Oxford Bedrock Geology Map w/ Explanation

Patrick J. Barosh

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OPTIONAL FORM NO. 10
5010-103

UNITED STATES GOVERNMENT

Memorandum

TO : Hugo Thomas, State Geologist
Conn. Dept. of Environmental Protection
561 State Office Building
Hartford, CT 06115

DATE: August 1976

FROM :
Elizabeth Good, Room 1304, U.S. Geol. Survey
150 Causeway Street, Boston, MA 02114

SUBJECT:
Barosh, P.J., 1976, Preliminary bedrock geologic map of the Oxford quadrangle, Mass.-Conn.-R.I.: U.S. Geol. Survey open-file report 76-622, 5p., 1 plate, scale of map, 1:24,000

As you can see from the attached announcement, your office is a depository for the above cited open-file report. Enclosed are: 1) a paper copy of the preliminary bedrock geologic map of the Oxford quadrangle; 2) a sepia copy of the preliminary bedrock geologic map of the Oxford quadrangle; and 3) the 5p. explanation of map units.

U.S. GEOLOGICAL SURVEY
Reston, Va. 22092

Memorandum

Date 8/12/76

To: Branch of Plans and Program Management,
Publications Division - Stop 329

From: Chief, Office of Scientific Publications

Subject: New USGS open-file report

The following report was authorized by W. P. Ketterer for the Director on 8/12/76 for release in the open files:

TITLE: Preliminary bedrock geologic map of the Oxford quadrangle, Massachusetts, Connecticut, Rhode Island.

AUTHOR(S): P. J. Barosh

CONTENTS: 5 p., 1 pls., ____ figs., ____ tables.

Map scale: 1:24,000

Depositories:

USGS, Room 4A100, 12201 Sunrise Valley Dr., Reston, VA 22092
* USGS, Room 1304, 150 Causeway St., Boston, MA 02114
Massachusetts Dept. Public Works, 99 Worcester St., Wellesley Hills, MA 02181
Connecticut Dept. Environmental Protection, 561 State Office Bldg., Hartford, CT 06115

Release date: AUGUST 1976

Area: MA, CT, RI

Report No. 76-622

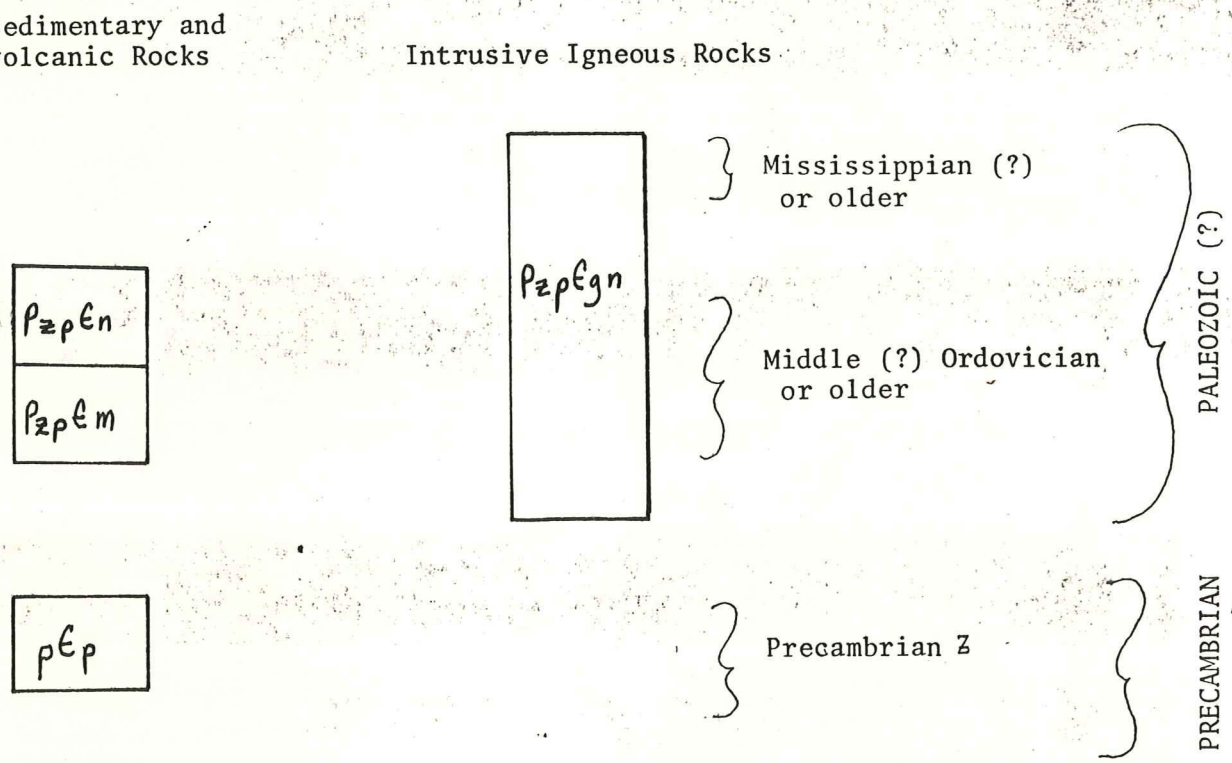
(*) Asterisks indicate depositories holding reproducibles.

Preliminary Bedrock Geologic Map of the Oxford Quadrangle, Massachusetts-Connecticut-Rhode Island

by Patrick J. Barosh

1976

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

PεpCgn GRANITIC GNEISS - Moderate to well foliated medium-gray porphyritic quartz monzonite; weathers about the same. Commonly hydrothermally altered and has mafic minerals changed to chlorite and feldspars altered to a pink color. Includes Ponaganset Gneiss and Scituate Granite Gneiss and possibly small bodies of Hope Valley Alaskite Gneiss. Intrudes the Plainfield Formation.

