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**PALYNOLOGY REPORT OF OUTCROP SAMPLES FROM
NORTH SLOPE, ALASKA**

by

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Alaska Division of
Geological and Geophysical Surveys

May 1990

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STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

PALYNOLOGY REPORT
OF
OUTCROP SAMPLES FROM NORTH SLOPE, ALASKA



May 21, 1990

TO: R. Reifensstuhl/R. Clement
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Division of Geological & Geophysical Surveys
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SUBJECT: Palynology Report - Outcrop samples from North Slope, Alaska.

Introductory Summary

A total of 48 palynological slides from outcrop samples taken in the Colville River and Ivishak River areas were examined. The slides were previously prepared and analyzed by a laboratory other than Micropaleo Consultants, Inc.(M.C.I.). The present study, by M.C.I., was conducted under the "rapid analysis" format which does not provide a detailed record of all palynomorphs observed.

All of the samples that were previously reported as age indeterminate remain unchanged. In addition, a few samples where previous age assignments are judged to be based on insufficient data, were herein assigned an indeterminate age.

The remaining samples, which all had an age assignment, were modified to some degree. Often based on what was not recovered in an assemblage, a tentative age range can be interpreted.

Results

In this section the age, zone, environment of deposition, and any key palynomorph taxa observed are given for each sample.

The palynological zone terminology is an informal system used by M.C.I. for northern Alaska strata. A chart is included (Figure 1) which relates these zones to the stage subdivisions.

