

**Correlation of Doggeelv and Lomvann formations,
Komagfjord tectonic window, Finnmark:
An alternative suggestion.**

*Jevnføring av Doggeelv og Lomvann formasjonene,
Komagfjord-vinduet, Finnmark: Et forslag.*

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Føyn (1964) described the tillite-bearing formations of the Alta district, suggesting correlations with eastern Finnmark and the interior Finnmark. In so doing, he described the Bossekop group which apparently correlates with the "Older sandstone series" in the Tana district (see Føyn, 1937).

Føyn's descriptions indicated to me the possibility of an alternative to the correlations proposed for the Doggeelv and Lomvann formations of the Komagfjord tectonic window (Reitan, 1960; 1963a; 1963b).

It is suggested that the Doggeelv and Lomvann formations found in the southern and eastern parts of the Komagfjord tectonic window may be correlative with the Bossekop group in the Alta district.

An unconformity was recognized between the greenstones and greenschists of the Holmvann formation and the Doggeelv formation in the Komagfjord tectonic window (Reitan, 1963b). Discordance between the Bossekop group and the underlying greenstones and greenschists of the Raipas suite has been noted by Holtedahl (1918) and Føyn (1964). Both contacts are believed to represent primary unconformities, but the detailed relationships have been obscured in many places by tectonic movements along the plane of contact. This fact was, perhaps insufficiently emphasized by me in describing the relationships in the Komagfjord

tectonic window, but it is evident from the geologic map (Reitan, 1963b, Plate I).

The lithologic descriptions of the Bossekop quartzite (Holtedahl, 1918; Føyn, 1964) and the Doggeelv formation (Reitan, 1963b, p. 17-18, 41-42) are very alike, though both are variable. Within the Bossekop group is found reddish and grayish shale; the Lomvann formation, overlying the Doggeelv formation, is a grayish-greenish rather light colored shale, partly mottled with reddish shale, the reddish color being more common southwestwards (Reitan, 1963b, p. 19). From this it appears that the lithologies are sufficiently similar to entertain the possibility of stratigraphic equivalence.

The maximum exposed stratigraphic thickness of the Bossekop group is about 150 meters (Føyn, 1964, p. 140-141, 148). The Doggeelv formation reaches a maximum thickness of 1500 meters or more, although it becomes thinner towards the southwest (i.e., towards Alta). The maximum exposed thickness of the Lomvann formation is 1000 meters or more, provided deformation has not caused thickening or repetition of strata. Towards the north it becomes a dark arenaceous shale or impure, dark fine-grained quartzite.

The distance between the nearest exposures of the Doggeelv and Lomvann formations in the Komagfjord tectonic window and the Bossekop group in the Alta district is about 30 km. If they are stratigraphically equivalent this would require a thickening of at least 2000 meters over this distance, yielding an angular discordance between the Bossekop group and the tillite of the overlying Borrass group (see Føyn, 1964) of about 4° . From Føyn's data an angular discordance of about $\frac{1}{2}^\circ$ is verified in the vicinity of Borrassfjellet.

Føyn (1937) established an angular unconformity of about 2° between the "Older sandstone series" (described as light-colored quartzitic sandstones and dark colored arenaceous shales; thickness about 1200 meters) and the overlying rocks in the direction about N 30-40 E in the Tana district. This is the approximate direction of maximum unconformity in the vicinity of Borrassfjellet in the Alta district and the approximate direction from Borrassfjellet to the nearest exposures of the Doggeelv and Lomvann formations in the Komagfjord tectonic window.

In the directions east and southeast of the exposures of the Doggeelv and Lomvann formations at a distance of about 20 km, near Stabburselv, is an expanse of sandstones and shales believed to be Eocambrian, presumably the "older series" (Holtedahl, 1953).

While these observations are too generalized to prove equivalence of the Doggeelv and Lomvann formations with the Bossekop group and the "Older sandstone series" of the Tana district, it would appear that neither the lithologies nor thicknesses in themselves constitute conclusive contrary arguments.

Having been charged with the responsibility of summarizing the state of knowledge concerning the Precambrian rocks of northern Norway and suggesting what seemed to be the most likely correlations and conclusions (Reitan 1960; 1963a), I feel it incumbent upon me to consider alternate possible correlations that may be suggested to me by new work. If these comments succeed only in pointing out the degree of uncertainty of some of the previously proposed correlations, they will serve a useful purpose. In rocks lying stratigraphically below the lowest fossil-bearing horizons, and in the absence of radiometric age determinations, only very detailed work can provide the basis for local and regional correlations with a reasonably high degree of confidence, if, indeed, this is at all possible with physically discontinuous and widely separated exposures of the rocks in question.

Sammendrag.

Føyn's beskrivelse (1964) av Bossekop-gruppen i Alta-området og jevnføring med den eldre sandsteinserie i Tana, ledet mine tanker til en annen mulig jevnføring av Doggeelv og Lomvann formasjonene enn den som jeg har foreslått tidligere (Reitan, 1960; 1963a; 1963b).

Det er mulig at Doggeelv og Lomvann formasjonene skal jevnføres med Bossekop-gruppen. De variasjoner som opptrer i litologisk egen-skaper og i tykkelse er ikke avgjørende argumenter mot denne jevnføring. Diskordansen på strekningen mellom Alta-vinduet og Komagfjord-vinduet måtte være ca. 4° i retningen N 30-40 Ø.

Det foreligger imidlertid heller ikke noe bevis for riktigheten av den jevnføring jeg her har antydnet. Begge forslag må derfor betraktes som arbeidshypoteser inntil detaljerte undersøkelser gir grunnlag for en mere sikker avgjørelse av spørsmålet.

References.

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