

WOODS HOLE OCEANOGRAPHIC INSTITUTION

WOODS HOLE, MASSACHUSETTS 02543

AREA CODE 617-548-1400

called
5/4/67
5/11/67

April 1, 1967

Dr. Elizabeth K. Ralph
The University Museum
33rd and Spruce St.
Philiadelphia, Pa.

Dear Beth,

I have intended to write thanking you for the grand tour which you gave to me during my visit of two months ago. I can now combine this thanks with some concrete news of the Thera program for this summer. Professor Marinatos has agreed to excavate at Akroteri. I passed along to him your comments about difficulty in getting good results with the magnetometer in volcanic terrain but he is, nevertheless, most anxious to have a try. Is it possible that there may be enough contrast between the ash and the lava building stones in some places? In any case, will you be available to go to Thera with your magnetometer sometime this summer? The time is somewhat flexible but we have been aiming at June which is rapidly approaching. The money situation is uncertain at present but the Smithsonian Institution and the National Geographic Society are quite interested. I enclose a program which includes several phases closely associated with the land excavation of Marinatos. More study of the plain of Perissa from present data shows it to be most interesting.

The lava samples which I promised you will be in the mail shortly.

Do you have a portable seismograph such as the Soiltest Terra-Scout? Hartley Hoskins used a similar instrument at Kenchriai last summer with success. He is a very good man with acoustic equipment.

Sincerely yours,

Jim Mavor
James W. Mavor, Jr.

encl. 5 phase program
letter from Marinatos Mar. 8, 1967

home
548-6229

hear May 10th
Nat. Geographic
if not, each pay own expenses
1 v. ~ 1st June

Frank
→ Seismograph?
→ generator?
CRO

ΕΘΝΙΚΟΝ ΠΑΝΕΠΙΣΤΗΜΙΟΝ ΑΘΗΝΩΝ
ΑΡΧΑΙΟΛΟΓΙΚΟΝ ΣΠΟΥΔΑΣΤΗΡΙΟΝ ΚΑΙ ΜΟΥΣΕΙΟΝ
ΔΙΕΥΘΥΝΤΗΣ
ΚΑΘ. ΣΠ. ΜΑΡΙΝΑΤΟΣ

Athens, March 8, 1967.

Prof. SP. MARINATOS
47, Polyla Street.
ATHENS (9) GREECE

Mr. James W. Mavor,
Woods Hole Oceanographic Institution.
Woods Hole, Mass.

Dear Mister Mavor,

I don't know how to thank you for your repeated letters and papers prepared for research in Thera. I did not answer soon, as I was partly absent and partly because I wished to have prepared something before writing to you. Indeed, a lecture was organized last week by the Society for Cycladic Studies in the Archaeological Society in Athens. There was a great success, as several ministers and all prominent personalities of Cycladic origin assisted. Unanimously they decided to help us in realizing your program, about which I gave them an idea. I will proceed now in getting all permissions necessary and hope, to write you again in some days or weeks.

I am very glad to hear, that Dr. Rainey and Miss Ralph are interested in Thera, and that Prof. Edgerton possibly will be equally there in June. Le Commandant Cousteau wishes, too, to investigate around Thera in June. I had a letter from the French Ambassador here about Cousteau's plan. However, this is another matter, as a special permission is needed for Cousteau's plans in Greek seas.

Of course I have made preliminary studies many times in Thera and I know exactly where lies the so-called "Zahn's House" in Akrotiri. A further excavation there seems promising, but in order to avoid excessive labor and expenses I should wish to test with the Cesium Magnetometer in the special points I have some hope. The assistance you promise me, quite especially the technical one, makes me enthusiastic. Happily I am in sabbatical year and I will be available till end of May and after May 15, being obliged to spend two weeks in Vienna at the beginning of May.

In the hope to report to you further news I must express you my warm thanks again and to ensure you about my excellent feelings.

Yours sincerely.

Sp. Marinatos

Prof. Spyridon Marinatos.

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March 20, 1967

PROPOSAL FOR FIVE PHASES OF THERA PROJECT (1)

Prepared by

James Watt Mavor, Jr.
Woods Hole Oceanographic Institution

A. Introduction

Land excavation of pre-1500 B.C. archaeological sites on the island of Thera at Akroteri and on Therasia were undertaken during 1860-1874 by Fouqué (3)(4), Mamet (5), Gorceix, Alaphuzos, and Nomikos. In 1899, R. Zahn excavated a dwelling at Potamos (6).

Post-1500 B.C. archaeological sites have been described by Leychester (7), L'Abbé Pègues (8), Hiller von Gaertringen (6) and others.

