Maine Geological Survey
DEPARTMENT OF CONSERVATION
Walter A. Anderson, State Geologist

OPEN-FILE NO. 79-1

Title: Geologic Report to Accompany the Preliminary Bedrock Geologic Map of the Spencer Lake 15' Quadrangle, Maine

Author: William A. Burroughs

Date: 1979

Financial Support: Preparation of this report was supported by funds furnished by the U. S. Geological Survey, Contract No. 14-08-0001-17871.

This report is preliminary and has not been edited or reviewed for conformity with Maine Geological Survey standards.

Contents: 12 page report and map

INTRODUCTION

Geologic Setting

The Spencer Lake quadrangle, Somerset and Franklin Counties, lies squarely across two of the major structures that occupy the Dead River drainage basin, west-central Maine (Boone, Boudette, and Moench, 1970). The combined, subparallel trends of the Boundary Mountains Anticlinorium in the northwestern part of the quadrangle, the Moose River Synclinorium in the central part, and many other smaller folds and faults impart a pronounced northeasterly trending grain to the bedrock geology of the quadrangle. The rocks exposed across these structures naturally fall into three broad categories, reflected in map pattern by three adjacent belts of widely varying geologic character. These same geologic domains are essential elements of the bedrock geology of large parts of west-central Maine. These three belts have the following distribution within the Spencer Lake quadrangle:

1. Occupying approximately the northwestern half of the quadrangle are crystalline rocks of the Precambrian (?) Chain Lakes Massif intruded by the Ordovician Attean Quartz Monzonite (Albee and Boudette, 1972).

2. Southeast of this zone and unconformably overlying it in some places or in fault contact elsewhere are fossiliferous Silurian and Devonian metasedimentary rocks comprising the extreme southwestern end of the Moose River Synclinorium (Boucot, 1969). These rocks are essentially unmetamorphosed but moderately deformed by northeasterly trending folds.

3. Everywhere separated from the Moose River Synclinorium by a fault is a sequence of Ordovician (?) and Cambrian (?) metavolcanics, phyllite, and metagraywacke, the bulk of which are assigned to the Dead River and Hurricane Mountain Formations. Metamorphism of these rocks is at low chlorite grade, but they are intensely deformed. Prominent structures in these rocks have the same trend, style, and age as structures in the Moose River Synclinorium.

Access

With the exception of two sporting camps on Spencer and King and Bartlett Lakes, the Spencer Lake quadrangle has no year-round population. A number of camp access

trails and gravel logging roads in various states of disrepair comprise the road network. Most roads require four-wheel-drive vehicles, and there is no passable road transecting the quadrangle from north to south due to road abandonment or intentional destruction by some landowners to deny public access.

Most direct entry to the northern half of the quadrangle is by proceeding westward from U. S. Route 201 at Parlin Pond for 15 mi along a Scott Paper Company logging road which skirts the northern shores of Spencer Lake and Fish Pond, proceeds westward across the quadrangle to Rock Pond, and continues into the Chain Lakes 15-minute quadrangle. From this point roads lead north to Holeb (Attean quadrangle) and south to State Route 27 north of Eustis. Road conditions are extremely poor along this entire route.

Best access to the southern part of the quadrangle is along a logging road departing State Route 27 1 mi north of Eustis. Joining with this road are a well-maintained road network in King and Bartlett Township (southwestern quarter of the quadrangle) and a major haul road paralleling Spencer Stream and providing access eastward to Little Spencer Stream (southeast quarter). Access to this latter area also is possible from a haul road proceeding westward from U. S. Route 201 several miles north of The Forks. By far the most efficient means of entry to the quadrangle is by light float plane.

Exposure

Bedrock exposure level is extremely low because of the dense forest cover and the veneer of Pleistocene deposits (mostly glacial outwash material) that blankets lowlands, particularly in the southeastern two-thirds of the quadrangle. Exposure is better although not excellent along many high-gradient streams, and it is relatively good but sporadic on summits and steep slopes making up the rugged terrain in the northwestern part of the quadrangle.

