OCR
Oxford Cambridge and RSA

Monday 17 June 2024 – Afternoon

A Level Geology

H414/03 Practical skills in geology

Insert

Time allowed: 1 hour 30 minutes

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INSTRUCTIONS

- Do **not** send this Insert for marking. Keep it in the centre or recycle it.

INFORMATION

- This Insert contains **Fig. 1**, **Fig. 2** and **Fig. 3**, and the map excerpt.
- This document has **8** pages.

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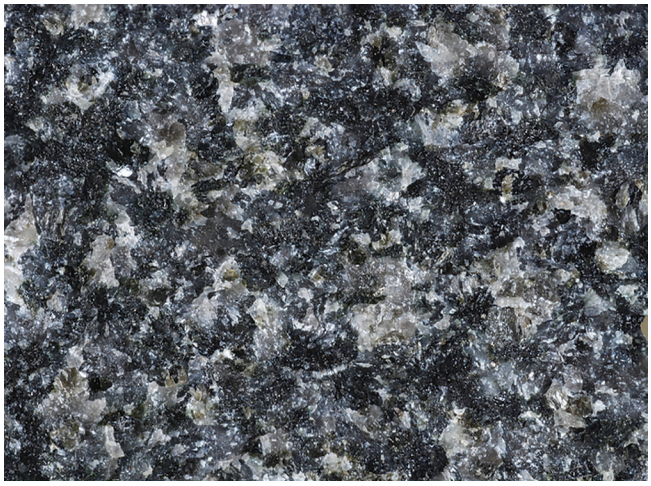
Fig. 1 – Hand specimen photographs

Rock A



Rock B

Rock C

Fig. 2 – Sketch of a cross section through an area that has been intruded by an igneous body

