UNIVERSITY OF TORONTO SCARBOROUGH

REPORT ON THE FIRST EXCAVATION SEASON AT SPITZKLOOF B

Prepared for

South African Heritage Resources Agency
Excavation Permit number 80/09/11/008/51b
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Prepared by

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1. **Executive summery**

The first field season at the rockshelter Spitkloof B in the Richtersveld region of Namaqualand has produced artefactual material reflecting a late Holocene occupation: informal quartz lithics, small ostrich eggshell beads and pottery. We also discovered a quartz bladelet with mastic and ochre adhering to the edge and clear evidence for bead manufacturing on site. Using a Leica total station to piece plot every artefact over 2.5 cm in size meant that we were able to excavate a 4 m^2 unit to a depth of 27 cm. Based on the visual depth of the talus slope there is at least 1.5 m of material yet unexcavated. Spatial patterns identified in the excavated unit include hearths with corresponding ash dumps and an intentional burial of a newborn steenbok (*Raphicerus campestris),* which has not been recorded in South African prehistory. Numerous scientific studies are underway in order to identify past economic strategies and palaeoenvironmental signals including: Optically Stimulated Luminescence,

micromorphology, botanical (phytoliths, pollen, and charcoal), lithics and faunal analyses. This is a multi-disciplinary research program including numerous international institutions.

2. Introduction

This is the first field season excavation report from the Spitzkloof B Rockshelter (28° 51.79ôS 17° 04.65ôE). The site is located 30 km inland from the Atlantic Ocean and 30 km due south from the Orange River in the Richtersveld Municipality, Northern Cape, South Africa (Fig. 1). The Spitzkloof shelters consist of three eroded bowls within a folded outcrop of quartzite in the Stinkfontein subgroup (Frimmel 2003) overlooking quartzitic gravel plains. Immediately in front of the shelters is a dry tributary of the Holgat River (Fig. 2).

The talus slope of the two largest shelters, A and B, produced classic lithics attributed to the Middle and Later Stone Age periods. There is no evidence on the surface for contact or historic period occupation of the shelters.

In July 2011, at the end of the second field season at Spitzkloof Rockshelter A, the edge of a large termite void was discovered approximately one meter down the south profile of unit G3. As there is a large rock fall just above the edge of this void the excavation unit became unstable and therefore a safety risk. As we had not yet reached bedrock, the excavation of the three square meter unit at Spitzkloof A was not yet complete. It became clear that in order to accomplish our research goals we would have to start the excavation all over again by moving into the second shelter labelled B. To this end we obtained an extension of our original excavation permit to incorporate the second shelter (Excavation permit number 80/09/11/008/51b). The primary research questions of the project called óAdaptations to Marginal Environments in Middle Stone Ageô (AMEMSA) are: When, where and how did early *Homo sapiens* develop the adaptive plasticity required to colonize and continuously occupy environments where resources are unpredictable in space and time? Did they develop new social-economic strategies and technology *in situ* or were these creative solutions developed elsewhere. Ultimately this research project is aimed at contributing to the evidence for the migration of early humans ó Out of Africaô and eventually colonizing the deserts of Australia. The Spitzkloof shelters are a very important component of this research program as they represent the arid environment component of the larger research project.

3. Background

3.1 Environment

The Spitzkloof Rockshelters are located in the winter rainfall zone that receives greater than 66% of its precipitation during the austral winter months. The region is a semi-arid desert and the southern extension of the Namib Desert on the west coast of South Africa. The region is desolate with the coastal strip

consisting of Holocene white sand dunes and older Pleistocene sand in the interior (Le Roux and Schelpe 1981, Acocks 1998). Drainage is westward toward the Atlantic Ocean but low rainfall ranging from 50 to 100 mm per annum mean that rivers rarely flow (Mucina et al. 2006). The biome is classified as Succulent Karroo and temperatures in the vicinity of the site exceed 30 °C during the summer while winter minimums are below freezing. The region is a diversity hotspot for some succulent and reptilian species (Mucina et al. 2006) but otherwise the wildlife available for human consumption lacks diversity in terms of species richness and evenness. All flora and fauna are arid adapted specialists and typically obtain hydration through coastal fogs that range up to 90 km inland. The vegetation is Lekkersing Succulent Shrubland (Mucina et al. 2006), dominated by dwarf shrubbery while larger species such as *Acacia karroo* can be found along dry riverbeds.