Previous Work

Several geologists previously have surveyed in greater or less detail that

part of the Spencer Lake quadrangle underlain by low-grade metasedimentary rocks. Boucot (1969) produced a geologic map outlining in some detail the distribution of lithologies and in less detail the structures of the Moose River Synclinorium. This publication and Boucot (1961) contain detailed descriptions of the formations comprising the Synclinorium in the Spencer Lake quadrangle and its continuation eastward into the Pierce Pond quadrangle. Serra (1973) similarly mapped and described in detail Cambrian and Ordovician units and structure in the southern part of the Spencer Lake quadrangle.

In the north-adjacent Attean quadrangle Albee and Boudette (1972) have mapped, named, and described many of the same rock units and structures which continue into the Spencer Lake quadrangle. Boudette (1970) also has mapped the distribution of pre-Silurian rocks at the southwest terminus of the Moose River Synclinorium in the west-adjoining Chain Lakes 15-minute quadrangle. Boone's (1973) map and description of the Little Bigelow Mountain map area and unpublished data of Boone cover much of the terrain southeast of the Spencer Lake quadrangle.

Method of Study

The main thrust of this project was to undertake basic bedrock geologic mapping with emphasis on identifying potential mineral resources and on evaluating the extent of brittle fracture within the Spencer Lake quadrangle. Administrative authorization for this project was not forthcoming from the Maine Geological Survey until the first week in July, 1979, leaving a field season of approximately seven weeks. Inasmuch, however, as contractual obligations stipulated production of a bedrock geologic map of the entire 15-minute quadrangle, the research strategy adopted was to concentrate field survey in the hitherto unmapped terrain underlain by the Attean Quartz Monzonite and the Chain Lakes Massif in the northwestern half of the quadrangle and to rely as much as possible on the results of earlier workers in the southeastern half of the quadrangle. Limited field checking in this latter area would resolve any discrepancies between the work of various geologists. In general, research

activities followed this scheme and, consequently, the preliminary geologic map is essentially one-half the product of new reconnaissance mapping and one-half compilation of previous work with some modification due to field checking and additional geologic information acquired through new mapping in nearby areas.

Most adjustments occurred along the northwestern boundary of the Moose River Synclinorium and its environs. The main changes from Boucot (1969, pl. 13) are (1) elimination of the tail of Attean Quartz Monzonite on the northwest flank of Camera Ridge (SW ninth), (2) shifting of the contact between the Chain Lakes Massif and the Attean Quartz Monzonite in the WC ninth 1 km westward, and (3) shifting of the contact between the Seboomook Formation and Attean Quartz Monzonite on the western shore of Spencer Lake (EC ninth) 0.25 km southward. Contact lines drawn on the geologic map are annotated as to whether they are a result of new mapping or of compilation, and the explanation indicates what data sources were used in preparing portions of the final map.

To optimize exposure discovery in the time available, field survey initially concentrated on roads, stream channels, and lake shores. Away from these easily located topographic features navigation was by compass, pace, and altimeter traverse, verified by compass resection where relief and elevation provided a line of sight above the forest cover. Gross character and lithologies present (as determined under hand lens) were recorded for each outcrop as were prominent or consistent structural elements. Thin sections subsequently were examined where it was difficult to determine in the field the exact lithology or the interrelation of several lithologies in an outcrop. Outcrop localities visited in this study are annotated on the geologic map either by a dot symbol or by presence of a representative dip and strike symbol for the structural element(s) measured at that point.

LITHOLOGICAL DESCRIPTIONS

Where outcrop patterns have been compiled from existing maps, applicable rock descriptions appearing in the explanation to the geologic map have been carried

forward directly from explanations attached to the source maps. The reader is referred to Boucot (1969) and Serra (1973) for a more comprehensive discussion of post-Ordovician and pre-Silurian metasedimentary rock units, respectively, exposed in the Spencer Lake quadrangle. Most of the other references cited in this paper also contain detailed discussions of these rocks in nearby areas.

Albee and Boudette (1972) in the north-adjacent Attean quadrangle have described thoroughly many of the units, notably the Attean Quartz Monzonite and the Chain Lakes Massif, which are also exposed in the northwestern, hitherto unmapped portion of the Spencer Lake quadrangle. In all instances this report uses their formational map designation codes. Nevertheless, the units differ somewhat between the two quadrangles, and in some places new field evidence sheds light on previously ambiguous contact relations between these rocks. What follows, therefore, are descriptions of the modes of occurrence of rocks mapped in this study in the northwestern part of the Spencer Lake quadrangle.

