# BALNEAVES: HUMAN BONE CREMATION REPORT

J I McKinley

TABLE 1

Total weight of bone, % of bone in each sieve and maximum fragment size. Based on Tables 3 and 4.

| Context | Total wt.(g) | Sieved weights (%). | | | Max frag. size (mm) | |
|---|---|---|---|---|---|---|
| | | 10mm | 5mm | 2mm | Skull | Long bone |
| Pit 1 | 696.2 | 68.6 | 22.8 | 8.6 | 60 | 112 |
| Pit 2 | 140.6 | 39.2 | 40.0 | 18.0 | 28 | 32 |
| Pit 3 | 799.7 | 36.9 | 48.4 | 14.7 | 41 | 98 |
| Pit 4 | 701.4 | 51.0 | 36.6 | 12.4 | 46 | 66 |
| Pit 6 | 165.8 | 23.3 | 55.4 | 21.3 | 21 | 30 |
| Pit 7 | 1013.6 | 48.7 | 39.9 | 11.4 | 60 | 69 |
| Pit 12 | 8.7 | 26.4 | 56.3 | 17.2 | 16 | 38 |
| X1,3,5 | 727.5 | 63.1 | 21.4 | 15.5 | 56 | 108 |
| X2 | 212.3 | 55.5 | 30.3 | 14.7 | 59 | 83 |
| X4 | 151.6 | 76.0 | 18.7 | 5.2 | 55 | 42 |
| Prob X | 17.8 | 76.4 | 12.9 | 10.6 | - | 32 |
| X7 | 59.5 | see below | | | 15 | - |

TABLE 2

Identifiable material by weight (g) and as a % of total weight and % of identifiable material in each skeletal area. These are based on Tables 3 and 4.

| Context | Weight (g) | % of Total identified | Skull % | Axial | Limbs upper | Limbs lower |
|---|---|---|---|---|---|---|
| Pit 1 | 361.3 | 51.9 | 26.0 | 23.1 | 33.9 | 19.7 |
| Pit 2 | 41.3 | 29.4 | 66.7 | 9.2 | 17.6 | 30.7 |
| Pit 3 | 181.5 | 22.7 | 39.9 | 3.8 | 16.5 | 39.7 |
| Pit 4 | 225.3 | 33.1 | 45.8 | 3.6 | 24.8 | 25.7 |
| Pit 6 | 24.8 | 15.0 | 51.2 | 2.0 | 21.0 | 25.8 |
| Pit 7 | 311.2 | 37.0 | 49.3 | 0.5 | 18.5 | 31.7 |
| Pit 12 | 3.1 | 35.6 | 25.8 | 12.9 | - | 61.3 |
| X1,3,5 | 362.9 | 49.9 | 23.5 | 14.5 | 27.3 | 34.7 |
| X2 | 94.0 | 44.3 | 26.9 | 20.6 | 36.2 | 16.3 |
| X4 | 76.7 | 50.6 | 27.9 | 18.4 | 24.2 | 29.5 |
| Prob X5 | 11.1 | 62.3 | - | 24.3 | 75.7 | - |
| X7 | 32.8 | 55.2 | other % contaminated | | | |

CREMATIONS

NO. 1

Disturbed cremation pit with inverted urn. Bones from within and below urn.

*Skull*

3 incisor/canine/premolar tooth roots. One mandibular and one maxillary tooth root fragment. Fragments min. 4 other tooth roots.

Mandible: anterior body fragment with very small spines. Body fragment. Right anterior ramus border with molar socket. Inferior ramus border fragment. Small fragment condyle with neck.

Maxilla: right palate fragment with canine-molar sockets. Palate fragment.

Left nasal process: right medial supra-orbit with sharp margin and flat brow. Fragment gracile zygomatic arch. Styloid process. Fragment mastoid portion. Left petrous temporal and fragment. Fragment basal portion. Occipital condyle fragment. Temporal base fragment. Small right zygomatic and articular tubercles. Left postglenoid tubercle and external auditory meatus. Fragment small, gracile left malar.

Vault, 28 thin fragments, upper sutures open. Measures: 4.13, 5.18, 3.64, 3.44, 3.87, 4.65, 3.83. n = 7, mean = 4.10mm, S.D. = 0.57mm.

*Axial*

Atlas, articulation surface fragment. Cervical, body and fragment. Pair articulation processes.

Thoracic, fragments min. 4 bodies, 2 transverse processes. 10 superior articulation processes, 2 with slight pitting in facet surface. 8 inferior articulation processes, one with pitting in facet surface.

Lumbar, fragments min. one body and 2 inferior articulation processes.

Sacral, inferior body fragment.

Rib, 28 fragments shaft, 2 heads.

Innominate: right acetabulum with greater sciatic notch - angle fairly acute - small cyst - 3mm diameter, 15.5mm deep - in superior posterior portion of rim. Fragments both ischial tuberosities with acetabulum fragments, both auricular surfaces, left greater sciatic notch -

fairly acute angle - iliac tuberosity, iliac spines and ilium with crest. Very small fragment pubic symphysis, surface fairly smooth, no border.

*Upper limb*

Clavicle, fragments shaft and small sternal end.

Scapula, inferior angle.

Humerus, large fragment left heads joins large fragment neck and shaft (diameter of head = 43.7mm). Fragments right head and neck. 9 large fragments of shaft including distal, one with pock-marks as from metal/glass fusions coming away from bone. Fragments both distal articulation surfaces, right with mesial epicondyle and shaft with depressions.

Radius, 3 fragments shaft. Distal shaft fragment and distal articulation surface fragment.

Ulna, right coronoid process and radial notch fragment. Left radial notch with shaft and tuberosity. 3 fragments shaft. Styloid process.

Carpals: fragments triquetral, trapezoid, trapezium and hamate.

Metacarpals: long, gracile lst. Head with shaft, 3 bases with shaft and 3 shafts.

Proximal phalange base. 8 proximal/middle phalanges heads with shafts (2 blue/grey). 2 middle phalanges and 2 bases with shafts. Distal phalange and head with shaft.

*Lower limb*

Femur, 2 fragments head with shaft. 4 fragments shaft. Distal articulation surface fragments.

Patella, anterior surface fragment with bronze stains (see O'Berg below).

Tibia, fragments proximal articulation surface. 4 fragments shaft.

Fibula, proximal head with shaft fragment. 3 fragments shaft.

Tarsals; Fragments cuboid, talus and both intermediate cunieforms.