3.2 Previous Archaeological Investigations

Relative to most regions in South Africa, very little archaeological research has been conducted in Namaqualand due in part to its inhospitable nature and because a large proportion of the area was previously inaccessible diamond mining territory. However over the past 20 years the Archaeology Contracts Office and others have begun to systematically survey the region for various projects including Heritage Impact Assessments, Environmental Impact Assessments and Archaeological Impact Assessments. Over 1700 open sites have been identified with surface material identifying occupation of the area from the Early Stone Age through to the historic period (Dewar 2008, Halkett 2002, 2003, 2006a, 2006b; Halkett and Dewar 2007; Halkett & Hart 1997, 1998; Halkett & Orton 2004, 2005a, 2005b, 2007; Orton 2007a, 2009a; Orton & Halkett 2005, 2006; Webley 1992, 2002, 2009). More rare is the presence of shelters with archaeological deposits that allow for the creation of chronological sequences that provide context for the artefact signatures in open sites. Most research into Namaqualand's past is due to Cultural Resource Management projects while only three purely academic studies are known to date (Dewar 2007, Dewar et al. 2006, Dewar and Jerardino 2007, Dewar and Orton *In Press*, Dewar and Stewart 2011, Dewar and Stewart *In press*, Orton 2007b, 2008a, 2008b, Orton 2013, Orton and Halkett 2006, Orton et al. 2005, Webley 1992, 2002, 2007). This excavation is the extension of my own thesis research into landuse and economic strategies of the region during the Later Stone Age. While Webley concentrated on the material from Spoegriver Cave, Orton and Dewar focussed on the open sites in order to identify Later Stone Age landscape use. This is why the excavations at the Spitzkloof shelters are important; the shelters hold a deep sequence with preserved organic material, allowing for the identification of past economic strategies and palaeoenvironmental signals. The artefact signatures with tightly controlled dates permit the integration of the shelter data and the open sites, allowing for much more robust interpretation of past landscape use. This research project expands our understanding of land use in northern Namaqualand while the

Vaarsch River project is located in the Knersvlakte in southern Namaqualand (Mackay et al. 2010, Orton et al. *In Press*).

3.2.1 Northern Namaqualand

Spitzkloof A was excavated from April to May 2010 and again in 2011 (Dewar and Stewart 2011, *In Press*). After two field seasons units G3 and F3 are 1.9 m deep while F4 is 50 cm deep. The second field season was drastically cut short when a large termite void was discovered one meter down the face of the south profile in unit G3. The void was 1 x 2 meters in size and extended through what would have been unit G4.

After discovering the termite void, the sections were shored up with sand bags and samples were collected primarily along the north wall of unit G3. The samples are currently being analysed for Optically Stimulated Luminescence (Dr Zenobia Jacobs at the University of Wollongong), micromorphology, phytolith and pollen analyses (Dr Mike Morley and Dr Adrian Parker at Oxford Brookes University).

4. Current Excavations

In July 2012 we returned to Spitzkloof with an extended permit to work in shelter B. The new site was surveyed and drawn using a Leica total station and tied into the datum established in 2010. The mouth of the shelter is twenty-five meters wide and six meters deep facing northeast. A four-meter square grid was surveyed onto the deposit with care to avoid the back wall and the edge of the drip line (Fig. 3).