Chain Lakes Massif

Two main varieties of granofels are the most abundant constituents of this highly metamorphosed complex. Most commonly encountered is a gray, equigranular (1-mm average grain size), quartzofeldspathic rock with grayish feldspar subordinate in most instances to quartz. Biotite or chlorite is variably abundant. Generally the rock is unlayered, but gneissic layering occurs sporadically due to the alternation of biotite- and quartzofeldspathic-rich bands.

A second type of granofels is texturally distinctive because of its coarse layering (over 1-m thick) and presence in some of these massive layers of elongate inclusions of the following three types:

1. Dark greenish-gray, aphanitic blocks up to 6-cm-long.

2. Coarsely crystalline (over 1-cm) quartz blebs and knots.

3. Highly rusty-weathering, ovoid inclusions up to 10-cm-long and composed of biotite and amphibole (cloritized in places). Alignment of minerals within these

blocks parallels inclusion boundaries.

As in the Attean quadrangle, diorite occurs within the granofels both as mappable entities and as small, isolated dikes and imprecisely bounded bodies. Felsite as well intrudes the granofels throughout the Spencer Lake quadrangle, typically as small, unmappable bodies but also in one large body in the SW ninth of the quadrangle. This dense, light olive-gray, aphanitic, quartzofeldspathic rock differs from younger igneous units such as the Attean Quartz Monzonite in that it is highly altered. In thin section widely scattered relict feldspar phenocrysts are mere saussuritized ghosts of grains, and matrix grains show a metamorphic rather than igneous texture, characterized by a mosaic of intergrown, rounded, and sutured grains.

Attean Quartz Monzonite

One of the most distinctive attributes of the Attean Quartz Monzonite is its variable composition. Generally it is a medium- to coarse-grained (1- to 3-mm grain size) rock containing two feldspars, little muscovite, moderate amounts of quartz, and minor biotite. Extensive alteration of minerals is restricted to shear zones. K-feldspar locally occurs as large rectangular phenocrysts, in some places up to 4 by 8 cm in size. In many places the rock approaches the composition of a granite by virtue of low plagioclase content and abundant quartz (estimated up to 25 per cent). Color on fresh surface varies from outcrop to outcrop, ranging from grayish-green, gray, and creamy white to mottled pink and white. The most common variety encountered was a buff, slightly porphyritic, two-feldspar rock with a quartz content in the vicinity of 15 per cent. Although the "characteristic" large K-feldspar phenocrysts occur in outcrops across the summit of Hardscrabble Mountain, on into the lowland to the north, and near the "Narrows" on Spencer Lake (EC ninth), in most other localities this type of phenocrystic development is not obvious. The rock has either and even-grained texture or only slight phenocrystic development of K-feldspar (or plagioclase) and quartz.

Quartz Porphyry

A large body of quartz porphyry is exposed on the southeast summit ridge of No. 5 Mountain (NC ninth) in contact with relatively even-textured quartz monzonite in some places and elsewhere with diorites and granofels of the Chain Lakes complex. This rock consists of a gray, andesitic matrix in which are scattered, subrounded feldspar phenocrysts and ovoid quartz phenocrysts averaging 5-mm in diameter. Also disseminated throughout the matrix are 1-mm biotite flakes. Although an intrusive contact was observed between the quartz porphyry and the Chain Lakes Massif, the contact between this rock and the quartz monzonite seems gradational. Traverses across the summit ridge encountered an eclectic array of porphyritic, equigranular, and texturally intermediate rocks arranged in only rudimentary geographic sequence. Consequently, the contact line on the geologic map is essentially an approximate boundary between zones of dominant porphyry and dominant quartz monzonite. Preliminary analysis of thin sections across a quartz monzonite-quartz porphyry contact zone indicates that the contact is irregualr, shows no clear signs of intrusive origin, locally is sheared, but generally is gradational. Further obscuring the nature of the contact is the tendency for local shears in equigranular quartz monzonite to produce rounded quartz and feldspar grains in a mylonitic matrix, a texture that resembles quartz porphyry in the field.