Fragments 4 metatarsals including lst base with shaft.

Fragments lst proximal phalange. lst distal phalange and Vth distal.

Two sesamoid bones.

*Age*: mature adult.

*Sex*: ?? male.

*Pathology*: 1) Small cyst - 3mm diameter, 15.5mm deep - in superior posterior portion of

right acetabular rim. 2) Two thoracic superior articulation processes with slight pitting in facet surface and one inferior articulation processes with pitting in facet surface.

*Comments*: blue/grey burning in two finger phalanges.

Bronze staining on anterior patella fragment. Pock-marks on humerus shaft fragment.

NO. 2

Disturbed cremation pit with inverted urn.

Much of this collection is obviously missing, the site description mentions 'lots of bones' - at least some of the 'X' number collections must be from here. However, none of the 'X' number collections have the worn and chalky appearance characteristic of this collection, so maybe it just looked like there was lots of bone?

*Skull*

Very small tooth roots. 3 incisor/canine/premolar tooth roots. Maxillary 3rd molar tooth roots. Fragments min. one other molar tooth roots.

Mandible - fragment right coronoid process. Fragment anterior ramus border.

Fragment, very small, gracile zygomatic arch. Fragment right supra-orbit with notch, very sharp margin and flat brow. Styloid process. Small left postglenoid tubercle with external auditory meatus.

Vault, 57 small, thin fragments. Upper sutures open/fusing.

Measures: 4.01, 2.78, 2.21, 3.10, 2.40, 3.09, 3.51. n = 7, mean = 3.01mm, S.D. = 0.58mm.

*Axial*

Axis, fragment posterior arch, small.

Cervical, very small articulation process pair.

Thoracic, 4 articulation processes. Spinal fragment.

Rib, 3 fragments shaft including 1st.

*Upper limb*

Humerus, 6 fragments shaft including distal.

Radius, very small fragment shaft.

Proximal/middle phalange head with shaft.

*Lower limb*

Femur, tibia and fibula shaft fragments.

*Age*: adult.

*Sex* ? female.

*Comment*: bone very worn and chalky.

Some animal bone included including fragment bird long bone and antler - ?worked? too small and chalky to be sure.

NO. 3

Cremation pit with inverted urn.

*Skull*

6 incisor/canine/premolar tooth roots. 4 molar tooth roots. Fragments min. four other tooth roots.

Mandible - Fragments inferior border of rami. Anterior ramus border fragment. Gracile, blunted, right coronoid process joins anterior ramus border with 2nd and 3rd molar sockets, periodontal bone resorption mild, around 3rd molar socket. Right body fragment with canine-2nd molar sockets, mild periodontal bone resorption around molar sockets.

Maxilla - palate fragment.

Fragment right nasal process. Temporal base fragments.

Fragments gracile, right zygomatic arch. Fragments right and left supra-orbit and glabella, narrow/medium margins, forama and slight medial brow ridges. Fragments left and right petrous temporals. Fragments both malars with gracile processes.

Fragments mastoid portions. Fragments both external auditory meatii, both articular tubercles and left postglenoid tubercle.

Vault, 103 small fragments, upper sutures mostly fused.

*Axial*

Atlas, arch fragments.

Cervical, 3 articulation processes. Thoracic, 7 articulation processes.

C/T/L body fragments.

Sacral, inferior body fragment.

Innominate: Fragment right greater sciatic notch with fairly obtuse angle.

*Upper limb*

Scapula, fragments both necks.

Humerus, 4 fragments shaft. Distal articulation surface fragments.

Radius, fragment head with neck. 4 fragments shaft.

Ulna, proximal articulation surface fragment.

Fragments small lunate and hamate.

2 metacarpals heads and 6 fragments shaft.

Proximal phalange base with shaft. 7 proximal/middle phalanges heads with shafts, 3 shafts. Fragments 5 distal phalanges.

*Lower limb*

Femur, tibia and fibula shaft fragments. Two of fibula fragments pock-marked as after removal of fused glass/bronze.

Patella, anterior surface fragment.

Fragments calcaneum, cuboid and intermediate cuneiform.

2 metatarsal shafts.

Fragments 2 proximal phalanges, one middle and lst distal phalange.

Sesamoid bone.

*Age*: adult.

*Sex*: ? female.

*Pathology*: slight periodontal disease around mandibular molar tooth sockets.

*Comment*: some of bone - lower limb - showed increased longitudinal striations and looked slightly worn.

Pock-marks on fibula shaft as with removal of fused glass/bronze.

NO. 4

Disturbed cremation pit with fragments inverted urn.

*Skull*

Mandibular incisor tooth root. Both maxillary lst premolar tooth root. Min. 7 molar tooth root fragments.

Mandible - fragment left condyle and neck with small 'blip' c. half-way along anterior margin. Fragment blunt left coronoid process. Fragments anterior and inferior ramus borders.

Left posterior body fragment with 2nd and 3rd molar sockets.

Anterior body fragment with small spines. Body fragments some with tooth sockets.

Fragment right petrous temporal. Fragments left and right malar processes. Fragments gracile left and right zygomatic arches with tubercles. Fragments both articular and both postglenoid tubercles. Fragment mastoid portion.

Vault, 100 thin fragments, upper sutures open/fusing. One fragment with pock-marks on outer plate, as from fusion of bronze/glass.

*Axial*

Atlas, fragments anterior arch, gracile posterior arch and right articulation surfaces.

Cervical, neural arch fragment.

Thoracic, 15 articulation processes (min. 4 vertebrae).

Lumbar, inferior articulation process.

Rib shaft fragment.

Fragment ilium.

*Upper limb*

Scapula, neck fragment.

Humerus, 10 fragments shaft including distal. Distal articulation surface fragment.

Radius and ulna shaft fragments.

Hook of hamate.

Metacarpal shaft fragment.

Phalanges: 8 proximal/middle heads with shafts. Middle base fragment. Two, very small

distal phalanges.

*Lower limb*

Femur (10), tibia (6) and fibula (8) shaft fragments.

Two sesamoid bones.

*Age*: young/mature adult.

*Sex*: ?? female.

*Pathology*: 1) left mandibular condyle with small 'blip' c. half-way along anterior margin. Morphological variation.

*Comment*: bone very small and gracile. Condition worn and chalky. Pock-marks on vault characteristic of bronze/glass fusion to bone.

NO. 6

Cremation deposited in pit (part of group). Pit contained flecks of charcoal and possibly burnt sand in upper fill.