The units were labelled J8, K8, J7 and K7. The sediment was excavated in 50 cm^2 quadrants using small trowels and brushes and processed through a 1.5 mm dry sieve. All bucket counts (10 L buckets) were recorded to estimate density of material. Organic rich deposits including all hearths and ash dumps were floated and the fine fraction was collected separately. The site was excavated stratigraphically using a modified single context method. Every context was excavated in 3 cm spits or by single context whichever was thinner. All data were recorded on single context recording sheets using a File Maker Pro 11 database on iPads. Each quadrant had a dedicated tablet and the data was uploaded to a laptop every night. Each one m^2 unit was given a different numbering system to avoid biasing the interpretation of the contexts during excavation: K8 is recorded as 1000ŝ, J8 is 2000ŝ, K7 is 3000ŝ and J7 is 4000ŝ. Drawings of every context were recorded using grid paper and pencil and the opening of a new context / feature was photographed with a digital camera. Depths were measured using both the total station and a line level with a measuring tape. All material 2.5 cm and over was piece plotted *in situ* using the total station and bagged separately. All sorted material was bagged by relevant artefact categories on site.

The four units were excavated systematically with the aim of exposing living floorsô in order to identify spatial patterning. The overall excavation process was very slow due to the piece plotting exercise, thus we only excavated twenty seven centimetres of deposit representing eight layers (35 contexts), two hearths, four ash dumps and a steenbok burial (Figs. 4 & 5, Table 1). A total of 502 L (0.502 m^3) was recovered. We used hatpins and white plastic botanical labels to mark the boundaries of the contexts in the profile walls.

4.1 Dating

We are currently having difficulty using Optically Stimulated Luminescence to date the site as the Dose rate at Spitzkloof is 2-3 times higher than at any other site Dr Jacobs has worked on (Jacobs personal communication). This means that the quartz crystal traps were filled at a very fast rate and are now full and this plateau prevents an accurate estimation of equivalent dose. Dr Jacobs is currently working on a single aliquot method using feldspar rather than the quartz crystals as an alternative. We will however also submit a request for a radiocarbon dates using either the charcoal or the ostrich eggshell. While the charcoal has already been analysed, the ostrich eggshell is less likely to have been affected by diagenesis (Van der Merwe and Vogel 1983).

4.2 Micromorphology

Dr Mike Morley and Dr Adriane Parker of the Human Origins and Palaeo-Environments Research Group at Oxford Brookes University are analysing the soil column and micromorphology samples from Spitzkloof A. They will identify the site formation processes as either geomorphic or anthropomorphic. They will then analyse the phytoliths and pollen species in the samples in order to establish a palaeoenvironmental record for the site. We are hoping to further the palaeoenvironmental signal by obtaining a core sample from a dry lakebed eight kilometres northwest of the shelter during our proposed field season in July 2013. As a natural trap it is expected to have a comparative sample for the region, particularly for pollen.

5. Artefacts

5.1 Bone

The organic preservation is excellent at Spitzkloof B allowing for the preservation of both bone and botanicals. The bone has not yet been analysed but will be analysed by Dr Genevieve Dewar and a post doctorate fellow Dr Benjamin Collins (University of Toronto) once the material from site A has been completed. Dewar will focus on the interpretation and identification of the material while Collins will look at the bone for evidence of taphonomic processes. In total 199 bone elements ranged from 2.5 to 5 cm in length and

were piece plotted. A further 71 bone elements were greater than 5 cm and received two spatial identifiers. While not yet fully analysed, the majority of the piece-plotted bone is from *Chersina angulata*, small snake, *Antidorcus marsupialis*, *Pedestes capensis*, *Raphicerus campestris*, *Procavia capensis* and large bovids (cf. Brain 1981) in that order. An interesting find is a nearly complete newborn steenbok (*Raphicerus campestris*) burial identified as Feature 7. Mr John Engelhard of the University of Toronto is currently writing an honours year paper assessing the social implications and behaviour that this burial might be signalling. His preliminary findings are attached. All elements of the steenbok are present with the exception of the femora and humeri, the largest meat yielding bones (Fig. 6)