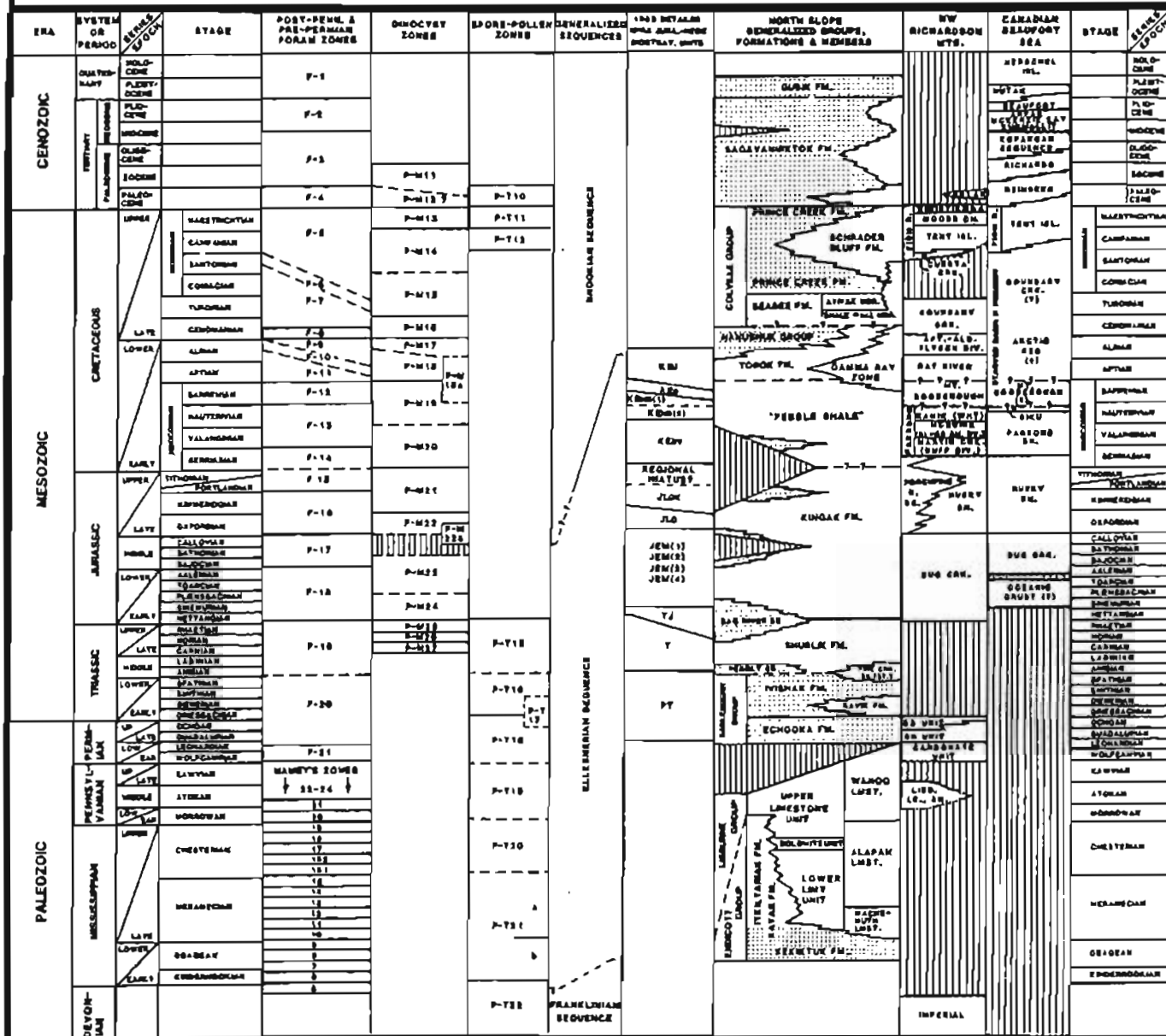


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ALASKAN - CANADIAN ARCTIC

GENERALIZED BIOSTRATIGRAPHIC CHART

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The environment of deposition as interpreted in the palynological preparations is stated as nonmarine, marginal marine, or marine. These designations are simply categories based on the absence or presence and diversity of microplankton.

01) 88MR5B

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Long-ranging Jurassic to Cretaceous spore-pollen assemblage.

02) 88MR6A

<u>Age.</u>	Late Cretaceous Campanian - Maestrichtian (Probable Campanian)
<u>Zone.</u>	Probable P-T12
<u>Environment.</u>	Marginal marine
<u>Palynomorphs.</u>	<i>Aquilapollenites trialatus</i> (single) <i>A.</i> spp. (rare) <i>Isabelidium</i> sp. (single)
<u>Remarks.</u>	The most age-limiting species is <i>A. trialatus</i> . However, since only a single specimen was recorded, a tentative Campanian age is given.

03) 88MR7A

<u>Age.</u>	Probable Early Cretaceous Possible Aptian - Albian
<u>Zone.</u>	Possible P-M18 to P-M17
<u>Environment.</u>	Nonmarine. No evidence of marine.

03) 88MR7A (Cont.)

Palynomorphs. Undifferentiated bisaccates (frequent)
Deltoidospora spp. (common)
Leptolepidites sp. (rare)

Remarks. The presence of *Leptolepidites* suggests an early Cretaceous age for this sample. Based on forms which are not present in the assemblage, a possible Aptian to Albian age is proposed.

04) 88MR8B

Age. Late Cretaceous
Campanian

Zone. P-T12

Environment. Nonmarine. No evidence of marine.

Palynomorphs. *Aquilapollenites trialatus* (abundant)
A. spp. (frequent)

Remarks. The abundant presence of the marker species, *A. trialatus*, suggests a Campanian age for this sample.

05) 88POS68B

Age. Indeterminate

Environment. Nonmarine. No evidence of marine.

Palynomorphs. Long-ranging Jurassic to Cretaceous spore-pollen assemblage.

06) 88POS69B

Age. Indeterminate

Environment. Nonmarine. No evidence of marine.

Palynomorphs. Barren of palynomorphs.

07) 88POS40L

<u>Age.</u>	Probable Senonian Undifferentiated
<u>Zone.</u>	Probable P-M14 to P-M13
<u>Environment.</u>	Marginal marine.
<u>Palynomorphs.</u>	Undifferentiated bisaccates (common) <i>Deltoidospora</i> spp. (common) <i>Lycopodiumsporites</i> spp. (common) <i>Osmundacidites</i> spp. (common) <i>Chatangiella</i> cf. <i>C. biapertura</i> (single)
<u>Remarks.</u>	The tentative age assignment is due to the presence of only a single specimen of the key dinocyst form, <i>Chatangiella</i> .

08) NS402

<u>Age.</u>	Late Cretaceous Campanian - Maestrichtian (Probable Maestrichtian)
<u>Zone.</u>	Probable P-T11
<u>Environment.</u>	Nonmarine to very marginal marine.
<u>Palynomorphs.</u>	<i>Aquilapollenites</i> cf. <i>A. magnus</i> (rare) <i>A.</i> spp. (rare)
<u>Remarks.</u>	The rare, poorly preserved specimens of <i>Aquilapollenites</i> , which are compared to the form <i>A. magnus</i> , are the basis for a probable Maestrichtian age interpretation.