*Skull*

3 incisor/canine/premolar tooth roots, one with small cervical carious lesion in one side - 2 x 1mm, 1mm deep. 6 fragments molar tooth root.

Fragments left and right lateral portions of supra-orbits. Fragments petrous temporal. Right postglenoid tubercle with external auditory meatus. Fragments external auditory meatus. Temporal base fragment.

*Upper limb*

Vault, 18 small fragments.

*Axial*

Axis, fragment posterior arch with inferior articulation surface.

*Upper limb*

Humerus, 2 fragments shaft.

*Lower limb*

Femur and tibia shaft fragments.

*Age*: adult.

*Sex*: ?

*Pathology*: 1) small carious lesion in one side of cervical region - 2 x 1mm, 1mm deep - incisor/canine/premolar tooth root.

*Comment*: bone very worn and chalky.

NO. 7

Central cremation pit containing much charcoal and bone, no sign of burning/scorching in pit itself.

*Skull*

Large tooth roots. Mandibular molar tooth root. 3 incisor/canine/premolar tooth roots. 3 canine/premolar tooth roots. One mandibular and one maxillary 3rd molar tooth roots. Fragments min. 3 maxillary and 3 mandibular molar tooth roots.

Mandible - left and right coronoid processes, large and very blunt. Fragment sigmoid notch. Anterior body fragments with spines.

Maxilla - fragment.

Fragments both large petrous temporals. Fragments both zygomatic arches. Fragments both postglenoid tubercles with external auditory meati. Large articular tubercle. Temporal base fragments. Fragments left and right malars. Fragments left supra-orbit with medium margin, foramen and medial brow ridge. Fragments mastoid portion, zygoma root continues strongly. Occipital fragments with not particularly large but rugged external protuberance.

Vault, 65 fragments, upper sutures fusing/fused.

*Axial*

Atlas, anterior arch with large facet, slight osteophytosis on margins. Fragments posterior arch. Axis, arch fragment.

Rib: shaft fragment.

*Upper limb*

Scapula, neck fragment.

Humerus (ll) and radius (4) shaft fragments.

Ulna, fragment sigmoid notch. Right proximal shaft fragment.

2 metacarpals shafts fragments.

One middle and 2 distal phalanges.

*Lower limb*

Femur (22), tibia (9) and fibula (5) shaft fragments.

*Age*: mature/older adult.

*Sex*: ? male.

*Pathology*: 1) atlas anterior arch with slight osteophytosis on margins of facet.

*Animal*: several fragments burnt animal bone (as human), sheep size - possibly young animal?

*Comment*: collection slightly chalky and some bone slightly worn.

NO. 12

Pit cutting south west pit group. Fill of pit believed to probably be from pit 4 in excavation. Fill contained charcoal flecks and burnt bone.

*Skull*

Vault, 3 very small fragments.

*Upper limb*

Radius shaft fragment.

*Lower limb*

Tibia shaft fragment.

*Age*: subadult/adult.

*Comment*: this is probably disturbance from one of the other pits which it cuts.

*Due to a mishap during excavation, parts of one or more of the numbered collections above became detached from the rest of the collections and lost their numbers. The resulting collections were given arbitrary 'X' numbers to use during examination.*

X1

This obviously came from one of the urned collections as there were numerous fragments of pottery mixed in with the bone. X3 and X5 are also from the same collection.

*Skull*

Mandibular incisor tooth root. Maxillary lst premolar tooth root. 2 incisor/canine tooth roots. Fragments maxillary molar tooth root and 3rd maxillary molar tooth root.
Mandible - left ramus with condyle, neck, sigmoid, small, pointed coronoid process and 3rd molar socket. Left anterior body fragment with incisors and canine sockets. Right posterior body fragment with molar sockets.
Maxilla - right anterior palate fragment.
Right nasal process.
Vault, 3 fragments, upper sutures open.

*Axial*

Cervical, body fragments and neural arch with articulation processes.
Thoracic, fragments min. 2 bodies. 4 articulation processes and 2 transverse processes.
Sacral, fragment lst body, unfused to 2nd.
Rib, 13 fragments shaft.

*Upper limb*

Scapula, fragments neck, spine and acromion neck.
Humerus, fragments shaft including left distal.
Fragments trapezoid.
3 metacarpals bases with shafts. 2 heads.
Proximal phalange base fragment. 5 proximal/middle phalanges heads with shafts (one blue/white). Fragments 3 distal phalanges.

*Lower limb*

Femur, proximal shaft fragment and right medial condyle (joins rest of distal articulation surface in X3).

Patella fragment.

Fibula, 5 fragments shaft.

Fragments intermediate cuneiform.

Metatarsals: 2 heads (bit grey).

Fragments 3 proximal phalanges.

*Comment*: see X3 for identification.

X2

This collection is also obviously from an urned cremation as numerous fragments of pottery were recovered with the bone. It is possible that X1 and X2 are from the same collection.

*Skull*

Fragments 2 incisor/canine/premolar tooth roots.

Mandibular 3rd molar tooth root.

Mandible - right condyle with neck. Right angle.

Styloid process.

Vault, 12 fragments, upper sutures open.

*Axial*

Atlas, left articulation surfaces with posterior arch fragment. Axis, small odontoid process. Left articulation surfaces with posterior arch. Cervical, fragments 2 bodies, 2 articulation processes pairs.

Thoracic, fragments 2 bodies. Transverse processes. 8 articulation processes.

Lumbar, body fragments.

Rib, 7 fragments shaft and tuberosity, including 1st.

Fragments ilium with crest.

*Upper limb*

Scapula, fragment medium size left glenoid with neck. Left coronoid process.

Humerus, 2 fragments shaft.

Ulna, shaft fragment. Small left distal head with styloid process.

Fragment capitate.

5th metacarpal base fragment.

2 proximal phalanges bases with shafts. Proximal/middle phalange heads with shaft.

Middle phalange. 3 distal phalanges.

*Lower limb*

Femur, proximal head fragment. Shaft fragment. Patella, fragments both.

Fibula, proximal head fragment with bronze staining. Shaft fragment (blue/grey).

Fragment calcaneum.

lst metatarsal head fragment.

Fragments 2 proximal phalanges bases with shafts.

*Age*: mature adult individual.

*Sex*: ?? female.

*Comment*: bronze stains on fibula. Blue/grey fibula shaft.

X3

This collection is the same as X1, fragments distal femur from both collections join together. So, this too must be from one of the urns. Also same collection as X5.