5.2 Charcoal and Botanicals

A total of 77 pieces of charcoal were greater than 2.5 cm in length and were piece-plotted. An additional 51 botanical remains were piece plotted including unburnt twigs, pieces of wood, and bark. Dr Timm Hoffman has all the botanical material at the Department of Botany at the University of Cape Town. He is currently co-supervising an honours project (Ms. Kate Cronin) with Dr Ed February, creating a modern reference collection of charcoal for the Namaqualand region. Mrs Magdalena Sobol identified the taxonomy of the piece-plotted charcoal in order to identify past preferences for campfire wood and or as a palaeoenvironmental indicator. Her analysis is attached but was hindered by the small comparative reference collection.

5.3 Lithics

The majority of lithics from the site consist of milky-quartz flakes although some quartz crystal, heat treated CCS, tabular quartzite and silcrete was observed. A total of 95 lithics were between 2.5 and 5 cm in length, receiving a piece plot number, while an additional 10 lithics were greater than 5 cm and received two spatial points. An interesting find was a quartz bladelet with mastic and ochre adhering to it. There was very little evidence of retouch but the analysis has not yet been completed. Dr Jayson Orton has the lithics at the Archaeology Contracts Office and will be identifying them once his analysis of the material from Spitzkloof A is complete. Dr Alex Mackay will be analysing the Middle Stone Age (MSA) material once he has completed the analysis of the Spitskloof A MSA lithics.

5.4 Ostrich eggshell (OES)

Ostrich eggshell is rich at the site with a total of 159 specimens large enough to piece plot. This included two broken flask mouths that do not refit. The interior of a large number of pieces was etched; indicating that people used an abrasive, probably sand to clean out the eggshell, either to remove the egg yolk for subsistence purposes or to clean the shell for use as a vessel. The

external aspect of the shell reflects a range of colours: sunny yellow to light brown and white. This is not quite what we had seen in Spitzkloof A assemblage that produced a great range of colours from a sunny yellow to bright red and turquoise. We conducted burning experiments in the field to determine how the colours were produced. We were able to produce the sunny yellow but not any of the other colours. An honours student in the Department of Archaeology at the University of Cape Town is currently working with Dr Judith Sealy to identify the temperatures and proximity to the fire that is required to cause colour change.

5.5 Ostrich eggshell beads

Ostrich eggshell bead making activities occurred at the site with a total of fourteen beads in different stages identified *in situ*. Following Ortonôs (2008b) stages, there are nine stage Va complete beads. Two stage Vb beads (broken complete) are carbonized while four bead preforms are in stage IIb. All beads are small and will be less than 5 mm when measured. Other beads in all three stages previously mentioned were discovered during sorting, but they have not yet been analysed.

5.6 Pottery

A single quartz tempered burnished pot sherd was identified in the surface layer.

5.7 Shell

A total of twenty-three shells from three different Mollusc species were piece plotted: *Trigonephrus sp.*, *Bullia sp.*, and *Scutellastra argenvillei.* The dune snails are common in the region today but the *Bullia sp*. and *S. argenvillei* are marine species that must have been transported over 30 km from the Atlantic Ocean. It is common during the Later Stone Age in Namaqualand for the *Bullia sp*. shells to be perforated and made into ornaments (cf. Dewar 2008), however there was no evidence for perforation on this specimen.

5.8 Other Finds

In addition to the artefact classes typically associated with Later Stone Age sites in Namaqualand there was a preserved bird feather and a piece of brown beer bottle glass.

