GENERALIZED SUBSURFACE BIOSTRATIGRAPHIC CHART

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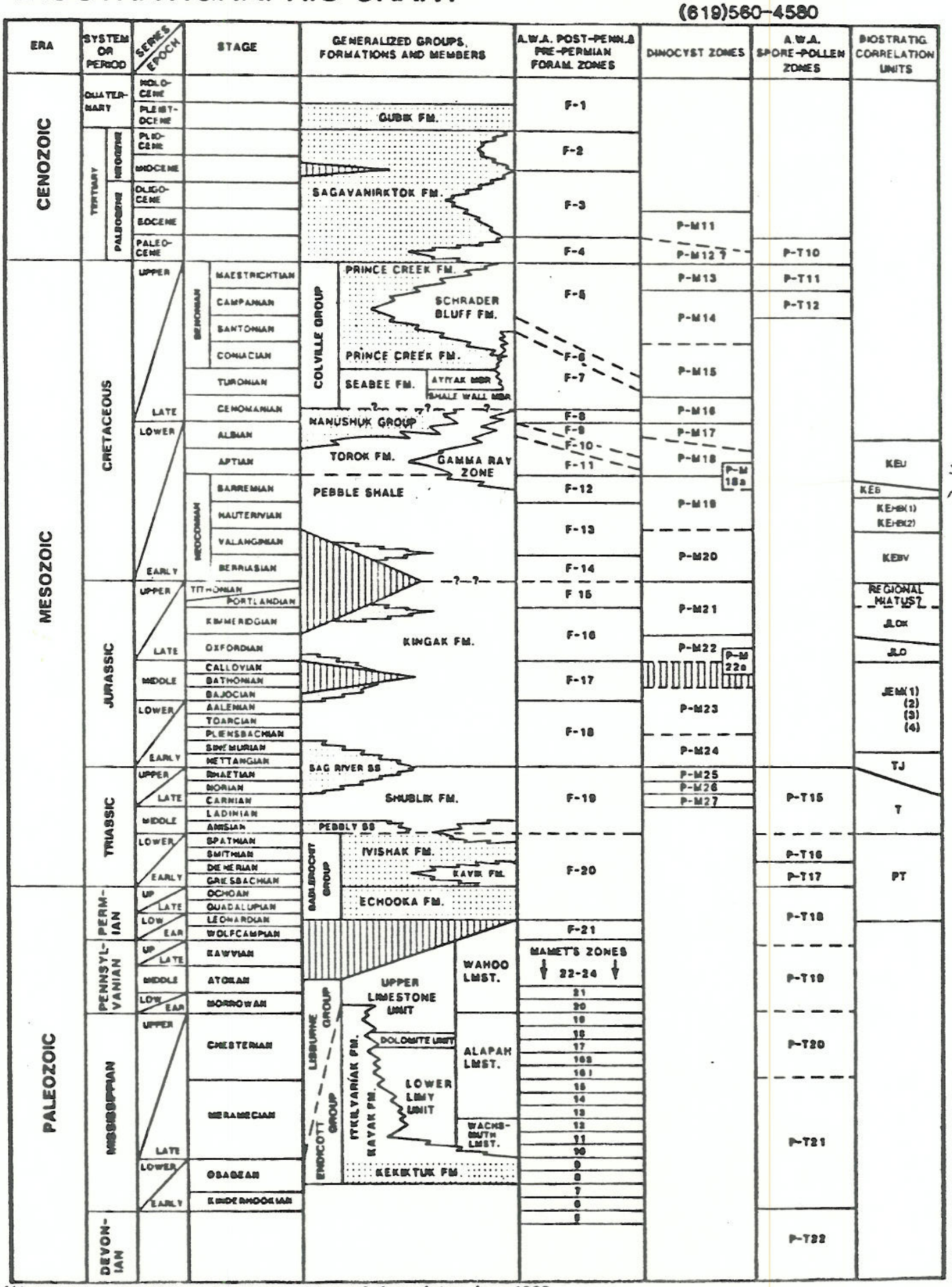

Modified from U.S.G.S. and Anderson, Warren & Associates, Inc.-1980

Text Figure 2

Procedures

The Neocomian or "Pebble Shale" interval from seven (7) Barrow area test wells was studied in detail. The wells were chosen to provide the optimum in geographic and stratigraphic/sample coverage for the area. The wells selected were:

1) South Barrow #1
2) South Barrow #2
3) South Barrow #3
4) South Barrow #9
5) South Barrow #16
6) South Barrow #18
7) Iko Bay #1

This foraminiferal and palynological study involved the reprocessing and examination of selected intervals, the examination of previously prepared samples, and the interpretation of previously recorded microfossil data from the wells.

The sample types encompassed mainly 30 foot composites of ditch cuttings and sidewall or conventional cores. The reprocessing was conducted by the BioStratigraphics Laboratory, San Diego, California.

All of the examined slides are on reposit at the U.S. Geological Survey (ONPRA) in Menlo Park, California.