*Skull*

Fragment right temporal with external auditory meatus and small mastoid process (tip missing). Right petrous temporal. Fragment nasal process. Fragment posterior portion foramen magnum border. Fragment sphenoid bone. Right, lateral supra- orbit with medium margin. Fragment left external auditory meatus. Gracile right malar fragment.

Vault, 10 fragments, upper sutures open. Spot bronze stain on outer plate of one fragment.

*Axial*

Cervical, spinal process.

Thoracic, one upper and one lower vertebral bodies - bronze staining on upper. Inferior articulation process.

Lumbar, body fragment.

Rib, 8 fragments shaft including lst.

Fragments acetabulum and ilium with crest.

*Upper limb*

Clavicle, fragment right lateral shaft.

Humerus, fragment head with shaft. 4 fragments shaft including proximal.

Radius, head with shaft (21mm diameter). 6 fragments shaft including distal.

Ulna, left proximal articulation surfaces with shaft fragment.

Large fragment gracile shaft.

2 fragments metacarpal shaft, base with shaft.

*Lower limb*

Femur, shaft fragment. Left distal shaft with depressed area 10 x 8mm in posterior lateral surface c. 15mm superior to distal articulation surface. Right lateral condyle with patella surface, joins medial portion in X1.

Tibia, fragment proximal condyle with eminence. 4 fragments shaft (one grey). Right distal articulation surface with slight probable bronze stains.

Fibula, 3 fragments shaft. Small right distal head with shaft fragment.

Most of left talus.

Metatarsal head with shaft fragment.

*Age*: mature adult individual = X1 and X5.

*Sex*: ? female.

*Pathology*: left distal femur shaft with depressed area 10 x 8mm in posterior lateral surface c. 15mm superior to distal articulation surface. Morphological variation.

*Comment*: probable bronze stains on outer vault, upper thoracic vertebra and right distal tibia.

Blue/grey burning, tibia shaft. Blue/white finger phalange.

Metatarsals grey.

X4

This collection also originated from an urn as testified by the presence of pot sherds. The size of the bones corresponds with X2 and the odontoid process from there is the right size to fit the atlas facet in here - both small.

*Skull*

Mandible - body fragment.

Maxilla - fragment nasal margin.

Left lateral supra-orbit with medium/narrow margin and flat brow.

Vault, 7 fragments, upper sutures open, bronze staining on outer surface of some.

*Axial*

Atlas, anterior arch with small facet. Cervical, body fragment. Pair articulation processes.

Neural arch fragment.

Thoracic, body fragment.

Lumbar, superior and inferior articulation processes.

Rib, 14 fragments gracile shaft.

Innominate; Fragment right pubic symphysis, surface pattern still fairly clear.

*Upper limb*

Clavicle, fragment sternal end.

Scapula, fragments neck/spine. Superior angle.

Humerus, shaft fragment.

Radius, right head (19.9mm diameter) with neck and tuberosity. Shaft fragment.

Ulna, fragment small left distal head.

Fragment 1st metacarpal head with shaft, large. Metacarpal head, small (blue). Shaft fragment.

*Lower limb*

Femur, left lateral condyle and left distal shaft with anterior intercondylar surface.

Tibia, fragments proximal condyles. 3 fragments shaft.

Fibula shaft fragment.

Tarsals: fragments calcaneum, talus and cuboid.

Metatarsal base with shaft fragments.

*Age*: younger mature adult.

*Sex*: ?? female.

*Comment*: bronze staining on outer vault. Blue metacarpal head.

X5

This collection is the same as Xl and X3, fragments anterior mandible from X1 and X5 it together. Crumbly fragments of pottery were recovered with the collection.

*Skull*

Maxillary molar tooth roots, also 3rd maxillary molar tooth roots.

Mandible - large fragment anterior inner body with incisor-canine sockets (fits with mandible in X1).

Maxilla - large left fragment with lst incisor-end molar sockets.

Fragment left malar. Long, gracile styloid process. Left zygomatic and articular tubercles.

Vault, ll fragments.

*Axial*

Thoracic, fragments min. 3 bodies. 3 transverse and 3 articulation processes.

Sacral, fragment body.

Rib, 17 fragments shaft, 3 with tuberosities.

Innominate; Fragment acetabulum.

*Upper limb*

Carpals, fragments scaphoid, lunate and triquelateral. Proximal phalange. Fragment proximal/middle phalange head. Fragments 2 distal phalanges.

*Lower limb*

Femur, 4 fragments shaft including distal.

Tibia, fragment proximal condyle. 2 fragments shaft.

Tarsals; fragments calcaneum and cuneiform.

Metatarsal head with shaft.

Fragments 3 proximal and one middle phalanges.

*Comment*: see X3 for identification.

X?5

This collection also contained small, crumbly fragments of pottery.

*Axial*

Cervical, body fragment. Left articulation processes and neural arch from a second vertebra.

Thoracic articulation process.

*Upper limb*

Humerus, fragments shaft.

Carpals; Hook of hamate.

Fragment lst? metacarpal head, shaft and base, bent and somewhat disorganised in the centre of the shaft, possibly as a result of a well healed break?

Proximal/middle phalange head with shaft.

*Age*: adult.

*Pathology*: possible well healed mid-shaft break in one metacarpal.

X6

Negligible quantity.

X7

Collection also contained fragments of crumbly pottery.

*Skull*

2 fragments incisor/canine/premolar tooth root. Molar tooth root fragment.

Fragments nasal process and ethmoid.

Vault, 2 fragments.

*Axial*

Rib, 2 fragments shaft.

*Upper limb*

Carpals; pisiform and fragment lunate.

*Lower limb*

Fragments 2 proximal phalanges.

*Age*: adult.

TABLE 3

Total weight and fractionation.

| No. | | Sieved weights (g) | | |
|---|---|---|---|---|
| | | 10mm | 5mm | 2mm |
| Pit | 1 | 477.5 | 158.8 | 60.1 |
| Pit | 2 | 55.1 | 60.2 | 25.3 |
| Pit | 3 | 294.9 | 387.1 | 117.7 |
| Pit | 4 | 357.9 | 256.6 | 86.9 |
| Pit | 6 | 38.6 | 91.8 | 35.4 |
| Pit | 7 | 493.3 | 404.7 | 115.6 |
| Pit | 12 | 2.3 | 4.9 | 1.5 |
| PitX1,3,5 | | 458.9 | 155.7 | 112.9 |
| Pit | X2 | 116.8 | 64.3 | 31.2 |
| Pit | X4 | 115.3 | 28.4 | 7.9 |
| Pit | X5? | 13.6 | 2.3 | 1.9 |
| Pit | X6 | - | - | - |
| Pit | X7 | 4.6 | 18.8* | 36.0* |

* denotes that the collection contained debris other than bone which will affect the weight.