09) NS508

<u>Age.</u>	Possible Late Cretaceous Possible Maestrichtian
<u>Zone.</u>	Possible P-T11

09) NS508 (Cont.)

Environment. Nonmarine to very marginal marine.
Palynomorphs. *Aquilapollenites magnus* (single)
Remarks. The single specimen of *A. magnus* is the basis for a possible Maestrichtian age for this sample.

10) 89MR2C

Age. Indeterminate
Environment. Nonmarine. No evidence of marine.
Palynomorphs. Indeterminate spore, dark brown (single)

11) 89MR3A

Age. Indeterminate
Environment. Nonmarine. No evidence of marine.
Palynomorphs. Undifferentiated bisaccate (single)

12) 89MR7C

Age. Indeterminate
Environment. Nonmarine. No evidence of marine.
Palynomorphs. Barren of indigenous palynomorphs.

13) 89MR8C

Age. Indeterminate
Environment. Nonmarine. No evidence of marine.
Palynomorphs. Barren of identifiable palynomorphs.

14) 89MR9C

Age. Indeterminate

Environment. Nonmarine. No evidence of marine.

Palynomorphs. Indeterminate spores & spore fragments. Poorly preserved.

15) 89MR13C

Age. Cretaceous
Undifferentiated

Environment. Marine.

Palynomorphs. Undifferentiated bisaccates (common)
Cleistosphaeridium spp. (frequent)
Hystrichosphaeridium stellatum (rare)
Oligosphaeridium complex (single)

Remarks. All palynomorphs poorly preserved.

16) 89MR16C

Age. Probable Jurassic - Early Neocomian

Zone. Possible P-M22 to P-M20

Environment. Nonmarine. No evidence of marine.

Palynomorphs. Indeterminate spore fragments (common)
Corollina spp. (abundant)

Remarks. All organics highly corroded.

17) 89MR16D

Age. Probable Jurassic - Early Neocomian

Zone. Possible P-M24 to P-M20

17) 89MR16D (Cont.)

<u>Environment.</u>	Marginal marine.
<u>Palynomorphs.</u>	Indeterminate spore fragments (frequent) <i>Corollina</i> spp. (frequent) <i>Michrhystridium</i> spp. (rare)
<u>Remarks.</u>	All organics highly corroded. The few specimens of acritarchs indicate at least a marginal marine environment.

18) 89MR16E

<u>Age.</u>	Early - Middle Jurassic
<u>Zone.</u>	P-M23
<u>Environment.</u>	Marine.
<u>Palynomorphs.</u>	<i>Corollina</i> spp. (frequent) <i>Nannoceratopsis gracilis</i> (rare) <i>Parvocysta cracens</i> (frequent) Undescribed form JRD-5 (single) <i>Michrhystridium</i> spp. (rare)
<u>Remarks.</u>	All organics highly corroded.

19) 89MR18C

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Indeterminate spores & spore fragments. Poorly preserved.

20) 89MR19C

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Indeterminate spores & spore fragments. Poorly preserved.

21) 89MR24C

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Indeterminate spores & spore fragments.

22) 89MR30C

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably marginal marine.
<u>Palynomorphs.</u>	Indeterminate palynomorph fragments (frequent) <i>Oligosphaeridium complex(?)</i> (single)
<u>Remarks.</u>	Palynomorphs all poorly preserved.

23) 89MR32C

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably nonmarine.
<u>Palynomorphs.</u>	Barren of palynomorphs.

24) 89MR33C

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably nonmarine.
<u>Palynomorphs.</u>	Undifferentiated bisaccates (rare)

25) 89MR39C

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably marginal marine.

25) 89MR39C (Cont.)

Palynomorphs. Undifferentiated bisaccates (frequent)
Hymenozonotriletes lepidophytus (rare) reworked
Cleistosphaeridium sp. (single)

26) 89MR44C

Age. Early Cretaceous
Aptian - Albian

Zone. P-M18 to P-M17

Environment. Marine

Palynomorphs. Undifferentiated bisaccates (abundant)
Muderongia asymmetrica/V. mayi (abundant)
Palaeoperidinium cretaceum (rare)
Oligosphaeridium complex (thick-wall) (single)
O. pulcherrimum (single)
Spiniferites ramosus (rare)

Remarks. Due to the absence of certain middle to late Albian markers, it is possible that this sample is of Aptian - Early Albian (P-M18) age.

27) 89MR49C

Age. Indeterminate

Environment. Probably nonmarine.