Relative Age of Igneous Rocks

If one includes the small body of keratophyre in the SW ninth of the quadrangle and in the west-adjacent Chain Lakes 15-minute quadrangle (Boudette, 1970), there are five distinct pre-Silurian igneous rock types in the Spencer Lake quadrangle. Both felsite and diorite intrude granofels and occur with granofels as xenolithic blocks within the Attean Quartz Monzonite. They are therefore inferred to be coeval in terms of at least gross relative age. The Attean Quartz Monzonite and quartz porphyry postdate these earlier igneous phases and are probably broadly coeval because of their gradational contact.

Quartz Monzonite-Chain Lakes Contact

Where not faulted, the contact between the Attean Quartz Monzonite and the Chain Lakes Massif is intrusive. Moreover, both units exhibit a relatively consistent sequence of lithologic changes near the contact. Attributes of the contact zone are as follows:

1. New mineral growth attendant on contact metamorphism tends to disrupt gneissic banding (where developed) in granofels, and the rock takes on a more homogenous appearance. On Spencer Mountain (EC ninth) Chain Lakes granofels is greenish-gray and relatively massive, in hand specimen reminiscent of "quartzitic diorite", a field term that previously has been applied to these rocks (Woodard, 1951). Although some diorite does occur in this area, nevertheless these rocks can be traced into progressively better layered types away from the contact. In thin section they are seen to contain abundant quartz and a strong tectonite fabric, all of which argue for a metamorphic rather than an igneous immediate ancestry. In many places contact rocks also show some signs of granitization, including extensive diking and irregular veining by granitic material or growth of disseminated quartz and K-feldspar crystals.

2. Quartz monzonite near the contact is in most instances relatively even-grained. Progressively better development of large K-feldspar phenocrysts in the Attean Quartz Monzonite occurs farther away from the Chain Lakes contact.

3. As well as containing abundant, partially assimilated, xenolithic blocks of Chain Lakes constituents, the Attean Quartz Monzonite in many places near the contact becomes considerably darker and, due to biotite enrichment and K-feldspar depletion, takes on the appearance of a granodiorite. In some places it is nearly impossible to distinguish between contact-metamorphosed granofels and contaminated quartz monzonite on the basis of field appearance, particularly when rocks are wet.

STRUCTURE

Folds and Minor Structures

Both Boucot (1969) and Serra (1973) described many gently plunging, northeasterly trending, upright folds in the metasedimentary rocks underlying the southeastern half of the quadrangle. In several places map patterns of metasedimentary units reflect these structures. Deformation is probably of Acadian age (Devonian), but within the outcrop belt of pre-Silurian stratified rocks in the southern part of the quadrangle it is most likely imposed on earlier structures (Boone, 1973; Burroughs, 1979). A moderately steeply dipping axial plane cleavage (crenulation type) is associated with Acadian folding.

Similar structures are not seen within the crystalline rocks underlying the northwestern half of the quadrangle. Joints and minor shear planes, generally associated with a weak, spaced cleavage, are the most frequently observed structures in this area. These features show little consistency of orientation even within small areas, and, as is particularly apparent in the exposures at the northeastern-most tip of the headland forming the Spencer Lake "Narrows" (EC ninth), these joints, shears, and foliations are the products of several episodes of strain. Because in at least one instance (at the previously mentioned "Narrows") alignment of both inclusions and K-feldspar phenocrysts in the Attean Quartz Monzonite is the result of strain rotation and new mineralization along foliation, determination of flow structure within pre-Silurian igneous rocks is hazardous.

Within the granofels, however, the distribution of the few gneissic-layering measurements obtained seems to indicate some coherence of structure. In general, layering attitudes are similar over small areas and may define, in at least rough form, several broad undulations contributing to the structure of the granofels.

Northwesterly Trending Faults

New mapping indicates that several northwesterly trending faults mapped by Albee and Boudette (1972) in the Attean quadrangle and by Serra (1973) in the

Spencer Lake quadrangle, extend into the heart of the Spencer Lake quadrangle. The extension of a fault mapped by Albee and Boudette (1972) in the Attean quadrangle from No. 5 Mountain to the Spencer Lake "Narrows" is based on repetition of lithologies, the conspicuous escarpment forming the east face of No. 5 Mountain, outcrop of a blastomylonitic fault breccia of diorite and granofels on the southwest flank of Spencer Mountain's main summit, and cataclastically layered shear zones in diorite and quartz monzonite at the Spencer Lake "Narrows". It is possible that this fault or parallel structures in the area south of Spencer Lake (unsurveyed in this study) may continue southeastward into Serra's (1973) Little Spencer Stream fault system and eventually may link with Boone's (1973) Dead River Fault System.