TABLE 4

Identifiable material

| No. | % of total weight | Weight skull (g) | identified skeletal areas. axial | U.limb. | L.limb. |
|---|---|---|---|---|---|
| 1 | 51.9 | 94.2 | 83.6 | 122.7 | 71.1 |
| 2 | 29.4 | 27.6 | 3.8 | 7.3 | 12.7 |
| 3 | 22.7 | 72.5 | 7.0 | 30.0 | 72.2 |
| 4 | 33.1 | 103.3 | 8.1 | 56.0 | 57.9 |
| 6 | 15.0 | 12.7 | 0.5 | 5.2 | 6.4 |
| 7 | 37.0 | 153.4 | 1.6 | 57.5 | 98.7 |
| 12 | 35.6 | 0.8 | - | 0.4 | 1.9 |
| X1,3,5 | 49.9 | 85.3 | 52.8 | 99.0 | 125.8 |
| X2 | 44.3 | 25.3 | 19.4 | 34.0 | 15.3 |
| X4 | 50.6 | 21.4 | 14.1 | 18.6 | 22.6 |
| X5? | 62.3 | - | 2.7 | 8.4 | - |
| X7 | 55.2 | 31.2 | 0.9 | 0.4 | 0.3 |

Tables 3 and 4 record the weights, fragment sizes and identifiable fragments from Balneaves. The collections were renumbered following excavation as in some cases one cremation would have five sample numbers which were of an arbitrary nature. For ease of working, the new numbers have been utilized in the tables. In the case of the 'X' numbers, those which were demonstrated to be from the same collection have been combined.

BALNEAVES: SOIL THIN SECTIONS

Dr Donald Davidson

*Sample 256*

Components areas: above and below the pan as expressed in channel pattern.

*1. Structure*: partially accommodated channels (0.16 to 0.80mm in width) above the pan; no aggregates; fewer channels below the pan; channel pattern - straight to curved; vughs (spherical to elongate, not normally connected) 0.4 to 0.8mm in diameter and are not orientated and have random pattern; above pan channels and vughs partially connected; pellicular grain microstructure - weakly developed.

*2. Mineral components*: coarse fraction: quartz grains range in size from silt to fine/medium sand (<1mm). One large quartz (200mm). Dominance of single and compound quartz grains; instances of biotite and plagioclase; quartz grains - angular/subangular and smooth.
Fine fraction: brown, optically amorphous iron oxides, isotropic.

*3. Organic components*: few charcoal fragments up to 1.8mm with clear cellular structures (woody material).

*4. Groundmass*: close porphyric; b-fabric of micromass is undifferentiated.

*5. Pedofeatures*: (a) very distinct iron pan (1.0 to 1.8mm thick) running in a discontinuous manner across the centre of the slide; dark reddish brown;
(b) Sesquioxide coatings (80μm thick) on two pores immediately below pan.
(c) Matrix throughout slide dominated by the precipitation and flocculation of iron sesquioxides.

*Points Of Archaeological Interest*

1. Slide dominated by the processes of trans-location/precipitation/flocculation of iron

sesquioxides as expressed in pan formation and the deposition throughout the matrix.

2. Channel structure probably results from earthworm activity which was greater above the pan; (ie greater disturbance above the pan).

3. Evidence of channel networks of different age eg some channels cutting across and partially infilling others.

4. Charcoal - worthy of further study for possible identification.

*Sample 257*
Component areas: uniform slide

*1. Structure*: strongly developed sub-angular blocky peds (0.2 to 0.4mm) separated by intricate system of planar voids, otherwise complex packing voids with weakly developed planes;

*2. Mineral components*: coarse fraction: dominance of single and compound quartz grains; some rock fragments up to 150mm; instances of microcline, biotite and plagioclase: quartz grains - angular/subangular and smooth.
Fine fraction: dark reddish brown amorphous iron oxides; isotropic.

*3. Organic components*: charcoal fragments throughout, but particular concentration (c30%) across centre of slide; cellular structures very clear (woody material); fewer charcoal in lower part of slide (context 1007); charcoal up to 2mm; section of a root totalling 7.6mm, 0.2mm in width.

*4. Groundmass*: single spaced porphyric.

*5. Pedofeatures*: precipitation and flocculation of sesquioxides and associated organic matter within a matrix of silt and sand sized quartz grains.

*Points Of Archaeological Interest*

1. Concentration of charcoal in central part of slide.

2. Considerable precipitation of iron sesquioxides in association with organic matter (post-occupation?)

3. Except for charcoal fragments, overall uniformity of slide.

4. No evidence for time lag between formation of soil in upper and lower part of slide.

*Sample 258*

Sample straddles deposits associated with a cremation burial and backfill.
NOTE: the soil in the sampling tin was loose, thus observations are only made on a few attributes.

*Points Of Archaeological Interest*

1. Fragments of bone (up to 5.5mm) throughout slide.

2. Many charcoal fragments, up to 1mm.

3. Many organic residues including decaying roots.

4. Two fragments (15mm and 8mm) of an iron pan (1.6mm thick), dark reddish brown on upper side and dark brown on lower.

## BALNEAVES: THE BOTANICAL REMAINS

Christine M Rushe

Samples were taken from the ditch and various pits within the enclosure and processed for carbonised remains. All samples were wet sieved using mesh sizes of 1mm and 300μ and the material from the coarse flot (1mm) was sorted. Of the thirty six samples taken, twelve produced small amounts of carbonised plant material. The results from these seven ditch and five pit samples form the basis of this report.

A list of the species identified in each context is given below in Tables 6 and 7. Evidence for cereal grain is scant. Emmer (*Triticum dicoccum*) and barley (*Hordeum* sp.) are present. Both are known from the Bronze Age in Britain and in Scotland emmer appears to remain the commonest wheat into the Roman period and beyond (Jones 1981, 106). The evidence for emmer comes from a single grain and fragments of chaff from the ditch (context 1002A) near the entrance of the enclosure. A fragment of hulled barley was also found in the SW section of the ditch (context 1003). This fragment appeared to be twisted which suggests that the six-row variety is present. One other fragment of barley (possibly hulled) is present in context 1103A in Pit 10 (a large pit to the S of the enclosure).

