
16 Meall Dail Chealach

[NN 703 676]–[NN 716 675]

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16.1 Introduction

The NW-elongated ridge of Meall Dail-Chealach (510 m O.D.) rises above open moorland, 2 km north of the Errochty Dam. Exposed at this GCR site is one of the best examples to be seen in the Central Grampian Highlands of a late, post-metamorphic, major kink fold, the Trinafour Monoform. This fold refolds the sharp closure of the Errochty Synform and is responsible for its final orientation.

The steep middle limb of the monoform is marked by a narrow line of steep dips that was first recorded by the Geological Survey on Sheet 55 (1902) and was described as 'a line of disturbance' in the subsequent memoir (Barrow *et al.*, 1905). It was not however noted by subsequent workers in the area, Anderson (1923), Bailey and McCallien (1937) or Rast (1958). Its significance was realized by Thomas (1965, 1980), who interpreted it as the steep limb of one of a number of major post-metamorphic angular kink folds in this area and named it the Trinafour Monoform (Ft on (Figure 3.39)a, following the nomenclature of Treagus, 2000).

16.2 Description

Exposures on the ridge of Meall Dail-Chealach from [NN 708 671] as far north-west as the mid-slopes of Meall Breac [NN 686 697] (Figure 3.39)a are composed of Grampian Group metasedimentary rocks. The rocks are thinly layered schistose psammities and quartzites containing isoclinal folds of earlier generation structures (D1/D2). These rocks are affected by their proximity to the major ductile thrust, the Boundary Slide, which separates them from rocks of the Appin and Argyll groups. All of these rocks are affected by the post-D2 Errochty Synform, which is locally associated with minor folds and a schistosity (Fe and Se on (Figure 3.39)a, following the nomenclature of Treagus, 2000). The ridge follows the outcrop of the steep limb of the Ft Trinafour Monoform.

The bedding and subparallel S1 and S2 schistositities on the steep limb of the Trinafour Monoform range in dip from 65° north-east up to vertical, with a strike of 155°, which is oblique to the main north-west trend of the steep belt. Some of the exposures display minor open folds Ft on (Figure 3.39)a, plunging at 20–30° towards 140–150° with axial planes dipping gently to the south-west (Figure 3.39)b. Near the base of the crag on the north-east side of the hill, the layering is seen to curve away towards Dubh Lochan [NN 711 674], beyond which the laminated gneissose psammities dip at 30–40° towards 210° on the north-eastern gentle limb that marks the north-east margin of the monoformal structure. The south-west closure of the monoform in the Grampian Group rocks is seen 2.5 km to the north-west (at [NN 687 695]) and also more clearly in the Appin and Argyll group rocks downstream from the Errochty Dam (at [NN 718 653]) (Figure 3.39)a. The plunge of the major fold varies from 10° to 25° to the south-east and both the amplitude and the wavelength of the fold decrease downwards, so that the fold dies out up plunge on the slopes of Meall Breac [NN 685 698]. Down plunge, the monoform broadens to an open structure south-west of Trinafour, where it is accompanied by the open upright Allt Culaibh Antiform and the asymmetrical Croftnagowan Synform to the north-east and south-west respectively (Figure 3.39).

16.3 Interpretation

It is clear that this major line of disturbance refolds all earlier structures, including the Boundary Slide and associated D1 and D2 minor folds and schistositities, and especially the axial trace of the post-D2 Errochty Synform and its associated

