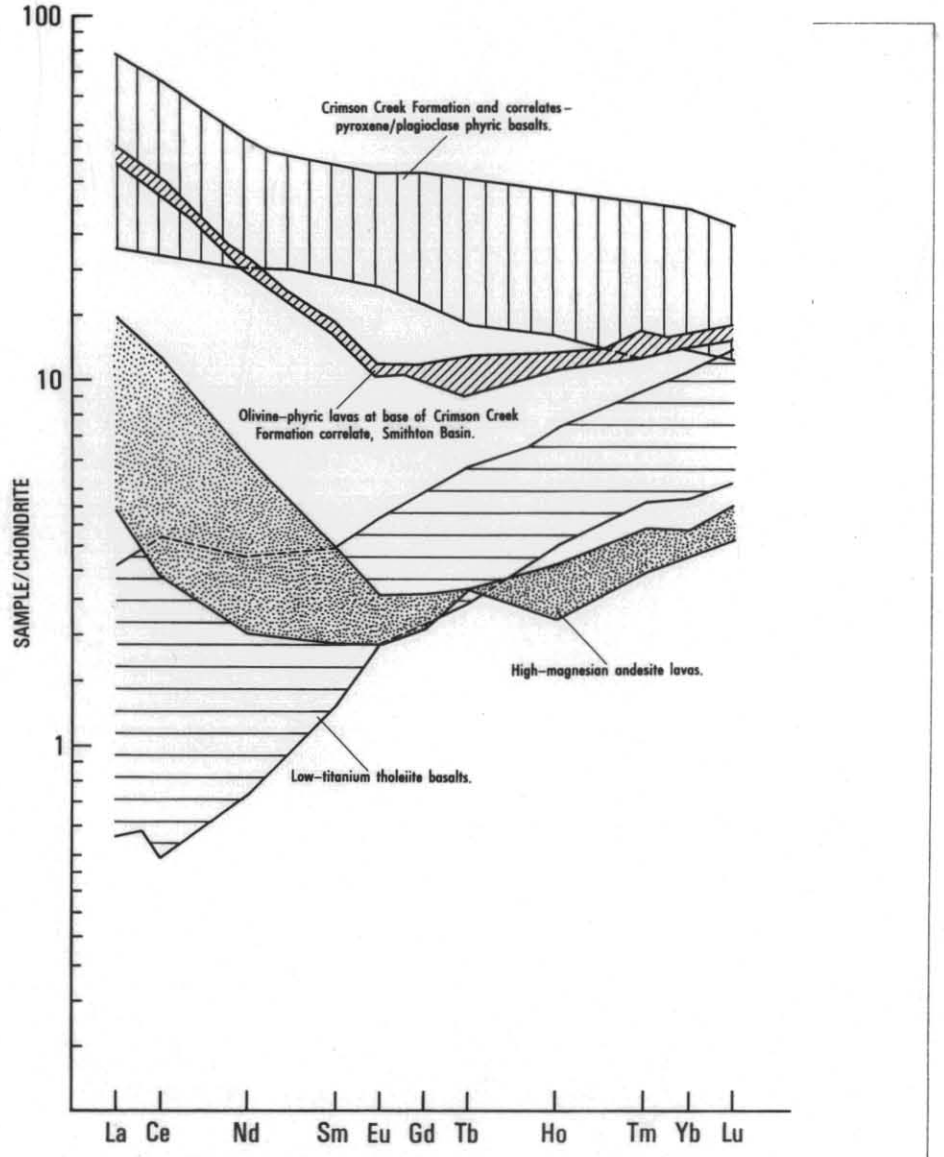

Figure 8. *Comparison of fields of chondrite normalised REE patterns for different basaltic phases.*

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