The emmer grain and chaff found in the ditch sample could have become charred in a number of ways, for example, during parching or through a cooking accident. All of the carbonised material could, however, have been burnt deliberately as waste. This might explain the presence of such remains on what appears to be a burial site.

The remaining carbonised material is comprised of a variety of native weed and shrub species. *Prunus spinosa* (Sloe) and *Rubus* sp. are both shrubs of woodland, hedges and heaths; *Erica/Calluna* (heather) is also a common heath plant. *Polygonum aviculare* and *Plantago lanceolata*, although sometimes associated with arable land, are common plants of waste and grassy places. *Sieglingia decumbens* (heath grass) is normally found in acid grassland but can also grow locally on damp, base-rich soils. None of these remains were found in association with cereal grains, so they can add very little to their interpretation. Isolated seeds could have become incorporated into the deposit in a variety of ways, none

of which need necessarily be related to any economic activity. Each of these species could have been derived from plants growing within the locality of the site.

TABLE 5

List of species from group 1: the ditch samples

| CONTEXT | 1002A | 1008 | 1010 | 1000 | 1003 | 1006 | 1022 |
|---|---|---|---|---|---|---|---|
| VOLUME (Kg) | 5.5 | 10.0 | 8.0 | 11.0 | 11.0 | 9.5 | 12.0 |
| SPECIES | | | | | | | |
| *Hordeum cf. vulgare* | | | | | 1 | | |
| *Triticum cf. dicoccum* (grain) | 1 | | | | | | |
| *Triticum dicoccum* (glume base) | 4 | | | | | | |
| *Triticum dicoccum* (rachis internode) | 1 | | | | | | |
| *Erica/Calluna* type (fruit capsule) | | | | | | 1 | |
| Gramineae type (undifferentiated) | | | 1 | | | | |
| *Plantago lanceolata* | | 1 | | | | | |
| *Prunus cf. spinosa* | | | | 1 | | | |
| *Sieglingia decumbens* | | | | | | 1 | |
| Unident. | | | | | | 1 | |

TABLE 6

List of species from pits

| CONTEXT (PIT) | 3 | 11 | 11 | 10 | 13 |
|---|---|---|---|---|---|
| VOLUME (Kg) | 10.0 | 9.0 | 7.0 | 9.0 | 9.0 |
| SPECIES | | | | | |
| *Hordeum* sp. | | | | 1 | |
| *Erica/Calluna* type (fruit capsule) | | 1 | | | 2 |
| Gramineae type | | 1 | 1 | | |
| (undiffer.) | | 1 | | | |
| *Plantago lanceolata* | 1 | | | | |
| *Polygonum aviculare* type | 11 | | | | |
| *Rubus* sp. | | | 1 | | |
| *Sieglingia decumbens* | | | | | 1 |
| Unident. | 1 | | | | |

## BALNEAVES: POLLEN

Dr Richard Tipping

*Purpose of the examination*

The identification of distinctive suites of pollen types within the cist floor at Loanleven and several other Bronze Age 'cemeteries' in Scotland (see Loanleven report below) led to the need to investigate the possibility of similar patterns within the Balneaves complex.

Samples from the basal and most securely stratified fills of five of the pits at Balneaves were examined (F1110A; Pit 3: F1109C and E from Pit 6: F1107A; Pit7: F1114B; Pit 13: F1115A; Pit 14) together with the blackened encrustations from within Urns 1 and 3 (see 'The Pottery'; Alison Sheridan) were prepared according to conventional chemical techniques (cf. Moore and Webb 1978), including the use of 10μm nylon sieves and hydrofluoric acid to remove siliceous particles, stained with safranin, and examined at mag. x400 on an Olympus BHS microscope.

*Results*

Scan counts only were performed. All samples barring one from the pit fills were polleniferous, and although badly crumpled, showed no indications of bias due to differential preservation. However, there was no indication that the samples were anything other than related to the local environment around the site. No *Filipendula* pollen was seen, and no 'enhancement' by other pollen types was recognised. Given this finding, and the observation that the sediment used to infill the funerary pit may have derived from earlier periods, analyses were not continued.

This negative result, with regard to the developing hypothesis of floral tributes at Bronze Age burials, is difficult to interpret. The preservation conditions at Balneaves are such that *Filipendula* is unlikely to have been selectively removed from the pollen assemblage, and it is concluded that floral tributes were not presented at these burials. Whether there is a regional differentiation in this practice, or a difference between cist and pit burials, or between inhumations and cremations, needs to be examined from a larger sample.

*Acknowledgements*

I would like to thank Dr Stephen Carter for bringing this site to my attention, and to Richard Kynoch for preparing the samples.

## BALNEAVES: POST-MEDIEVAL POTTERY

Derek W Hall

*Bodysherd of pottery from Pit 15*

This sherd of pottery is of a thin red brown fabric with small quartz inclusions. Its internal surface has a thin white slip which gives it the impression of being very well made. It does not fit into any medieval fabric type known by the writer. On balance it seems likely that this sherd is from a vessel of eighteenth or nineteenth century date suggesting a fairly modern date for the feature concerned.

Jacqueline McKinley

*Results*

TABLE 7

Fragmentation of burnt bone by weight (g)

| | Total wt.(g) | Sieved weights (g) | | | Max.frag.size mm | |
|---|---|---|---|---|---|---|
| | | (10mm) | (5mm) | (2mm) | Skull | Long bone |
| Cist 2: | 6.2 | 4.3 (69.3%) | 0.5 (30.7%) | - | 33 | 19 |
| Cist 4: | 1126.4 | 993.9 (88.2%) | 114.3 (10.1%) | 18.2 (1.7%) | 60 | 105 |

TABLE 8

Identified material by weight (g)

| | Wt (g) identified | % total wt | Skull | Axial | U.Limb | L.Limb |
|---|---|---|---|---|---|---|
| Cist 2: | 3.6 | 58.1 | 3.1 (86.1%) | - | 0.5 (13.9%) | - |
| Cist 4: | 575.7 | 51.1 | 112.4 (19.5%) | 144.2 (25.0%) | 145.6 (25.9%) | 173.5 (30.1%) |

*Cist 2*

*Skull*

vault, 4 fragments including mastoid portion. Upper sutures fusing.

*Upper limb*

Radius, distal articulation surface fragment

*Age:* adult

*Sex:* uncertain

*Animal bone*: two fragments long bone (femur/tibia) from a medium to large sized bird.

