



DIRECTORATE OF MARINE SERVICES (NAVAL)

MINISTRY OF DEFENCE

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Long-Airdox (Cardox) Limited  
Unit A  
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Via Hyde  
Cheshire  
SK14 6LG

Your reference

Our reference D/DMS(N)17/6/131A

Date 20 November 1990

BREAKING HARD CEMENT UNDERWATER

References: A. D/DMS(N)17/5/85 dated 7 Sept 1990  
B. CARDOX's JH:bjf/003G.d2 dated 6 Sept 90

1. Having been driven off task by the weather it is time to say thank you for your help in this operation.
2. Although the pneumatic drill was unable to cope with the underwater pressure at that depth, the CARDOX system provided a reliable means of breaking up the cement and contributed considerably to the solution of a very hard problem.
3. We expect to resume work towards the end of April 1991 and would wish to contract your services again.
4. It is understood from the Contracts Branch that the formal contract has not yet been forwarded to you, therefore to avoid further delay in payment it would be appreciated if you would forward your invoice to me in respect of the hire time in accordance with your estimate at Reference B and such consumables as we expended. The over-estimate made of probable shot expenditure was under-used due to the difficulty of preparing shot-holes.
5. As a matter of interest, in that material underwater it was found that splitting extended up to three metres back into the lump, causing jamming of the drill bit when the next row of shot-holes was to be drilled. To overcome this problem a procedure was developed in which three parallel rows of shot-holes were drilled and plugged with empty tubes. The row nearest the face was then withdrawn, charged, inserted and fired. A third row was then drilled and plugged, followed by firing the next row from the new face.
6. Thank you once more for providing a system which gave us the answer we needed. We look forward to receiving your invoice.

F A MORTON  
Chief Salvage and Mooring Officer  
for DIRECTOR OF MARINE SERVICES (NAVAL)