PεpCn NASHOBA FORMATION - The Nashoba Formation of Hansen (1956) was redescribed by Bell and Alvord (in press). The Nashoba is used here in its original broader sense, which includes the Shawsheen and Fish Brook Gneisses at the base. The Nashoba is characterized by light- to medium-gray, medium- to coarse-grained, medium-bedded quartzose-feldspathic gneiss; beds of amphibolite and various types of schist and marble are common at certain horizons. The Nashoba is overlain by the Tadmuck Brook Schist, not exposed in the Oxford quadrangle, at a slight angular discordance which probably represents an unconformity but could be due to faulting. It conformably overlies the Marlboro Formation. The Nashoba correlates with the Tatnic Hill Formation of Dixon (1964) in Connecticut. The Nashoba is about 15,000 m thick to the north (Bell and Alvord, in press), but it is much thinner in the Oxford quadrangle due to omission by faults.

$P_zp\epsilon nm$- heavily mylonitized rocks of the Nashoba Formation.

PzpCm MARLBORO FORMATION - pre-Silurian

Bedded to massive amphibolite forms the upper part of the Marlboro Formation (Emerson, 1917, Bell and Alvord, in press) in the Oxford area. This amphibolite is generally lighter and contains a few beds of quartzose-feldspathic gneiss. The basal contact is faulted, and the upper contact with the Nashoba Formation is gradational, although it may be locally faulted. The Marlboro is correlative in Connecticut with the Quinebaug Formation of Dixon (1964). The Marlboro and the overlying Nashoba Formation are considered pre-Middle Ordovician in age by Alvord, (1975) on the basis of radioactive-age dating. The Marlboro Formation is about 2,000 m thick to the north; the upper part, the Sandy Pond Amphibolite Member being 640 m thick (Bell and Alvord, in press).

pCp PLAINFIELD FORMATION - Lundgren (1962) named the Plainfield Formation from exposures in eastern Connecticut. It consists of medium-grained quartzite interbedded with fine- to medium-grained biotite-muscovite schist. The quartzite is light gray to buff in medium to thick beds where it forms almost all the section, and medium gray with greenish and purplish casts in thin beds where it is interbedded with pelitic schists. In both places it weathers slightly lighter. The Westboro Quartzite, a probable correlative to part of the Plainfield

Formation is intruded by rocks dated as Precambrian (Nelson, 1975). The lower contact is an intrusive one, and the upper contact is faulted.

SYMBOLS

Contact, dashed where approximately located

Fault - dashed where approximately located; showing relative movement, saw teeth on upper plate of thrust fault

Anticline, showing plunge

Strike and dip of bedding and foliation

Strike and dip of foliation

Horizontal foliation

Strike and dip of joint

Strike of vertical joint

References Cited

Alvord, D.C., 1975, Preliminary bedrock geologic maps of the Westford and Billerica quadrangles, Middlesex County, Massachusetts: U.S. Geol. Survey open-file report 75-387.

Bell, K.G. and Alvord, D.C., in press, Pre-Silurian stratigraphy of northeastern Massachusetts: in Page, L.R., ed., New England Stratigraphy: Geol. Soc. America Mem. 148.

Dixon, H.R., 1964, The Putnam Group of eastern Connecticut: U.S. Geol. Survey Bull. 1194-C, 12 p.

Emerson, B.K., 1917, Geology of Massachusetts and Rhode Island: U.S. Geol. Survey Bull. 597, 289 p.

Hansen, W.R., 1956, Geology and mineral resources of the Hudson and Maynard quadrangles, Massachusetts: U.S. Geol. Survey Bull. 1038, 104 p.

Lundgren, Lawrence, Jr., 1962, Deep River area, Connecticut: Stratigraphy and structure: Am. Jour. Sci. v. 260, p. 1-23.

Nelson, A.E., 1975, Bedrock geologic map of the Natick quadrangle, Middlesex and Norfolk Counties, Massachusetts: U.S. Geol. Survey Geol. Quad. Map GQ-1208.

TOP

Oxford MASS

6/3/76

PREPARED IN COOPERATION WITH THE

COMMONWEALTH OF MASSACHUSETTS — DEPARTMENT OF PUBLIC WORKS

STATE OF CONNECTICUT — GEOLOGICAL AND NATURAL HISTORY SURVEY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

OXFORD QUADRANGLE
MASSACHUSETTS—CONNECTICUT—RHODE ISLAND
7.5 MINUTE SERIES (TOPOGRAPHIC)

Mapped, edited, and published by the Geological Survey
Revised in cooperation with Massachusetts Department of Public Works

Control by USGS, USC&GS, and Massachusetts Geodetic Survey

Topography by planetable surveys 1942–43. Revised from aerial photographs taken 1966. Field checked 1969

Polyconic projection. 1927 North American datum
10,000-foot grids based on Massachusetts coordinate system, mainland zone, Connecticut coordinate system, and Rhode Island coordinate system
1000 meter Universal Transverse Mercator grid ticks, zone 19, shown in blue

the above information applies to the topographic base map

SCALE 1:24000

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

UTM GRID AND 1969 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

ROAD CLASSIFICATION

Primary highway, all weather, hard surface
Secondary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Unimproved road, fair or dry weather
State Route

QUADRANGLE LOCATION

OXFORD, MASS.—CONN.—R.I.
N4200—W7145/7.5
1969
AMS 4666 III SE—SERIES V814

SPECIAL PRINTING
Contours and woodland symbols omitted

PRELIMINARY BEDROCK GEOLOGIC MAP OF THE OXFORD QUADRANGLE, MASS.-CONN.-R.I.

BY P. J. BAROSH 1976

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