5.9 Spatial Analysis

The hearths and ash dump features are closely related and likely represent cleaning events (Fig. 5). The surface of ash dumps and hearths are at the

same level under within a meter. Both hearths (Features 3 and 6) are clipped by the south wall of the excavation unit (Fig. 5).
Layer 2: Features 1 and 2 are homogenous ash dumps while feature 3 is a cleaned hearth with rubification: All three features are roughly 30 cm in diameter and 6 cm deep.
Layer 3: Feature 5 is located in this layer and consists of an artefact rich dump of bone, charcoal and ostrich eggshell. The lack of ash suggests that this is not an ash dump per say but perhaps reflects an overall site cleaning event, artificially clustering artefacts together.
Layer 4: Feature 4 is a homogenous ash dump at 30 cm in diameter and 6 cm deep while feature 6 is a structured hearth with charcoal, ash and rubification that dives 12 cm into deposit below.
Layer 7: Intentional burial of a newborn *Raphicerus campestris*, the feature is 17 cm in diameter and 6 cm deep (Figs 5 & 6).
Further spatial analysis using GIS will identify the three dimensional distribution of artefacts in relation to these these features and each other.

6. Discussion & Conclusion

As the analyses are not complete this will be a preliminary report. The single fragment of modern beer glass in layer 4 is likely intrusive and reflects the continued use of the site as a campsite. The lack of any other historic material in the upper layers indicates that there is no contact period occupation of the site. The pottery, small ostrich eggshell beads, an abundance of milky quartz flakes and the paucity of backed and retouched artefacts suggests that we are currently working in the late Holocene period (cf. Orton 2006, Dewar 2008), but this has yet to be confirmed through OSL or radiocarbon dates. The faunal species are all locally available today and reflect a palaeoenvironmental signal that suggests the region was similar to the current semi-arid desert environment mentioned above. The presence of only one species associated with rocky terrain *Procavia capensis* and the prevalence of *Chersina angulate*, *Antidorcus marsupialis* and *Raphicerus campestris*, all open country living species (Skinner & Chimbimba 2005) indicates that past economic strategies were focussed on the plains as opposed to the surrounding foothills. However the presence of the marine shells indicates some contact with the coast. While it is possible that a bird of prey brought the marine shell to the site it is unlikely given the lack of evidence for the consumption of microfauna, their preferred diet. The intentional burial of the newborn steenbok has not previously been recorded in the prehistory of South Africa. The lack of positively identified domestic animals is intriguing and suggests that pastoralists did not use the site, however a full faunal analysis is required to confirm this position.

7. Future Work

Immediate future work will include continued excavation of the four units using piece plotting with two total stations to increase productivity. We predict an additional 1.5 m of deposit is present. This excavation is planned for July 2013.

We also need to conduct a systematic survey of the region in order to identify other sites and raw material sources. This will be done using standard survey methods and high-resolution GPS handheld units. Additionally we are looking into the prospect of obtaining a sediment core of the dry lakebed 8 km northwest of the site for palaeoenvironmental samples.
We eagerly await the results of pending analyses, particularly the dating results, to help guide the next phase of this project.

8. Team

Report:	Genevieve Dewar
Fieldwork:	Genevieve Dewar Brian Stewart Alex Mackay Mike Morley Giulia Saltini Semerari Mark McGranahan Ben Collins Sarah Rhodes John Engelhard Sara Kivisto Michael Korcok

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Table 1. The description of the layers and contexts identified at Spitzkloof B including the Munsell Chart colours, matrix description, number of 10L buckets and list of artefacts.

Layer	Contexts	Description	Munsell chart	Matrix	Buckets	Artefacts
1	1,1001,2001	Surface scatter	7.5 YR 5/4 Brown	Sandy silt with roof spall < 4 cm a generally laying horizontally	14.6	Bone, Charcoal, Lithics, Oes, and Pottery
2	1000,2000, 3000,3001, 4000,4001, Feature1, Feature2, Feature3	Greyish brown sediment with few small pebbles < 1 cm	10 YR 6/4 Light yellowish brown	Silty sand with small pebbles	4.8	Bone, Charcoal, Lithics, and Oes
3	1002, 2002, 3002,4002, Feature5	Sediment is compact with 1 ï 3 cm small roof spall	7.5 YR 5/4 Brown	Fine sandy silt with roof spall oriented more vertically	7.8	Bone, Charcoal, Lithics, and Oes
4	1003,2003, 3003,3003a, 3003b,3003c, 4002a,4003, 4003a, Feature4, Feature6	Lighter coloured loose sediment with small isolated patches of small roof spall	10 YR 5/4 Yellowish Brown	Fine sandy silt	4.2	Bone, Bottle glass, Charcoal, Lithics, and Oes
5	1004,2004, 2007,3004, 3005,3004a, 4004, 3007	Brown loose sediment with < 1 cm roof spall	10 YR 5/3 Brown	Sandy silt with small roof spall	7.4	Bone, Charcoal, Lithics, Oes, and Shell
6	1005,2005, 3005	Loose greyish sandy silt with <2 cm roof spall	7.5 YR 4/5 Brown	Sandy Silt	3.7	Bone, Charcoal, Lithics, and Oes
7	1006,1007,	Loose	7.5 YR	Silty Sand	3.7	Bone,