Two faults mapped by Serra (1973) along Viles Brook and across Pray Hill have been continued on the geologic map across the entire outcrop belt of the Moose River Synclinorium. These faults are recognized by conspicuously aligned topographic lows and escarpments, by offset and truncation of outcrop belts, and in Silurian and Devonian metasedimentary rocks by anomolous bedding orientations (particularly along the Viles Brook Fault) and by myriad kink bands, related chevron folds, and quartz-filled tension gashes superposed on Acadian-age structures. The exact location of these fault extensions on the geologic map is highly inferential. They have been drawn on the assumption that primary fault movement was in a normal sense along steeply dipping planes. Faults also have been drawn to account for sundry local deflections in the trend of the boundaries of the Moose River Synclinorium as mapped by Boucot (1969).

MINERALIZATION

The following are sites of anomolous mineralization in the Spencer Lake quadrangle:

1. Well-crystallized specular hematite in places fills joints within the outcrop zone of felsite on the southwestern flank of Farm Hill (SW ninth).

2. In the vicinity of Rush and Butler Ponds (SW ninth) anomolous pyrite mineralization in the Seboomook Formation occurs in line with the Butler Brook Fault.

Pyrite cubes up to 1-cm in width are disseminated throughout the slate.

3. On a small island northwest of the Spencer Lake "Narrows" (EC ninth) occur extremely rusty-weathering, sulfidic, granofels inclusions in Attean Quartz Monzonite. Pyrite is relatively abundant in the diorites and contact-metamorphosed granofels abutting the Attean Quartz Monzonite.

4. Along Gold Brook (NW ninth) recent panning for placer gold is continuing on a small scale (commercial viability unassessed although local sources indicate that production manages to cover expenses).

5. Some asbestos occurs in serpentinite exposed in Little Spencer Stream (SE ninth) (Wing, 1951).

FURTHER RESEARCH

1. Further study is necessary to determine the nature and extent of northwesterly trending cross faults in the Spencer Lake quadrangle. Some of these structures, if shown to continue along strike into similar fault zones mapped in adjacent quadrangles, may be of truly regional extent. They may be the sites of even more extensive mineralization than noted in this study, and the structural relief produced by such faults in the southern third of the Spencer Lake quadrangle may help to explain the nature and number of deformations in the pre-Silurian metasedimentary rocks exposed there.

2. In this study numerous adjustments of contacts previously mapped by Boucot (1969) and accumulation of evidence of deformation affecting Acadian folds in the Moose River Synclinorium emphasize the need for extensive field checking in this area.

3. Detailed mapping and laboratory analysis is necessary to define properly early structures within the granofels and the nature of contact relationships between the Chain Lakes Massif, Attean Quartz Monzonite, and quartz porphyry.

4. From a logistical standpoint, the abysmally poor road net in the Spencer Lake quadrangle requires the use of aircraft for efficient coverage of the terrain.

REFERENCES CITED

Albee, A.L., and Boudette, E.L., 1972, Geology of the Attean quadrangle, Somerset County, Maine: U.S. Geol. Survey Bull. 1297, 110 p.

Boone, G.M., 1973, Metamorphic stratigraphy, petrology, and structural geology of the Little Bigelow Mountain map area, western Maine: Maine Geol. Survey Bull. 24, 136 p.

Boone, G.M., Boudette, E.L., and Moench, R.H., 1970, Bedrock geology of the Rangely Lakes-Dead River basin region, western Maine, in Boone, G.M., ed., 62nd New England Intercoll. Geol. Conf. Guidebook, p. 1-24.

Boucot, A.J., 1961, Stratigraphy of the Moose River Synclinorium, Maine: U.S. Geol. Survey Bull. 1111-E, p. 153-188.

Boucot, A.J., 1969, Geology of the Moose River and Roach River Synclinoria, northwestern Maine: Maine Geol. Survey Bull. 21, 117 p.