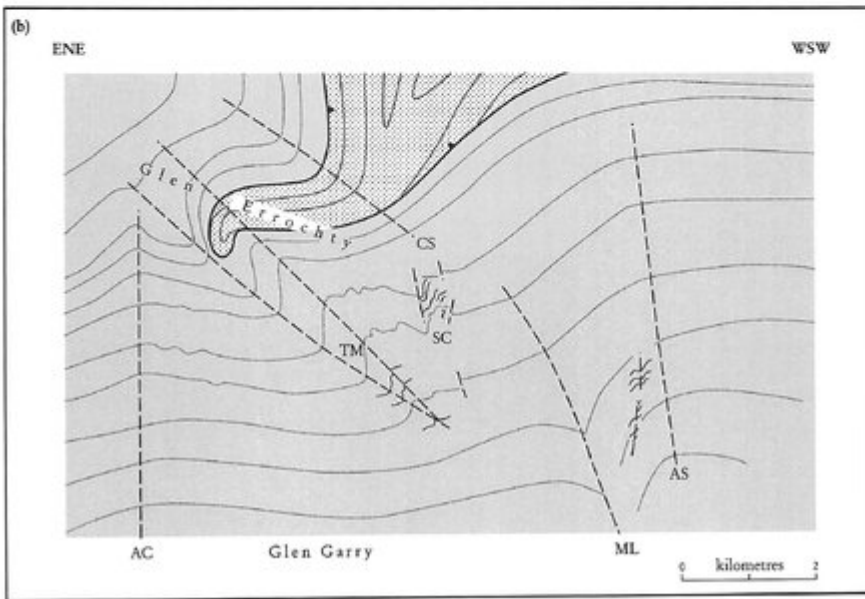
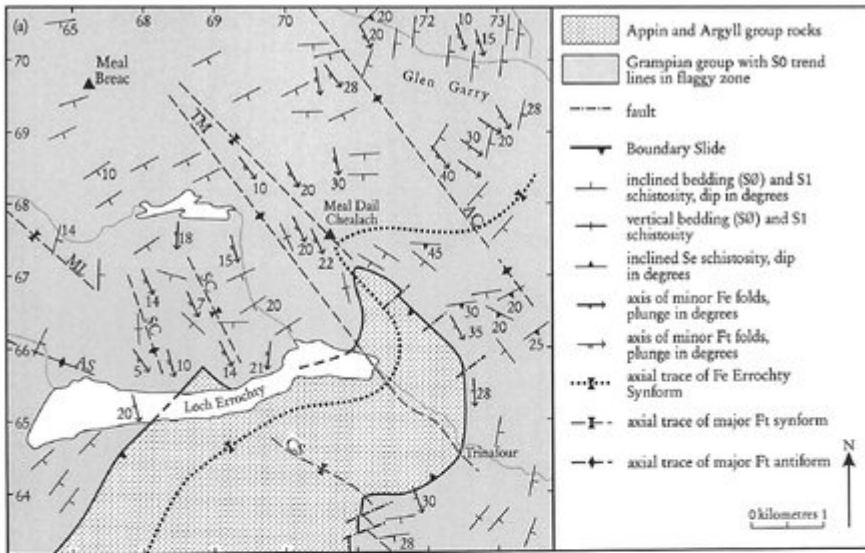
minor folds and schistosity (the De phase of Treagus, 2000). The Trinafour Monoform is related to distinctive brittle-style minor kink folds with a low plunge to the south-east (Figure 3.39)b. The occurrence of major and minor open and kink folds with gentle south-east plunges is rare in the Central Grampian Highlands, but they appear to be particularly well developed in the flaggy rocks on the gently dipping north-west limb of the Errochty Synform, where they are referred to as the Dt phase by Treagus (2000). The north-east vergence of the Trinafour Monoform is reflected by the minor folds, which also occur in conjugate and oblique sets, exemplified by the Sron Chon folds to the south-west. Late folds of presumably the same generation as the monoform that occur to the west and east (the Allt Sleibh Antiform, Meall na Leitreach Synform and Allt Culaibh Antiform) have progressively steeper axial surfaces with depth (Figure 3.39)b.

The age relationship of the Trinafour Monoform, and the related Ft folds mentioned above, to the other deformation events late in the history of the Grampian orogenic belt is not clear. Their brittle style would suggest that they post-date the ENE-trending folds of the D4 phase, such as the Ben Lawers Synform, described in the *Ben Lawers* GCR site report. The Dt folds must be the consequence of a NE-directed shortening along the length of the orogenic belt. This is in contrast to the supposed transtensional deformation in that direction that is responsible for the NE-trending, late-Silurian, fault set (Treagus *et al.*, 1999) discussed in the *Ben Oss* GCR site; the age relationship of the Dt folds to these faults is not known.

16.4 Conclusions

The Meal Dail Chealach GCR site is of national importance since it is representative of a number of spectacular NW-trending folds, the most impressive of which is the Trinafour Monoform, that formed late in the Caledonian deformation process. In this part of the Central Grampian Highlands these semibrittle-style, monoformal kink folds, which are the latest set of folds that can be identified, appear to be restricted in development to the area between Craiganour Forest and Glen Garry, and have formed in the gently dipping, flaggy, Grampian Group rocks. Around the Errochty Dam area they have also deformed the younger Appin Group rocks above the Boundary Slide. The site lies only a few kilometres west of the Trinafour to A9 road and is frequently visited by student parties.

[References](#)



(Figure 3.39) (a) Structural map of the Trinafour Monoform and the adjacent area around Meal Dail Chealach and Loch Errochty. AC Allt Culaibh Antiform, AS Allt Sleibh Antiform, CS Croftnagowan Synform, ML Meal na Leitreach Synform, SC Sron Con fold-pair, TM Trinafour Monoform. (b) Schematic profile view of the map in (a), looking east-south-east. Adapted from Thomas (1980).