Palynomorphs. Barren of palynomorphs.

28) 89MR50C

Age. Indeterminate

Environment. Nonmarine. No evidence of marine.

Palynomorphs. Undifferentiated bisaccates (rare)

29) 89RR19A

<u>Age.</u>	Probable Late Jurassic
<u>Zone.</u>	Probable P-M22 to P-M21
<u>Environment.</u>	Marginal marine.
<u>Palynomorphs.</u>	Undifferentiated bisaccates (rare) <i>Pareodinia ceratophora</i> (single)

30) 89RR20-500

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Barren of indigenous palynomorphs.

31) 89RR20-285

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Barren of palynomorphs.

32) 89RR20-1856

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Indeterminate spore, poorly preserved (single)

33) 89RR20-2722

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Nonmarine. No evidence of marine.

33) 89RR20-2722 (Cont.)

Palynomorphs. Indeterminate palynomorph fragments, poorly preserved (rare)

34) 89RR26B

Age. Indeterminate

Environment. Probably nonmarine. No evidence of marine.

Palynomorphs. Barren of palynomorphs.

35) 89RR39B

Age. Probable Early Cretaceous
Probable Aptian - Albian

Zone. Probable P-M18 to P-M17

Environment. Marine.

Palynomorphs. *Hymenozonotriletes lepidophytus* (abundant) reworked.
Cyclonephelium distinctum (rare)
Imbatodinium jaegeri (rare)
Odontochitina operculata (rare)
Oligosphaeridium complex (frequent)
O. complex (thick-wall) (rare)

Remarks. Due to the absence of certain middle to late Albian markers, it is possible that this sample is of Aptian - Early Albian (P-M18) age.

36) 89RR45C

Age. Probable Early Cretaceous
Possible Aptian - Albian

Zone. Possible P-M18 to P-M17

Environment. Marginal marine.

36) 89RR45C (Cont.)

Palynomorphs. Undifferentiated bisaccates (rare)
Hymenozonotriletes lepidophytus (rare) reworked.
Taeniaesporites spp. (rare) reworked.
Oligosphaeridium complex(?)(single)

37) 89RR46A

Age. Probable Early Cretaceous
Possible Aptian - Albian

Zone. Possible P-M18 to P-M17

Environment. Marginal marine.

Palynomorphs. Undifferentiated bisaccates (common)
Hymenozonotriletes lepidophytus (common) reworked.
Taeniaesporites spp. (rare) reworked.
Oligosphaeridium complex (single)

38) 89RR65B

Age. Indeterminate

Environment. Probably nonmarine. No evidence of marine.

Palynomorphs. *Hymenozonotriletes lepidophytus* (common) reworked.

39) 89RR70A

Age. Indeterminate

Environment. Probably nonmarine. No evidence of marine.

Palynomorphs. Barren of indigenous palynomorphs.

40) 89PE22B

Age. Late Cretaceous
Campanian

Zone. P-T12

Environment. Marginal marine.

Palynomorphs. *Aquilapollenites trialatus* (rare)
Chatangiella biapertura (single)
C. spp. (frequent)

41) 89PE34

Age. Probable Late Jurassic

Zone. Possible P-M22 to P-M21

Environment. Marginal marine.

Palynomorphs. Undifferentiated bisaccates (common)
Corollina spp. (rare)
Pareodinia ceratophora(?) (single)

Remarks. This assemblage could possibly range as young as early Neocomian.

42) 89PE49

Age. Indeterminate

Environment. Probably nonmarine. No evidence of marine.

Palynomorphs. Undifferentiated bisaccates (rare)
Taeniaesporites spp. (frequent) reworked?
Indeterminate spore fragments (frequent)

Remarks. The frequent occurrence of *Taeniaesporites* would suggest a Triassic age; however, these forms are commonly reworked into post-Triassic strata of the region, and without a more diverse associated assemblage, does not present a reliable basis for an age assignment.

43) 89IM05

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Indeterminate spore, poorly preserved (single)

44) 89IM06

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Barren of indigenous palynomorphs.

45) 89IM08

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Indeterminate spore fragments (rare)

46) 89IM50A

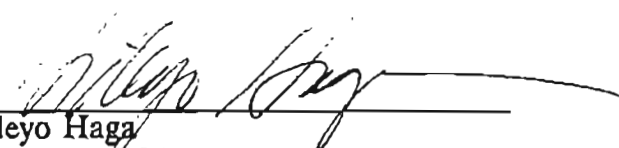
<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Barren of indigenous palynomorphs.