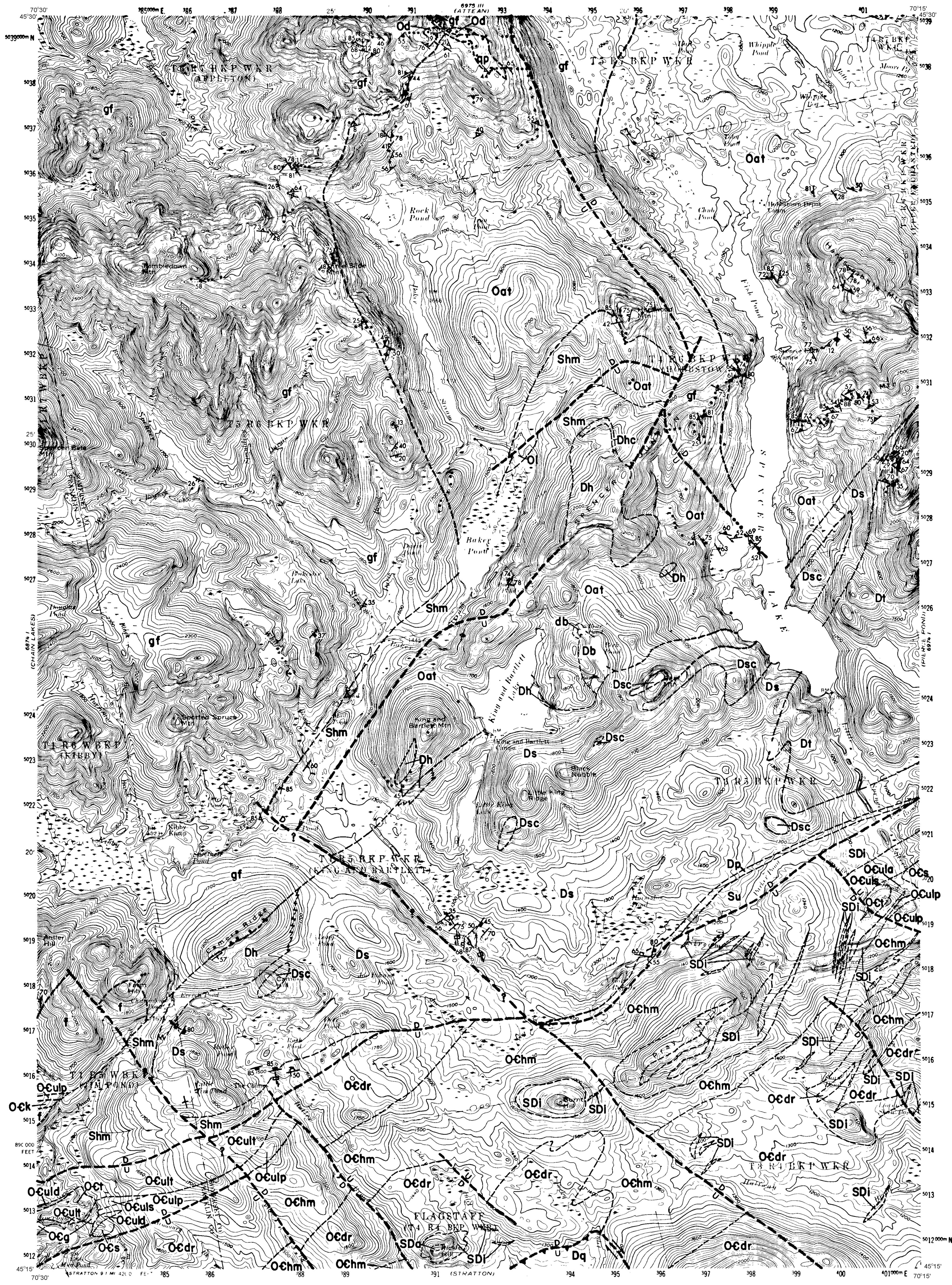
Boudette, E.L., 1970, Pre-Silurian rocks in the Boundary Mountains anticlinorium, northwestern Maine, in Boone, G.M., ed., 62nd New England Intercoll. Geol. Conf. Guidebook, p. C-1--C-21.

