

siltstone of the Fantasque Formation. The contact with the overlying Toad Formation is unconformable, the Grayling Formation being absent at this location. Triassic strata consist of carbonaceous and calcareous siltstones and interbedded shales.

Phosphate ^{rocks} bearing ~~strata~~ occur over a stratigraphic interval of 290 metres in the middle Toad Formation in strata of Anisian age. Phosphate nodules occur in several beds over an interval of 220 metres. Nodules are the dominant form of phosphate comprising 5 to 40 per cent ^{of} ~~by volume~~ in beds ⁱⁿ which they occur. ~~These~~

Nodules are typically black, ovoid to spherical and vary in ^{diameter} ~~size~~ from 1 to 3 centimetres. This ^{is} beds of pelletal phosphate are also present in the middle portion of the phosphatic sequence. ^{At}

approximately the same stratigraphic position calcareous concretions similar to those ~~observed~~ at Mount Ludington and Laurier Pass ^{North} are present.

uN

(38-40)

Tetsa River - Alaska Highway ^{Minfile:} 094K080 094K081
094K082 094K083

a/c

Latitude: 58°40'00" Longitude: 124°17'30" NTS: 94K/9
124°26'30"

outcrops of

Several phosphate occurrences are present in ~~the~~ ^{exposed} Toad Formation in ^{outcrops} along the Alaska Highway north of the Tetsa River. Geologically the area consists of ⁱⁿ a folded sequence of strata ranging in age from Permian to Upper Triassic (Figure 70).

2320

kp

^{Phosphate} Both pelletal and nodular occur in carbonaceous siltstone, shale and limestone of ~~the Toad Formation of~~ middle Triassic age. At the most easterly of these occurrences is a 15 to 20 centimetres ^{thick} phosphorite bed present in a sequence of dark grey carbonaceous siltstone and limestone (Plate 64). This

(Locality 38)

080

sequence is 3.3 metres thick and averages 4.30 per cent P_2O_5 .
This ^e phosphorite bed is pelletal with the pellets varying in size
from 0.05 to 0.15 millimetres. The majority of ~~the pellets~~
contain quartz nuclei or ^{an} ~~the~~ occasional carbonate nucleus. The
matrix consists of quartz with minor calcite and very minor
feldspar. Also present are rare phosphatized shell fragments or
nodules and some phosphate cement. ^{There are} ~~A few nodules are also present~~
in the siltstone.

No P

Bedding at this locality is ~~near flat-lying~~ to very gently
dipping to the west. ^b Beds vary in thickness from 50 to 100
centimetres.

(Locality 39)

81

Two kilometres to the west ^{exposed} another phosphorite bed, 15
centimetres thick, is ~~present~~ ~~(Plate 22)~~. It occurs in a sequence
of siltstone and dolomitic siltstone within the Toad Formation.

No P

~~The phosphorite~~ ^{II} consists of 15 to 25 per cent dispersed
pellets in a matrix of quartz and minor carbonate. Pellets are
subangular to rounded and 0.2 to 0.3 millimetres ^{diameter} in ~~size~~. The
majority contain a quartz core or ^{by a} ~~the~~ occasional carbonate core.
^{have} ~~A few of the pellets contain~~ both quartz and carbonate nuclei.
Some ~~of the~~ pellets have feathered contacts with internal
carbonate grains suggesting that replacement of carbonate by
phosphate has taken place. Within the phosphorite bed there is a
5 centimetre ^s thick layer in which the volume of pellets increases
to 50 or 60 per cent.

5

Immediately to the west of this ^{exposure} ~~locality~~ ^{on outcrops of} dark grey
siltstone ~~outcrops along the Alaska Highway~~. At this locality
phosphate is present as disseminated pellets and nodules, 0.5 to

81

1.0 centimetres ^{diameter} in ~~size~~ ~~These~~ nodules and pellets are black in colour in contrast to the dark grey colour of the siltstone. Some of the siltstone is very weakly phosphatic. Also ^{seen} ~~present~~ at this locality ^{but not} ~~and not observed elsewhere in this area~~ ~~are~~ Desiccation cracks and ripple marks ^{are}. Deposition of the phosphate appears to have taken place in extremely shallow water during which there may have been short periods of subaerial exposure.

The most westerly of the phosphate occurrences ~~present in the Tead Formation is present in outcrop at~~ ^{on} 82 Kilometre 607.5 ~~the Alaska Highway~~. ^(Locality 40) A 2.5 metre ^{interval} thick ~~sequence~~ of phosphatic siltstone and limestone occurs in a sequence of dark grey to black argillaceous limestone and calcareous shale and averages 5.56 per cent P_2O_5 . Bedding strikes northwesterly with moderate dips to the southwest. A ^{second} 70 centimetre ^{thick} bed, 55 metres ^{higher in the} section contains 10.12 per cent P_2O_5 .

Phosphate is present as disseminated pellets and a few black nodules. Pellets are 0.1 millimetres ^{diameter} in ~~size~~ ^{contrasting with a finer} in comparison to the matrix ~~which is 0.02 to 0.04 millimetres in size~~. They may constitute as much as ~~30-40~~ 40 per cent of the rock ~~by volume~~ but generally constitute less than 20 per cent of the ~~rock~~ ^{volume}.

Summit Lake ⁽⁴⁰⁾ ~~(16)~~ ^{Not referenced & a map: no locality #} Minfile: 094K084 ^{u/c}
Latitude: 58°40'00" Longitude: 124°36'00" NTS: 94K/10

^(Figure 20) ~~at~~ approximately 2 kilometres east of Summit Lake ^{exposed} shale and chert of the Permian Kindle Formation are ~~present in outcrop~~ along the Alaska Highway. Within this sequence and overlying the chert is a ⁵ metre ~~stratigraphic~~ ^{containing} interval ~~in which are contained~~ phosphatic laminations and lenses. These

laminations are distinguished only by their black colour in contrast to the dark grey ~~colour~~ of the shale. Overlying the phosphatic sequence are brownish to brownish-grey siltstones. A 2.5 metre ^{sample} ~~interval~~ ^{across} ~~from~~ ^{at} this locality averaged 3.60 per cent P_2O_5 .

Grey Peak (~~11~~) ⁴¹

Minfile: 094/019 ^F

Latitude: 57°48'00" Longitude: 125°12'00" NTS: 94F/14

Phosphate was first recognized in the Grey Peak area by Cecile and Norford (1979) while conducting geologic studies of the Upper Cambrian - Lower Ordovician formation. They observed that several thin phosphatic horizons are present in the upper 100 metres of ~~this~~ ^{the} formation. Several horizons in the lower banded limestone unit ~~of the~~ ^{they} ~~Cecile and Norford (1979)~~ describe these lower phosphate occurrences as "sea floor pavements or lag deposits".

Thin phosphatic ^{ic} beds occur at five horizons in the upper 100 metres of the nodular limestone unit of the Kechika Formation ~~in the vicinity of Grey Peak~~. Phosphate is present as microcrystalline coatings, 1 to 10 millimetres thick, around limestone nodules, and as phosphatized fossil debris (trilobite) in beds 5 to 50 centimetres thick. Some pelletal and oolitic phosphate is also present. These phosphatic beds are easily recognized by their blue ~~weathering~~ surfaces and black colour contrasting with the pale grey of the host limestone (Plate ~~10~~ ^{37 33}). Also present, but not obvious, are thin phosphatic coatings, 1 millimetre or less thick, surrounding limestone nodules in beds 2

in the headwaters of the Kwadacha River (Figure # 13)

N.B. 094F 019 GREY PEAK