*Cist 4*

*Skull*

Mandibular molar tooth root. Mandible - right and left condyles with necks. Left anterior ramus border and posterior body fragment with 3rd to 1st molar sockets, slight periodontal disease around mesial margins of sockets. Anterior body fragments with premolar-incisor sockets both sides. Posterior left body fragment with molar sockets, slight periodontal disease around 2nd and 3rd molar sockets.

Maxilla - fragments including palate and left anterior with canine and premolar sockets.

Left supra-orbit with broad margins and rugged muscle attachments.

Fragments ethmoid and sphenoid bones. Broad left malar process. Left half of nasal bone.

Right nasal process. Large articular tubercle. Robust left zygomatic arch. Right postglenoid tubercle and external auditory meatus and fragment of left. Temporal base fragment.

Occipital condyle. Occipital fragment with fairly small external protuberance.

Vault, 35 fragments, upper sutures open/fusing. Bronze stain on one fragment. Large, roughly oval, wormian bone 31 mm x 20 mm.

*Axial*

Atlas, fragments articulation surfaces and posterior arch.

Axis, body with odontoid process and superior articulation surfaces, fragment posterior

arch.

Cervical, one body and two pairs articulation processes.

Thoracic, fragments minimum five bodies, three transverse processes, three spinal processes and two articulation processes.

Lumbar, two bodies, ten articulation processes.

Rib, twenty-five fragments shaft, one facet with tubercle and 1st rib.

Innominate: fragments ilium with crest, auricular surface and ligament articulation. Fragments ischium including both tuberosities, crest and pubic symphysis with surface pattern obliterated, fairly smooth, slight border one side. Some fragments showed spots of bronze staining. Fragments acetabulum and greater sciatic notch.

*Upper limb*

Clavicle, right sternal end with articulation surface.

Scapula, fragments both glenoids, necks, spines and lateral borders.

Humerus, fragment head and head with tubercle. Eleven fragments shaft including distal with depressions. Right articulation surface and fragment.

Radius, head (20 mm diameter), fragments both necks and proximal shafts with small, gracile tubercles. Five fragments shaft including distal. Right, distal articulation surface.

Ulna, fragments sigmoid, coracoid and radial notch. Right proximal shaft with tuberosity. Three fragments shaft and small, right distal articulation and shaft.

Both lunates, fairly large.

Metacarpals: IInd, IIIrd and Vth bases, three fragments shaft, two heads.

Phalanges, fragments five proximals, five middles and four distals.

*Lower limb*

Femur, large fragments both necks. Seven large fragments, fairly gracile shaft. Fragments both distal articulation surfaces.

Patella, circa one third (grey inside).

Tibia, fragment proximal condyle. Three large fragments shaft. Fibula, three large fragments shaft.

Fragments, calcaneum, both tali (slightly grey inside), navicular and cuneiform.

Metatarsals, fragments seven heads with shafts including small Ist.

Phalanges, heads and shafts of both Ist proximals

*Age:* adult, younger mature

*Sex:* uncertain

*Pathology:* (1) periodontal disease evident around mandibular molar sockets, mild/medium in lingual portion. (2) Large wormian bone, roughly oval 31 mm x 20 mm.

## LOANLEVEN: ANALYSIS OF GREEN STAINED BONE FRAGMENTS

Alan O'Berg

*Introduction*

The bone fragments from Loanleven had several areas of green staining on their surfaces. They were analysed elementally to determine whether copper was present in the stained areas which might suggest that they were due to corrosion of a copper object.

*Method*

The bone fragments were analysed quantitatively without sampling or surface preparation using energy dispersive X-ray fluorescence (XRF). A Rhodium target X-ray tube run at an accelerating voltage of 46KV was used to produce the primary X-ray beam which was collimated to give an elliptical irradiated area on the surface of the specimen about 1 mm x 1.5 mm.

*Results*

| Spectrum | Area | Ca | Mn | Fe | Cu | Zn | Sn |
|---|---|---|---|---|---|---|---|
| JO152B | Stained | 1 | T | 2 | T | T | 2 |
| JO153B | Not stained | 1 | T | 2 | nd | T | 2 |

Key:

1 Major element
2 Minor element
3 Trace
nd Not detected

*Discussion and conclusion*

The concentration of copper was only just above the detection limit of the method used and the result could not therefore be regarded as positive confirmation that the staining was due to copper. However, copper was only detected in the stained area and, although other causes (such as staining by organic material) are possible, copper salts are the probable cause of staining.

## PARK OF TONGLAND: DESCRIPTION OF THE SOIL THIN SECTIONS

Donald Davidson

Four samples were collected from a vertical sequence with No 1 at the base straddling contexts 0089 and 0066, No 2 straddling contexts 0066 and 0021, No 3 in the centre of context 0021, and uppermost No 4 between contexts 0021 and 0065.

The four slides were described following the international system for thin section description (Bullock *et al.*, 1985). Slides No 1 and 2 were virtually identical whilst slides 3 and 4 were variations on these. It thus seemed best to provide a full description of slide No 1 which is also applicable to No 2 and then only to describe the differences between these two pairs of slides which are of a particular interpretational value.

*Slide no 1* (also applicable to No 2)
No subdivision into component areas

*1. Microstructure:* type: crumb
Aggregates are crumbs; strongly developed; 20% abundant; ultrafine to medium in size; almost smooth; unaccommodated; basic random; some crumbs consist of one or two encased rock fragments.
Inter-aggregate voids are; compound packing voids; micro to macro in size; few in abundance; basic random.
Intra-aggregate voids are; vughs; few in abundance; unorientated orientation patterns; random basic and referred distribution pattern.

*2. Basic Mineral Components*: c/f limit at 5um; ratio of 60:40
Coarse material: single mineral grains of quartz; silt to medium sand; unsorted; subangular, smooth; very few, frequency; alteration class 0;
Rock fragments: dominantly quartz, occasional plagioclase; unsorted; smooth, subrounded; frequency, common; thick pellicular alteration of one fragment.
Inorganic residues of biological origin: none.
Artefacts: none.

Fine material: mainly light brown mineral with small dark reddish brown residues (<25um); : speckled limpidity.

*3. Organic Basic Components*: coarse organic material: occasional amorphous organic fine material in the mineral fine material.

*4. Groundmass*: related distribution of coarse and fine material: open porphyric fabric of fine material: undifferentiated b-fabric.

*5. Pedofeatures*: textural pedofeatures: coatings of grains and rock fragments, vary from typic, capping and pendent.

