



an agency of the
Department of Arts and Culture

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CaseID: 21276

Date: Tuesday July 18, 2023

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Letter

In terms of Section 32(19) of the National Heritage Resources Act (Act 25 of 1999)

Attention: Prof. Shaw Badenhorst

University of the Witwatersrand - Evolutionary Studies Institute

Evolutionary Studies Institute

University of the Witwatersrand

The Cave of Hearths (CoH), located in the Makapan Valley in the Limpopo Province close to the modern town of Mokopane, has long been an influential site to trace the evolution of hominins in southern Africa (Mason 1969; 1988, McNabb and Sinclair 2009). Apart from some earlier investigations, excavations were initiated in the 1940s and continued into the 1950s (Mason 1969). The CoH yielded in situ Acheulian (Early Stone Age; ESA) occupation in Beds 1 to 3. The ESA beds have been dated to between 780 000 and 500 000 years ago using palaeo-magnetism dating (Herries and Latham 2009). The CoH also has an extensive Middle Stone Age (MSA) occupation, found in Beds 4 to 9. The presence of lithics from the Pietersburg Industry places the MSA at the CoH in the MSA I and II, dating to between 128 000 and 75 000 (Wurz 2013). The site also has Later Stone Age (LSA), Iron Age and historical occupations in Beds 10 and 11. The presence of Oakhurst-style lithics in the LSA bed suggest an age between 12 000 and 7000 years ago (Lombard et al. 2012), and the ceramic style may suggest an occupation during the Early Iron Age (AD 400 – 900, Huffman 2007). The material from the surface likely relates to the siege of 1854 (Mason 1969, 1988). Few archaeological sites in South Africa have such an extensive and successive occupations by hominins over millennia. The earlier radiocarbon dates (Mason 1969) vastly underestimated the time depth of the occupations, and these dates are no longer accepted (cf. Wadley 2015). The imprecise dating of the CoH beds remains a serious constraint. Despite the site's importance in earlier discussions on the evolution of hominins in South Africa, it has largely been excluded from archaeological debates on the ESA and MSA in particular due to the imprecise dating (Wadley 2015). At many other sites, each time period show variation in terms of material culture, and without more precise dates, the artefacts (fauna, lithics, human remains, ceramics, bone tools, etc) from the CoH remain limited in their study-potential. Moreover, due to the lack of precise dating, little remains known about the palaeoenvironment of the Makapan Valley. For example, there are indications that the rainfall was higher during certain times in the past. The presence of lechwe (*Kobus leche*) in Beds 7 and 9 indicate that during the MSA, much higher rainfall were experienced in the region (Maloka 2021). Bed 5 also contains waterworn lithics, which may suggest a wetter time (Mason 1988). However, it is currently impossible to reconstruct the

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palaeoenvironment in more detail due to the lack of precise dates. With my collaborators from the University of York (UK), we have already been given permission to sample zebra teeth from each bed for amino-acid racemization dating. We are waiting for the results of this analysis. This is a new method that are being applied, and with this proposal, I am proposing to obtain additional dates for the CoH. For this project, I am requesting to sample breccia that Mason collected for ESR dating. I am requesting to use 2 blocks of breccia from the CoH for electron spin resonance (ESR) dating. For this purpose, teeth and attached breccias are required. This dating technique is not available in South Africa. These specimens will be send to CENIEH in Spain, a commercial ESR dating facility, and returned to the collection after dating.

Dear Dr Shaw Badenhorst,

Thank you for submitting your outstanding permit reports.

Regarding your application to temporarily export and sample two breccia blocks from Cave of Hearth, Makapan World Heritage Site, for dating at CENIEH, P.^o Sierra de Atapuerca, Spain, please note that SAHRA has reviewed and decided to approve it.

We wish you every success with this project.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully

Ragna Redelstorff, PhD
Heritage Officer
South African Heritage Resources Agency

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Phillip Hine

Manager: Archaeology, Palaeontology and Meteorites Unit
South African Heritage Resources Agency

ADMIN:

Direct URL to case: <https://sahris.sahra.org.za/node/617145>

Terms & Conditions:

1. This approval does not exonerate the applicant from obtaining local authority approval or any other necessary approval for proposed work.
2. If any heritage resources, including graves or human remains, are encountered they must be reported to SAHRA immediately.
3. SAHRA reserves the right to request additional information as required.