	3006, Feature7	brownish red sandy silt	4/4 Brown	with small roof spall		Charcoal, Lithics, Oes and Land snail shell
8	1008,1009,2008	Soft but compact goldish-brown sediment with a moderate 1< cm roof spall	10 YR 4/4 Dark yellowish brown	Sandy silt with roof spall	3.8	Bone, Charcoal, Lithics, and Oes

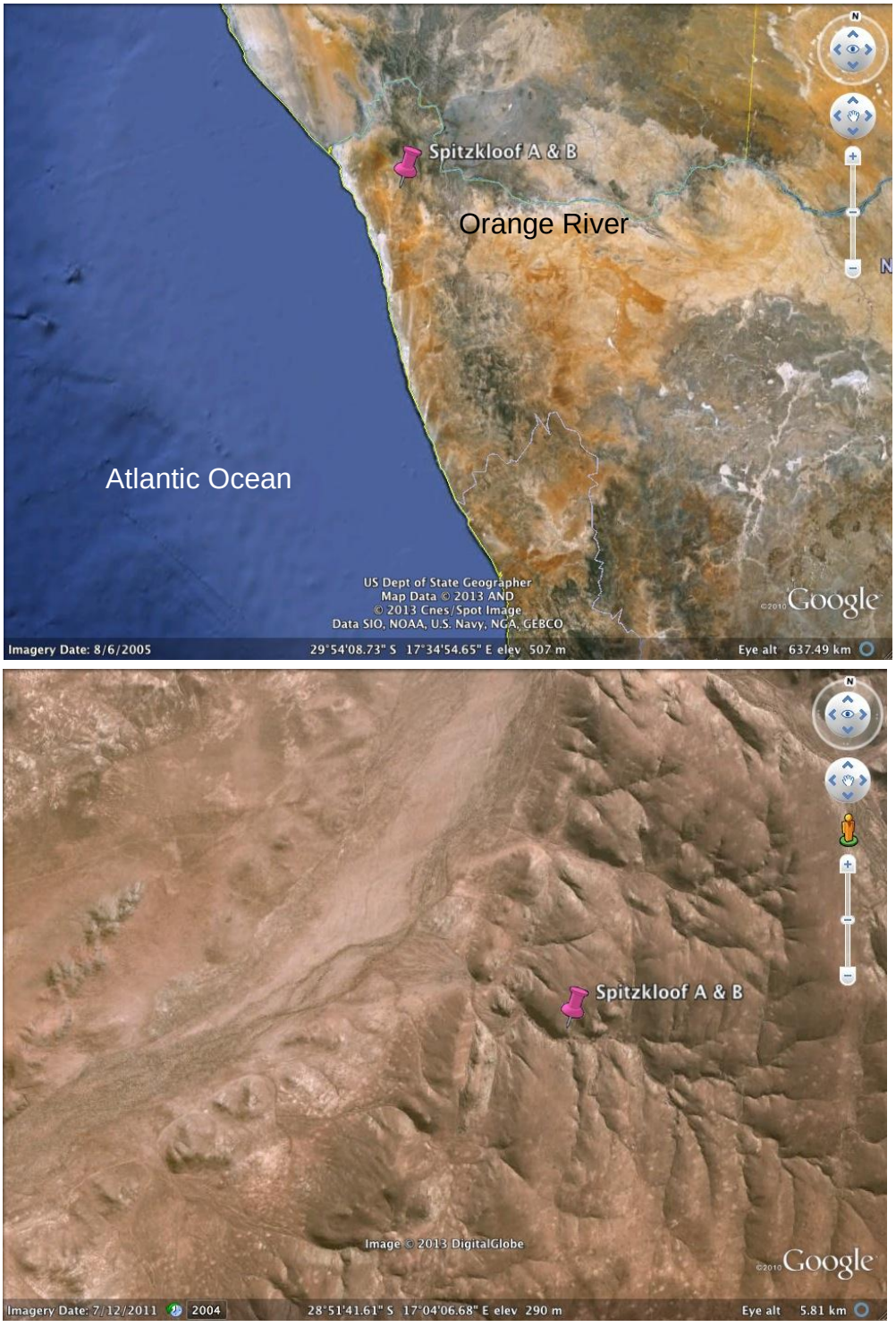

Figure 1. Top) a map showing the location of Spitzkloof A and B near the Orange River in the Richtersveld, Northern Cape, South Africa. Bottom) a close up map of