*Comparisons of slides nos 3 and 4 with nos 1 and 2*

*Slide no 3*

*Microstructure*: wider range of crumbs from micro to coarse; larger aggregates dissected to different extents by zig-zag planar voids.

Frequent abundance of compound packing voids.

Colour of fine material: dark reddish brown.

Presence of root fragments, one 2mm long, several 0.5mm long.

Few occurrences of charcoal; one encased in an aggregate.

*Slide no 4*

*Microstructure*: same as for slide No 3; also crumbs in various stages of disintegration from coarse sized aggregates (ultrafine).

Abundance of compound packing voids, same as for slides Nos 1 and 2 (few).

Colour of fine material: dark reddish brown.

Few occurrences of charcoal, some incorporated into crumbs.

Root fragment (1mm in length) incorporated into crumbs.

## PARK OF TONGLAND: POLLEN

Simon Butler

In order to test the potential of pollen analysis to resolve certain site environmental questions, a total of 5 pollen samples (numbered 1 to 5) were examined. Numbers 1 to 4 refer to series of Kubiena tins which formed a column up through the sub-cairn OGS. Number 5 was also from the OGS but from a different profile.

(Fig. 14, Stone 1 profile).

*Method*

A 2 cm sediment sample was taken from the middle of each Kubiena tin plus one sub-sample from the OGS sample bag. Each of these was processed in the following manner:

1. Addition of exotic marker gains (*Lycopodium*) by HCl dissolution.
2. Alkaline digestion for 1-2 hrs in hot 10% NaOH.
3. Microfiltration and swirling using 150 micron and 10 micron mesh sizes.
4. Acetolysis.
5. Ultrasonic vibration for 5 min at 50 kilocycles per second.
6. Dehydration and mounting in silicon oil.

*Results*

Pollen was found to be present in small amounts in the samples, but abundant microscopic (silt size) silica particles (*Argilla granosa*) obscured the pollen grains. These particles will have to be removed, by modifying the preparation technique, before pollen analysis can proceed.

Cursory examination of the few pollen grains which could be observed, revealed the existence of *Polypodium* spores, Gramineae, Coryloid, *Plantago*, Compositae and Caryophyllaceae. These suggest the existence of open, possibly agricultural, land. This conclusion is not statistically valid and should be treated with caution.

## PARK OF TONGLAND: GEOLOGY

G Collins

The site country rock is greywacke and shale of Llandovery age (Silurian). There may be dykes of porphyrite in the near vicinity. This stone, with altered country rock, is worked at Tongland Quarry, 3/4 mile due south of the site.

It was not possible to visit the site during the excavation; the identifications are of samples taken from features on site by the excavator. Samples were supplied from:-

a. outcrop to west of the site and recorded by Coles as one of an outer arc of low standing stones

b. outcrop to north of the site and recorded by Coles (1895) as one of an outer arc of low standing stones

c. two samples of the cairn material

d. one sample from the cairn kerb material

*Results*

The outcrops (a. and b.) were identified as dark grey greywacke, the cairn material (c.) as blue grey and dark grey greywacke, the kerb was identified as porphyrite.

## PARK OF TONGLAND: ANALYSIS OF POTTERY FABRIC INCLUSIONS

G Collins

All three pots contain quartz (often milky), feldspar and small lumps of grey granite (Biotite Granite) which looks very similar to the Gatehouse-of-Fleet granite and Creetown Granite. This suggests that the source of this material lies to the west of Kirkcudbright rather than to the east. Hence the grits from all three pots, and therefore the manufacture, are likely to have been quite local to the site.

## PARK OF TONGLAND: CHARCOAL

Camilla Dickson

*Radiocarbon charcoal samples*

(*= small component of charcoal)

*Cairn Samples*

F1.1 *Corylus**, *Fraxinus*, *Quercus*

*Pit Samples*

F 1.2 *Quercus*

Pit 1 *Corylus*, *Fraxinus*, *Quercus*

Pit 2 *Quercus*, unidentified

Pit 3 *Corylus**, *Quercus*

Pit 4 *Corylus*, *Fraxinus*, *Quercus*, (*Calluna*, 1 stem this was not submitted)

Pit 5 *Corylus*, *Quercus*

Pit 6 *Corylus*, *Fraxinus*, *Quercus**

2 fragments burnt bone, each *c.* 5.0cu.mm

Pit 7 *Corylus*, *Fraxinus*, *Quercus**

rare burnt stems *c.* 1 mm diam., rare uncarbonised bark, 1 fragment burnt bone, cancellous type *c.* 0.5cu.mm

All samples contain recent rootlets. Most have some fungal sclerotia of *Cenococcum* type.

*Non-radiocarbon samples*

Pit 4 *Corylus**, *Quercus*

*Observations*

Much of the *Fraxinus* and *Quercus* charcoal is from fairly fast growing trees, annual increment 1-2 mm, although the Pit 1 sample contains wood of exceptionally slow growth.

J McKinley

TABLE 8

Fragmentation of Burnt Bone by Weight (g) and %

| Context | Total wt. (g) | Sieved weights (g). 10mm | 5mm | Max frag. size (mm) 5mm | Skull | Long Bone |
|---|---|---|---|---|---|---|
| Pit 1 | 166.7 | 40.2 (24.1%) | 71.3 (42.8%) | 55.2 (33.1%) | 35.0 | 31.0 |
| Pit 4 | 418.0 | 148.9 (35.6%) | 164.0 (39.0%) | 105.1 (25.1%) | 22.0 | 95.0 |
| Pit 7 | 36.7 | 1.4 (3.8%) | 17.6 (48.0%) | 17.7 (48.2%) | 20.0 | - |
| Pit 12 | 0.2 | - - | - | 0.2 (100%) | - | - |

TABLE 9

Identifiable Material by Weight (g)

| Context | Weight (g) Identified | % Total | Skull | Axial | U.limb | L.Limb |
|---|---|---|---|---|---|---|
| Pit 1 | 37.6 | 22.5 | 30.9 (82.2%) | 0.6 (1.5%) | 3.4 (9.0%) | 2.7 (7.2%) |
| Pit 4 | 91.5 | 21.9 | 29.5 (32.2%) | 0.6 (0.65%) | 35.3 (38.6%) | 26.1 (28.5%) |
| Pit 7 | 2.1 | 5.7 | 2.1 (100%) | - | - | - |
| Pit 12 | - | - | - | - | - | - |

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