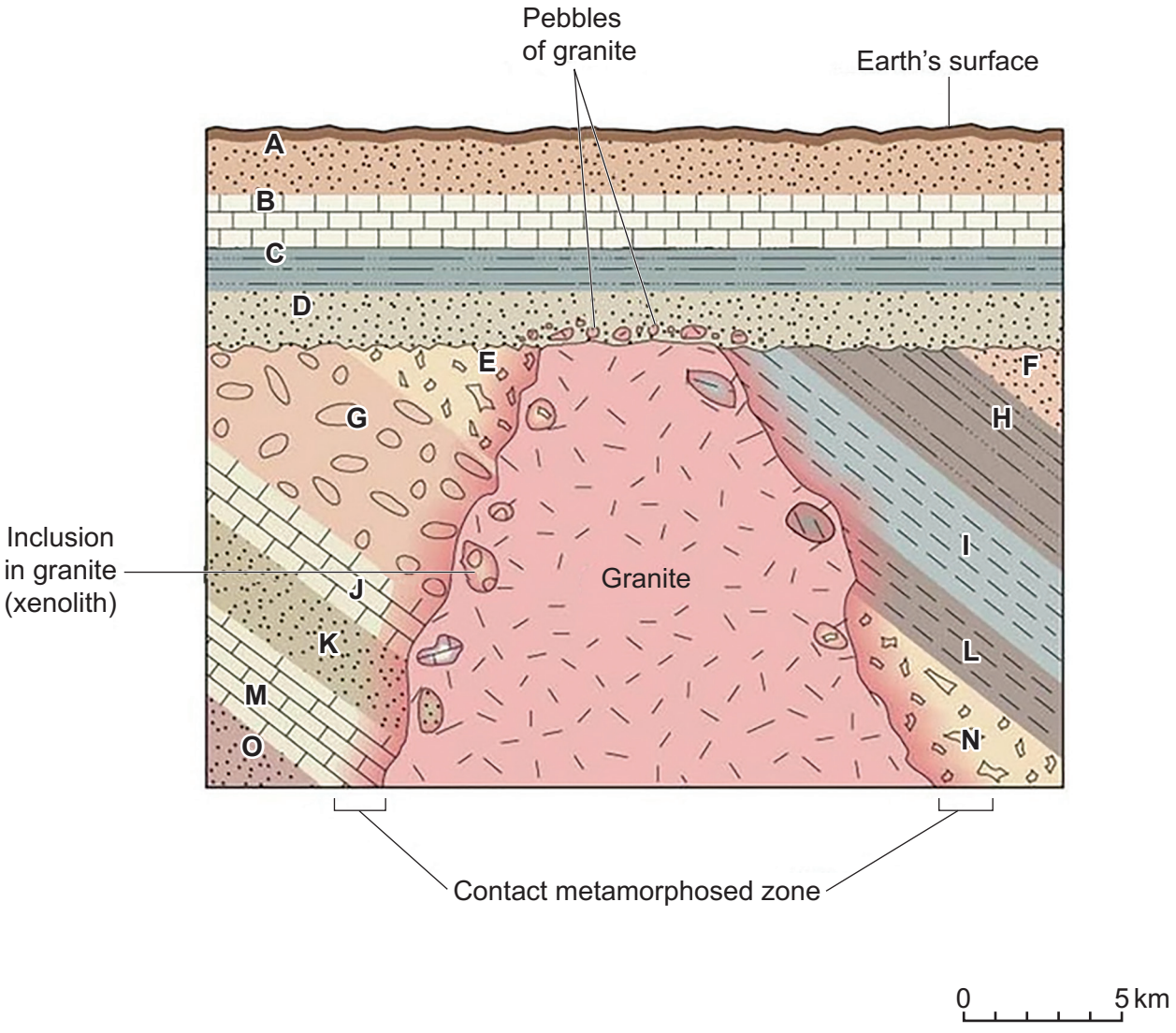
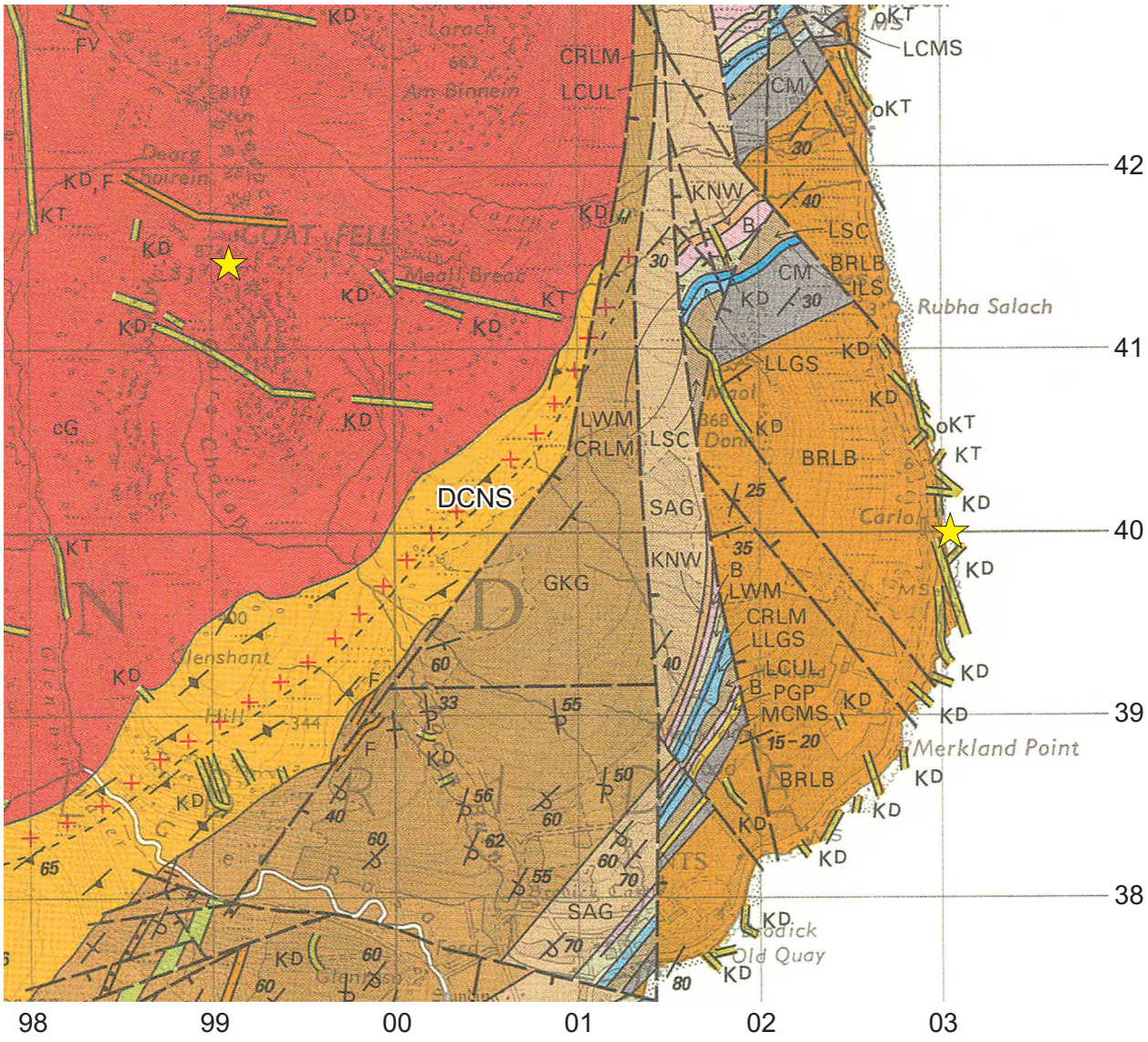


Fig. 3 – Hand specimen photograph of part of bedding surface containing belemnite fossils