the location of Spitzkloof A and B on the dry tributary of the Holgat River.

Figure 2. Photograph of Spitzkloof A on the right and B on the left, taken facing south from the outcrop across the dry tributary from the site.

Figure 3. Plan view pre-excavation at Spitzkloof B, facing southwest looking into the back of the shelter.

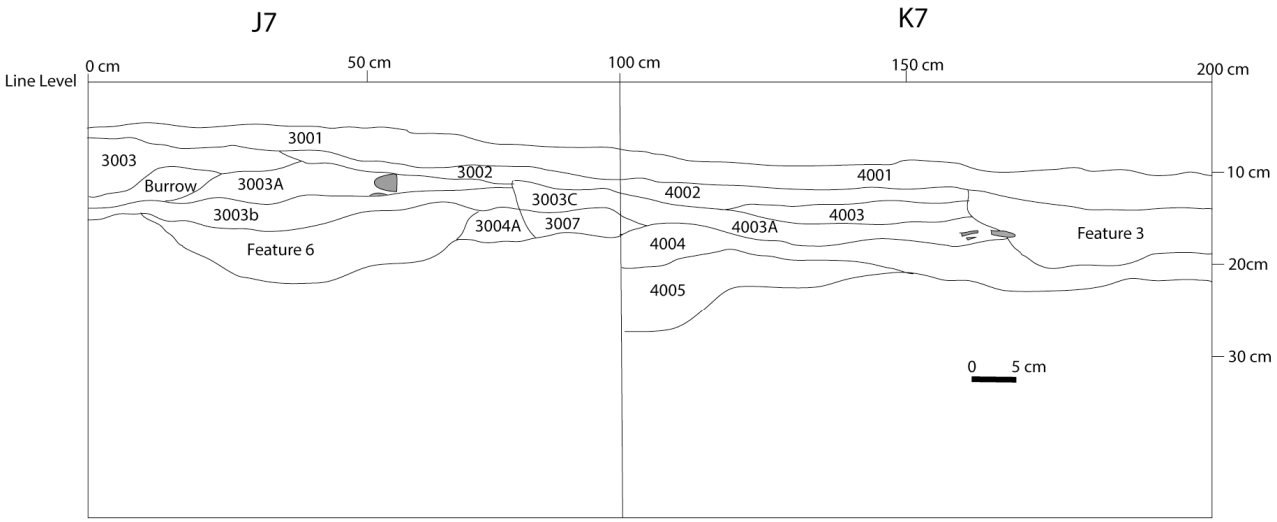

Figure 4. Drawing of the south wall profile of squares J7 and K7 of the excavation unit at Spitzkloof B. Feature 3 and 6 are hearths.