47) NS79C

<u>Age.</u>	Indeterminate
<u>Environment.</u>	Probably nonmarine. No evidence of marine.
<u>Palynomorphs.</u>	Undifferentiated bisaccates (rare)

48) NS90A

<u>Age.</u>	Late Cretaceous Probable Campanian
<u>Zone.</u>	Probable P-T12
<u>Environment.</u>	Marginal marine.
<u>Palynomorphs.</u>	Undifferentiated bisaccates (abundant) <i>Aquilapollenites trialatus</i> (single) <i>Chatangiella biapertura</i> (single) <i>Odontochitina operculata</i> (rare)



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ADDENDUM

The following table presents a summary of the results and compares the previous age assignments to those of this study.

COMPARISON OF RESULTS

<u>Sample</u>	<u>Previous Age</u>	<u>M.C.I. Age</u>
01)88MR5B	Indeterminate	Indeterminate
02)88MR6A	E. Maest.	Camp.-Maest.(prob. Camp.) Prob. P-T12
03)88MR7A	Poss. Albian	Poss. Apt.-Alb. Poss. P-T18 to P-T17
04)88MR8B	Early Maest.	Campanian P-T12
05)88POS68B	Indeterminate	Indeterminate
06)88POS69B	Indeterminate	Indeterminate
07)88POS40L	Late Santonian	Prob. Senonian Prob. P-M14 to P-M13
08)NS402	Cretaceous	Camp.-Maest.(prob. Maest.) Prob. P-T11
09)NS508	Early Maest.	Poss. Maest. Poss. P-T11
10)89MR2C	Indeterminate	Indeterminate
11)89MR3A	Indeterminate	Indeterminate
12)89MR7C	Indeterminate	Indeterminate
13)89MR8C	Indeterminate	Indeterminate

14)89MR9C	Indeterminate	Indeterminate
15)89MR13C	Barr.-Alb.	Cretaceous (undiff.)
16)89MR16C	Jurassic	Prob. Jur.-Early Neocomian Poss. P-M22 to P-M20
17)89MR16D	Jur.-Early Cret.	Prob. Jur.-Early Neocomian Poss. P-M24 to P-M20
18)89MR16E	Bajocian	Early-Mid. Jur. P-M23
19)89MR18C	Indeterminate	Indeterminate
20)89MR19C	Indeterminate	Indeterminate
21)89MR24C	Indeterminate	Indeterminate
22)89MR30C	Indeterminate	Indeterminate
23)89MR32C	Indeterminate	Indeterminate
24)89MR33C	Indeterminate	Indeterminate
25)89MR39C	Early Cret.	Indeterminate
26)89MR44C	Early Alb.	Apt.-Alb. P-M18 to P-M17
27)89MR49C	Indeterminate	Indeterminate
28)89MR50C	Indeterminate	Indeterminate
29)89RR19A	Prob. Jur.	Prob. Late Jur. Prob. P-M22 to P-M21
30)89RR20-500	Indeterminate	Indeterminate
31)89RR20-285	(not reported)	Indeterminate
32)89RR20-1856	Indeterminate	Indeterminate

33)89RR20-2722	Late Jur.-E.Cret.	Indeterminate
34)89RR26B	Indeterminate	Indeterminate
35)89RR39B	Barr.-Apt.	Prob. Apt.-Alb. Prob. P-M18 to P-M17
36)89RR45C	Berr.-Haut.	Poss. Apt.-Alb. Poss. P-M18 to P-M17
37)89RR46A	Berr.	Poss. Apt.-Alb. Poss. P-M18 to P-M17
38)89RR65B	Indeterminate	Indeterminate
39)89RR70A	Indeterminate	Indeterminate
40)89PE22B	Sant.-Camp.	Camp. P-T12
41)89PE34	Poss. Bathonian	Prob. Late Jur. Poss. P-M22 to P-M21
42)89PE49	Prob. Jur.	Indeterminate
43)89IM05	Indeterminate	Indeterminate
44)89IM06	Indeterminate	Indeterminate
45)89IM08	Indeterminate	Indeterminate
46)89IM50A	Indeterminate	Indeterminate
47)NS79C	Jur.-Early Cret.	Indeterminate
48)NS90A	Apt.-Early Alb.	Late Cret.(prob. Camp.) Prob. P-T12