1:50 000 geological map excerpt (the Isle of Arran)



Explanation

Geological boundary

Fault, crossmark on downthrow side

Coal

Ba — Baryte vein

Margin of metamorphic aureole

Marine limestone

INTRUSIVE AND EXTRUSIVE TERTIARY

V — **Tuff:** consolidated volcanic ash in vents commonly with large blocks

F — **Felsite** (unclassed): F^{P} **porphyry**, q^{FP} **quartz-porphyry**, F^{V} **pitchstone**, F^{G} **granite-porphyry**, F^{M} **microgranite**

OT — **Riebeckite-trachyte**

QD — **Quartz-dolerite** and associated felsic types, mainly as silts and sheets

D — **Olivine-dolerite:** D^{T} **olivine-analcime-gabbro and dolerite ('teschenite')** and associated basanitic types

KD — **Dolerite** or **basalt** or **tholeiite** dykes: K^{A} **andesitic tholeiite**, K^{C} **crinanite**, K^{T} **tholeiite**, ${}_{O}K^{T}$ **olivine-tholeiite**, members of the Tertiary dyke swarm

G — **Granite:** cG **course-grained granite**

B — **Basalt:** lavas of basaltic composition were extruded during the Upper Devonian, Dinantian, Narmurian and Permian periods and occur as masses in Tertiary vents

TRIASSIC

AHB — **Auchenhew Beds:** mudstones and pedogenic limestones with subordinate sandstones

PERMIAN

BRLB — Incorporates an upper series (**Lamlash Beds**, c. 200 ml mainly sandstone and a lower series **Brodick Beds**, c. 540 ml consisting of breccia and dune-bedded sandstone, the **Brodick Breccia** and the **Corrie Sandstone**

CARBONIFEROUS

Westphalian

CM — **Coal Measures** (undivided): a cyclic sequence of sandstones, siltstones, mudstones and seatearths. Non-marine bivalves occur in some mudstone beds

MCMS — **Middle Coal Measures** (Westphalian B): no workable coals

LCMS — **Lower Coal Measures** (Westphalian A): no workable coals

Namurian

PGP — **Passage Group:** mainly mudstone, partly bauxite in Merkland Burn

ULGS — **Upper Limestone Group:** a cyclic sequence of sandstones and mudstones with thin marine limestones. a**Index Limestone** (ILS) at base

LSC — **Limestone Coal Group (LSC):** a cyclic sequence of sandstones and mudstones with a few thin marine limestones. A coal soam was worked near Laggan
LCUL: **Upper Limestone Group** and **Limestone Coal Group** undivided

Dinantian

LLGS — **Lower Limestone Group:** mainly white sandstone with subordinate red mudstone **Corrie Limestone** (CRLM) at base

LWM — **Lawmuir Formation:** a cyclic sequence of sandstones, siltstones and mudstones with a few thin marine limestones

LNT — **Laggan Cottage Mudstone:** grey mudstone with plant remains

MPS — **Millstone Point Sandstones:** mainly white cross-bedded sandstone with thin beds of red-brown or grey mudstone

LGT — **Laggantuin Cornstones:** sandstones and red-brown silty mudstones in upwards-fining cycles with nodules and beds of concretionary limestone ('cornstone')

BGN — **Ballagan Formation:** mainly grey silty mudstone with thin beds of dolomitic limestone ('cementstone') and sandstone

KNW — **Kinnesswood Formation:** sandstones and red-brown silty mudstones with nodules and beds of concretionary limestone ('cornstone')

Explanation continued on page 8.

DEVONIAN

Upper

SAG **Stratheden Group** (undivided): mainly red-brown cross-bedded sandstone with subordinate siltstone

SAG **Conglomerate** in Stratheden Group: subangular clasts, mainly vein quartz and metasedimentary rocks, some well rounded quartzite boulders

Lower

Strathmore Group (SEG), **Garvock Group** (GKG), **Arbuthnott Group** (ATG) undivided: mainly purple-grey cross-bedded sandstone with subordinate red-brown siltstone

SXS **Sannox Siltstones:** mainly red-brown siltstone with thin beds of sandstone and conglomerate

Conglomerate: clasts mainly well rounded quartzite with some lava and vein quartz
BMCG: **Barytes Mine Conglomerate**, DRC: **Druid Conglomerates**

Volcanic conglomerate: clasts mainly of andesite lava: some quartzite boulders
CMC: **Creag Mhor Conglomerates**

LOWER CAMBRIAN
Southern Highland Group (Dalradian Subgroup)

DCNS **North Sannox Grits:** cleaved poorly sorted sandstones and siltstones

DCNS **Green slates** and **phyllite** bands in above

DCNS **Black slates** and **phyllite** bands in North Sannox Grits

DCLS **Loch Ranza Slates:** green and blue slates and cleaved siltstones with subordinate cleaved sandstones