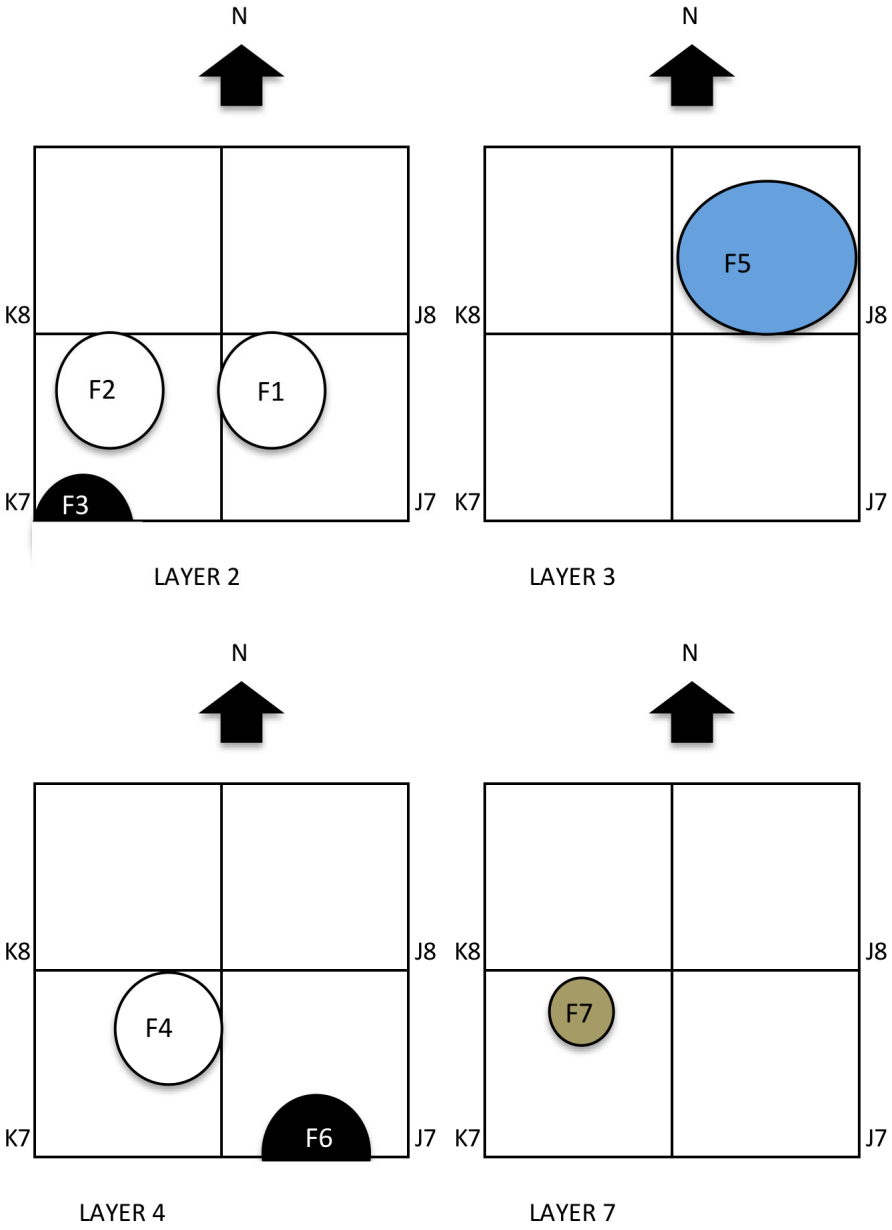

Figure 5. Schematic plan drawings of the spatial correlation between features in the same layer. Features 1,2 and 4 are ash dumps while features 3 and 6 are hearths. Feature 5 is a clustered dump of artefacts while feature 7 is the intentional steenbok burial.

Figure 6. Above) A photograph of the steenbok burial *in situ* in layer 7. Below) A photograph of a collection of some the steenbok elements in the burial.