Burroughs, W.A., 1979, Structure of the Dead River Formation in The Forks quadrangle, west-central Maine: Syracuse, Syracuse Univ. MS thesis, 126 p.

Serra, S., 1973, Structure and stratigraphy of pre-Silurian rocks in west-central Somerset County, Maine: Syracuse, Syracuse Univ. MS thesis, 104 p.

Wing, L.A., 1951, Asbestos and serpentine rocks of Maine: Maine State Geologist Report, 1949-1950, Maine Development Commission, p. 35-46.

Woodard, H.H., 1951, Report on the geology of a portion of the Spencer Lake area, Maine: Maine State Geologist Report, 1949-1950, Maine Development Commission, p. 68-77.



EXPLANATION

Dt

Tarratine Fm. *Dark greenish-gray sublitharenite.*

UNCONFORMITY

Ds / Dsc

Ds Seboomook Fm. *Cyclicly-banded argillite.*
Dsc Camera Hill Member. *Greenstone.*

Db

Beck Pond Limestone. *Limestone, limestone conglomerate, calcareous sandstone, impure limestone.*

Dp

Parker Bog Fm. *Light gray interbedded limestone and felsite.*

Dh

Hobbstown Fm. *Arkose and conglomerate.*

UNCONFORMITY

Shm

Hardwood Mountain Fm. *Dark calcareous sandstone, siltstone, slate, limestone conglomerate, and limestone.*

Su

Silurian undifferentiated. *Calcareous slate, limestone, and limestone conglomerate.*

UNCONFORMITY?

Ol

Lobster Mountain Volcanics. *Felsic and mafic volcanics.*

UNCONFORMITY?

OꞒdr

Dead River Fm. *Interbedded light green phyllite, metagraywacke, and feldspathic metasandstone. Locally, interbedded maroon, green, and dark phyllite with tuffaceous metapelite and metaconglomerate.*

OꞒhm

Hurricane Mountain Fm. *Dark gray to black sulfidic phyllite, tuffaceous metapelite, and metasiltstone.*

OꞒul	OꞒuld ≷ OꞒulp ≷ OꞒula
	OꞒuls
	OꞒult

OꞒul Cambrian(?) and Ordovician(?) undifferentiated.
OꞒula. *Slightly metamorphosed felsic agglomerate and tuff with some iron-rich chert lenses.*
OꞒuld. *Dark sulphidic phyllite.*
OꞒulp. *Metamorphosed amygdaloidal and pillowed basalt.*
OꞒuls. *Interbedded light green phyllite, metagraywacke, and feldspathic metasandstone.*
OꞒult. *Light gray to green tuffaceous metapelite.*

UNCONFORMITY

gf

Granofels (Chain Lakes Massif). *Gray medium- to fine-grained quartzofeldspathic rock, either massive or foliated, with locally numerous, rusty-weathering, mica- or amphibole-rich inclusions. Variously altered near contact with* Oat. *Includes small areas of greenstone and hornblende diorite similar to* Od *and* f.

Lower Devonian — Upper Silurian — Middle Ordovician — Cambrian(?) and Ordovician(?) — Precambrian(?)

Dq

Porphyritic quartz monzonite containing abudant xenoliths of mafic igneous rock.

db

Diabase and diorite.

SDa

Mafic agglomerate and volcanic breccia.

SDi

Fine- to coarse-grained mafic and intermediate igneous rocks, commonly altered.

Oat

Attean Quartz Monzonite. *Pink, green, or white medium- to coarse-grained porphyritic quartz monzonite, locally characterized by large K-feldspar crystals; granite where quartz is particularly abundant. Contains numerous granofels and diotite inclusions near contact with* gf.

qp

Quartz porphyry. *Large crystals of quartz (rounded) and feldspar in an aphanitic, light-gray matrix.*

OꞒt	OꞒs
OꞒg	

OꞒs. *Serpentinite.*
OꞒt. *Talc and quartz-carbonate rocks.*
OꞒg. *Metamorphosed gabbro.*

OꞒk

Keratophyre and quartz latite.

Od

Diorite. *Dark-colored fine- to medium-grained hornblende diorite.*

f

Felsite. *Highly altered plagioclase phenocrysts in a dense, greenish-gray, quartzofeldspathic matrix.*

Devonian — Silurian(?) and Devonian(?) — Ordovician(?) — Ordovician or Older

STRUCTURAL SYMBOLS

Contact. *Dashed where approximately located; lighter line where compiled from previous maps; heavier line where adjusted or located by field mapping, this survey.*

D / U — ? — ? — ....