The initial step was to examine the foraminiferal and palynomorph assemblages to derive the biostratigraphic subdivisions for each discipline. These data were then integrated with the electric logs in two (2) subsurface stratigraphic correlation sections (Figures 1 and 2).

Additionally, the Foraminifera species diversities were correlated on a second set of correlation sections (Figures 3 and 4), in which the integrated biostratigraphic unit boundaries have been adjusted to the nearest Foraminifera sample boundary. The dotted diversity event correlations on these sections are probably closest to being time-stratigraphic horizons. The integrated subdivision boundaries are biostratigraphic or rock-stratigraphic in nature, and they should not be used as time-stratigraphic correlation horizons.

Report Format

Following the introductory remarks, in Volume I, a discussion for each subdivision is given in the Results. The final results are also displayed in the

correlation sections at the back of this Volume (Figures 1 through 4).

A very brief Conclusions section follows the Results.

Volume II contains the data for the individual wells. The data for each well consists of five parts:

- Integrated Summary
- Foraminifera Summary
- Palynology Summary
- Foraminifera Distribution Chart
- Palynomorph Distribution Chart

RESULTS

The correlative units carried on the cross-sections are discussed below.

KEU

This Early Cretaceous unit is the thin interval of strata in the zone of highest gamma ray readings. The interval thickness varies from about 20 feet in the southern wells (S. Barrow #3 and Iko Bay #1) to almost 40 feet in wells toward the north. This slight thickening in the northward direction suggests that north of the

South Barrow #3 and Iko Bay #1 wells, a slightly higher rate of subsidence permitted a thicker accumulation of KEU strata.

This unit generally lacks significant numbers of northern source rounded frosted quartz floating sand grains, and probably represents southern source distal deposition.

The KEU unit may be, in part, Barremian and probably at least Aptian to possibly Early or Middle Albian in age (Mickey, M.B., and Haga H., 1983).

KEB

The KEB interval ranges in thickness from about 320 feet to 500 feet. Similar to the unit above, the KEB strata tends to thicken toward the north, but this thickening probably represents normal depositional thickening toward the source area.

This unit consists of normal marine clastic deposits in contrast to the distal (starved basin) deposits of the KEU unit. The KEB unit carries rounded frosted quartz floating sand grains and is considered to have had a northern source area. This unit appears to thin southward from the Barrow area into distal (starved basin) deposits (Mickey, M.B., and Haga, H., 1983).

The micropaleontolcgic data indicate a change in the faunal and floral assemblage in the basal part of this unit. A broken line marks this horizon on the cross sections (Figures 1 and 2). The microfossil ranges suggest a Hauterivian to Barremian age below this horizon. Each well on the Integrated Sections also shows a depth followed by a F or P near the bottom of the KEB interval. These depths mark the Foraminifera and palynomorph horizons for the top of the Huaterivian-Barremian strata in the respective disciplines.

It may be that this horizon actually represents the boundary between the Hauterivian and Barremian strata, however, the present state of knowledge can not provide absolute proof that this is the case.

KEHB (1)

The Hauterivian to Barremian age unit KEHB (1), is correlated as a unit identical to the KEHB (1) in the Jurassic-Neocomian Study (Mickey, M.B., and Haga, H., 1983). As discussed above, however, we now see that equivalent age strata occur above this interval. An asterisk (*) has been added to denote this observation on the correlation sections of this study.

The KEHB (1) unit ranges in thickness from 16 feet to 50 feet. The thickest sections occur in the Iko Bay #1 to the south, and in the South Barrow #1 to the north. The occurrence in the South Barrow #1 has been questioned only because no corroborating palynological evidence for any Hauterivian-Barremian was observed.

The KEHB (1) unit consists of the oldest Cretaceous strata in the Barrow area. This unit unconformably overlies argillitic basement rocks in the South Barrow #16 and South Barrow #1 wells; and Early to Middle Jurassic rocks in the South Barrow #2, #3, #9, #18, and Iko Bay #1 wells. [This "basal" Cretaceous unit therefore tends to onlap "the unconformity" in the Barrow area.]

JEM

The Early to Middle Jurassic strata were not examined in detail for this project. The general trend of this unit is to thin northward over the argillite basement. This is illustrated on the correlation sections in the pocket at the back of this volume.

CONCLUSIONS

The Neocomian strata studied in the South Barrow area can be subdivided into three (3) correlative units. these units are the KEU , KEB , and KEHB (1).

The KEU , or undifferentiated Early Cretaceous unit, consists of distal (starved basin) deposits, probably with a southern source. This unit essentially lacks northern source rounded frosted quartz floating sand grains.

The KEB , or Barremian unit, consists of normal marine clastic deposits containing northern source rounded frosted quartz floaters. South of the Barrow area, this unit probably thins into distal (starved basin) deposits.

The KEHB (1), or Hauterivian-Barremian unit, appears to onlap "the unconformity" in the Barrow area. We now recognize that the top of this unit should probably be placed about 20 feet to 50 feet higher in the Barrow area wells.

REFERENCES

Mickey, M.B., and Haga, H., 1983. Jurassic-Neccomian Seismic Stratigraphy, NPRA, N.O.A.A. Item Number TGY 0220.