

TECHNICAL REPORT

Stratigraphy Series

Report WH/89/15R

Ammonite from Marine Geology R.G.'s  
Borehole 88/6 (Little Minch)

B M Cox

Biostratigraphy Research Group Report PD 89/15

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(Little Minch)

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Bajocian  
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Biostratigraphy

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PD 89/15

Ammonite from Marine Geology R.G.'s Borehole 88/6 (Little Minch)

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For ease of reference and at the request of Martyn Stoker, the recent correspondence and subsequent report of Nicol Morton (Birkbeck College, University of London) on the ammonite recovered from Borehole 88/6 in the Little Minch have been brought together and are now issued as a PD report in the Biostratigraphy R.G.'s regular series.

BMC

B M Cox

17th January 1989



*Copy for file*

Keyworth  
Nottingham NG12 5GG

☎ Plumtree (06077) 6111  
Telex 378173 BGSKEY G  
Fax ☎ 06077-6602

Dr M S Stoker  
Marine Geology  
BGS  
Murchison House  
EDINBURGH

Your  
reference

Our  
reference

19th December 1988

Dear Martyn

Borehole 88/6 : ammonite from 28.35m

I have developed out the ammonite specimen from your Borehole 88/6 (specimen nos CSC 7590-1) and suggest that it is a Garantiana from the Upper Bajocian. I would be looking towards the Garantiana Clay of Skye and Raasay as a possible horizon. However, as I do not have first-hand experience at this stratigraphic level, I intend to send the specimens to Dr Nicol Morton at Birkbeck College, University of London who is an expert on the stratigraphy and ammonite faunas of the Middle Jurassic of the Inner Hebrides (viz. Morton 1976 Bajocian (Jurassic) stratigraphy in Skye, Western Scotland Scott. J. Geol., 12, 23-33 and various papers in Palaeontology et al.).

I shall suggest to him that he contacts you direct with any matters arising.

With best wishes

Benis Cox  
Biostratigraphy Research Group

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British Geological Survey

Keyworth  
Nottingham NG12 5GG

Plumtree (06 077) 6111  
Telex 378173 BGSKEY G

Dr Nicol Morton  
Dept of Geology  
Birkbeck College  
University of London  
7/15 Gresse Street  
LONDON  
W1P 1PA

Your  
reference

Our  
reference

20th December 1988

Dear Nicol

An unexpected interval of Jurassic mudstones has been cored in one of our Marine Geology Research Group's boreholes in the Little Mineh (Borehole no.88/6). This has yielded a single ammonite specimen from a depth of 28.35m. My impression is that it is a Garantiana from the Upper Bajocian. However, as I have no first-hand experience at this stratigraphic level, I think it would be beneficial, and maybe of interest for your own researches, if you examined the specimen.

If you are interested in doing this, perhaps you could let me know and I will send all the details and the specimen by "registered" post.

Yours sincerely

*Boris Cox*  
Dr Boris COX  
Biostratigraphy Research Group

*NT placed 3/1/89.  
BRC inserted.*

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British Geological Survey

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Plumtree (06 077) 6111  
Telex 378173 BGSKEY G

Dr Nicol Morton  
Dept of Geology  
Birkbeck College  
University of London  
7/15 Gresse Street  
LONDON  
W1P 1PA

Your  
reference

Our  
reference

4th January 1989

Dear Nicol

Please find enclosed the ammonite from the BGS Marine Geology Research Group's Borehole 88/6 in the Little Minch (specimen nos CSC 7590-7591). Also enclosed is a sheet showing the borehole details. Please liaise with Dr Martyn Stoker of the Marine Geology R.G. at Murchison House, West Mains Road, Edinburgh, EH9 3LA ; tel. 031-667-1000.

I enclose a couple of reprints with some North Sea interest and will contact you again when I have traced Stewart Brown's Brent Group ammonite which I am alleged to have 'identified'.