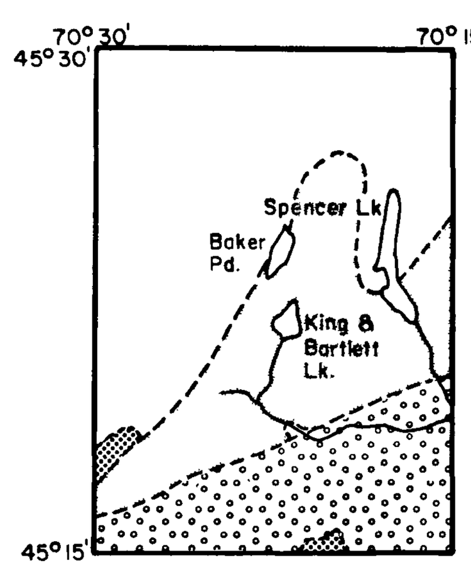
Fault. *Dashed where approximately located; dotted where concealed; queried where probable.* U, upthrown; D, downthrown side. *Teeth on upper plate of thrust.*

Outcrop control. *Visited outcrop locations, this survey, where no planar orientation data are reported.*

Dip and strike
(Inclined) (Vertical)

of beds.
of overturned beds.
of axial-plane cleavage in Silurian and Devonian stratified rocks.
of shears or kink zones (arrow shows sense of apparent offset) in Silurian and Devonian stratified rocks.
of gneissic layering in granofels.
of foliation crenulating gneissic layering in granofels.
of shears, joints, or late weak foliation in gf, Od, *and* Oat.

Geologic map prepared in 1979 by W. Burroughs for the Maine Geological Survey (Contract 911277)

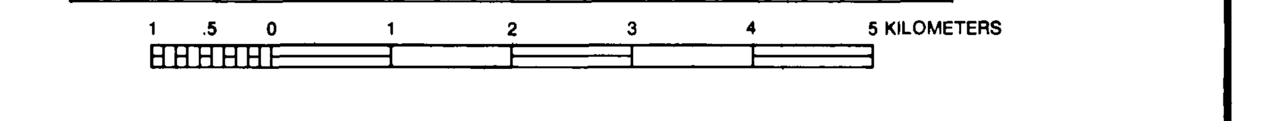


SPENCER LAKE QUADRANGLE

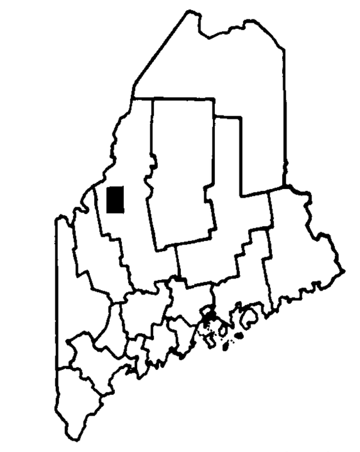
SOURCES OF DATA

- Field survey, July-August, 1979, by W. Burroughs and R. St. Louis, Maine Geological Survey
- Field survey, 1971-1974, by G.M. Boone, Maine Geological Survey
- Compiled from Boucot, A.J., and Heath, A.W., 1969, Geology of the Moose River and Roach River Synclinoria, northwestern Maine: Maine Geol. Survey Bull. 21. Limited field checking and adjustment, 1979
- Compiled from Serra, S., 1973, Structure and stratigraphy of pre-Silurian rocks in west-central Somerset County, Maine: Syracuse, Syracuse Univ. MS. thesis

SCALE 1 : 62,500



Preparation of this map was supported by funds furnished by U.S. Geological Survey Contract No. 14-08-0001-17871.



Quadrangle Location

RECONNAISSANCE
BEDROCK GEOLOGY OF THE SPENCER LAKE QUADRANGLE, MAINE

BY
WILLIAM A. BURROUGHS

1979

Maine Geological Survey
DEPARTMENT OF CONSERVATION
Augusta, Maine 04333
Walter A. Anderson, State Geologist
OPEN FILE NO. 79-1