With best wishes for the New Year,  
Yours sincerely

*Beris*  
Beris Cox

cc. Dr Martyn Stoker

*Sent by  
Special Delivery  
4/1/89.*

BRITISH GEOLOGICAL SURVEY  
Marine Geology Research Programme

BOREHOLE NO 88/6  
Proposed site no 341

		GEOLOGICAL SUMMARY			
		AGE	DEPTH (m)	GRAPHIC LOG	RECOVERY
Latitude:	57° 42.198'N				
Longitude:	6° 51.987'W				
Location:	6.6km SE of Renish Point, Harris				
Map area:	Little Minch				
Block no:	Landward area				
Geologist:	D. Evans M.S. Stoker				
Water depth:	120m				
Drift cored:	23.50m				
Recovered:	2.10m (8.9%)				
Solid cored:	7.00m				
Recovered:	6.65m (95%)				
Total cored:	30.50m				
Recovered:	8.75m (28.7%)				
Logging:	None				
Notes:	<p>This borehole was planned to investigate the possibility of Carboniferous sediments at or near to outcrop in the Minch Basin. The Quaternary cover proved to be thicker than expected and rockhead was reached at 23.5m where ?Jurassic mudstone was drilled.</p>				
		QUATERNARY	10		
			20		
			30		
		? JURASSIC	40		
			50		
			60		
			70		
			80		
			90		
			100		
			110		
			120		
			130		
			140		
			150		
			160		
			170		
			180		
			190		
			200		
					<p>Sand, muddy, poorly sorted, fine-to-medium, shelly, olive-grey.</p> <p>Diamict, massive, matrix-to-clast supported, shelly, moderately calcareous black monosulphidic streaks give H<sub>2</sub>S odour, very soft to firm, dark olive-grey.</p> <p>Mudstone, calcareous, nodular, ammonite and other shell debris, disseminated pyrite, hard, conchoidal fracture, very dark grey to black.</p> <p>Ammonite at 28.5m</p>

Rec'd 4/1/89.

copy to

Dr. Beris Cox,

B.G.S. Biostratigraphy Group,

Keyworth.

Little Niche  
Borehole  
88/6

Beris,

Happy to confirm your identification. Breaking the specimen out from the core proved it to be quite a reasonably well preserved, by Gavoniana clay standards.

Best wishes,  
Nicol.

**BIRKBECK COLLEGE**  
**(University of London)**

Department of Geology  
tel. (01) 631 6550 (direct line)

7/15 Gresse Street  
London W1P 1PA.  
6th January 1989

**Report on fossils from B.G.S. Marine Geology Group Borehole 88/6**

Samples CSC 7590/7591

These two samples overlap and are counterparts so represent about 5 cm of sequence. They have been broken up by me to extract the fossils which were visible and to see what others could be found. Individual fossils and rock fragments have been numbered to retain the original distinction into two samples, but there are no differences between the samples so that this report deals with both together.

Apart from fish scale and bone fragments and coprolites which appear to occur throughout, the macrofossils found include :

1. One moderately large ammonite fragment, mainly crushed but with part of the body chamber preserved uncrushed in a nodule. It is evolute with thick round whorl cross-section, sharp distant primary ribs (c.10 per quarter whorl) which are slightly flexed and branch at small tubercles on the middle of the whorl sides into two equally sharp secondary ribs which are straight but slightly prorsiradiate towards the venter. There are pointed tubercles on each secondary rib at the ventral shoulder, and the ribs fade from these onto the venter which is broad, flat and with a central smooth band where the ribs do not cross from one side to the other. This specimen has been identified as *Garantiana* (*Garantiana*) aff. *garantiana* (d'Orbigny) (macroconch) and can be matched with specimens from the Garantiana Clay Member on Raasay (Dietl & Morton MS submitted to Scott, J. Geol.). The age is the lower part of the Garantiana Zone, Upper Bajocian (almost certainly *Dichotoma* Subzone).
2. One indeterminate ammonite fragment (in CSC 7590).



3. Several specimens of a small globose bivalve. One well preserved specimen with shell and internal and external moulds was recovered (in CSC 7591) and is identified as *Nuculoma variabilis* (Sowerby). This nuculid is a shallow burrowing deposit feeder and is typical of environments with high sedimentation rates in which high organic content may result in reduced levels of oxygen availability in the sediment.
4. Two or three specimens of a larger bivalve occur in both samples. This is almost certainly a *Retroceramus* sp., but I don't know which species. One specimen (in CSC 7590) appears to have both valves present but displaced relative to each other. This is an epifaunal bivalve which is characteristically Boreal in its distribution.
5. One fragment of an indeterminable elongate bivalve with concentric ornament indicated the presence of a third species.

The lithology and especially the ammonite identify this piece of core as being from the Upper Bajocian Garantiana Clay Member of the Bearreraig Sandstone Formation. If all 7 m of mudstone reported in the borehole belong to the Garantiana Clay then this unit is thicker in 88/6 than at outcrop, but the upper part could be from the Cullaidh Shale Formation of the Great Estuarine Group. I note that 6.65 m of core were recovered, and further examination of this should be informative.

It is a pity that the borehole did not go slightly deeper, to penetrate the uppermost part of the Bearreraig Sandstone Formation. At outcrop this formation is very variable in thickness and facies, as a classic marine synrift sequence. It would have been very informative to know the lithological character so near to the western margin of the Hebrides Basin, for example whether there would be evidence for a western, Lewisian, source.

*Nicol Morton*

Nicol Morton.

Dr. Martyn Stoker.

B.G.S. Marine Geology Group.

Edinburgh.