Excavation of pre-1500 B.C. sites is inhibited by the thick layer of volcanic ash covering the island which has preserved the culture just preceding the eruption as a "prehistoric Pompeii".

It is suggested (9) that the plain of Perissa may have an ash thickness small enough to make excavation to the Minoan stratum practical, though this stratum is probably partially below present sea level. Evidence of buried post-1500 B.C. settlements has been reported on the plain but no excavation made. The 1966 expedition used the short pulse high resolution sediment profiler of Prof. Harold Edgerton off the beach of Perissa. An acoustic indication from 2 to 6 meters below the bottom was noted becoming irregular near shore (10).

Extensive beachrock formations on the south and east coasts of Thera are of geological and archaeological interest.

B. Objectives

1. To furnish technical assistance to the Greek government in the search for and excavation of pre-1500 B.C. archaeological sites on Thera.
2. Study leading to reconstruction of the geology, topography, and bathymetry of Thera before the great eruption of 1500 B.C.

C. Program for the summer of 1966.Phase I

Magnetometer survey on land at known and suspected archaeological sites. Primary use is short range at known sites.

Phase II

Seismograph survey of the plain of Perissa and other promising sites. It is believed that the limestone plain beneath the ash will be indicated easily. Ash is known to have poor acoustic transmission properties but a portable non-explosive source is believed adequate for the expected depth of 15-50 feet.

Phase III

Further survey with the Edgerton sediment profiler is planned. Based on the work in 1966, a number of improvements in equipment and technique, all involving low cost off-the-shelf components, can be made. A report on the work of last summer is in preparation (12). Quite a large area was covered, considering the time spent, involving different types of bottom and sub-bottom, and in shallow and deep water. A more detailed survey of the east coast near shore is planned. A land navigation system will be used to locate the boat (again a local kaiki), three or four persons stationed on land each with a transit and in walkie-talkie communication.

Some improvement in transducer and receiver is indicated. There are two approaches to increasing penetration and yet maintaining adequate resolution. One is to go to the cavitating sources, sparker or boomer, both of which are big pieces of equipment and are less efficient than the smaller non-cavitating sources used last summer. The other is to upgrade the present equipment. Using a UQN-1 (Edo) with a 6 Kc characteristic frequency rather than the 6Kc cylindrical mode radiator used would improve matters. To determine ash thickness and locate undersea ruins, only a little more penetration is needed. The records taken have a favorable signal to noise ratio.

Phase IV

Excavation, recording, and analysis of digs. This covers engineering, scientific, and archaeological expertise furnished to assist the Greek government.

Phase V

Beachrock study (13)(14)(15)(16).

Physical description including lateral dimensions and thickness. Acoustic procedures of phase III are necessary for this. Sampling, chemical analysis, and carbon 14 dating. Description of environment, chemistry of land run-off water and sea water, chemistry of limestone. At Cape Exomiti, northern "mole" may be older than southern (9). Relationship between beachrock formation, vulcanology, and archaeology could be important. (9).

D. Institutional Sponsorship

The program has the endorsement of the following institutions:

Woods Hole Oceanographic Institution
University of Pennsylvania
University of Athens
Greek Archaeological Society

It is recommended that funding be administered by the Woods Hole Oceanographic Institution.

E. Key People for Field Work

J.W. Mavor, Jr. Woods Hole Oceanographic
Institution, Engineer

B. Dale W.H.O.I. Geologist

Prof. Harold Edgerton, Mass. Inst. of Technology
Engineer

Dr. K.O. Emery, W.H.O.I. Geologist

Prof. A.G. Galanopoulos, University of Athens
Seismologist

Dr. H. Hoskins, University of Ghana, Geologist

Prof. Spyridon Marinatos, University of Athens
Archaeologist

Dr. E. K. Ralph, University of Pennsylvania
Physicist

Prof. E. Vermeule, Wellesley College
Archaeologist

Mr. E.F.K. Zarudski, W.H.O.I. Geophysicist

Bill Wetmore ?

F. Budget.

Phase I			
Magnetometer use , transport, ins.	4 weeks		\$1500
Dr. Ralph travel & subsistence	"		1000
Salaries	"		1500
Phase II			
Seismograph use, transport, ins.	4 weeks		1500
Mr. Mavor travel & subsistence	"		1000
Salaries	"		1500
Mr. Dale travel & subsistence	"		1000
Mr. Zarudski travel & subsistence	"		1000
Phase III			
Sediment profiler rental, transport, ins.	4 weeks	4000	
Kaiki rental & crew	"	1000	
Dr. Edgerton & Dr. Hoskins travel & subsistence		2000	
Salaries	4 weeks	4000	
Miscel equipment			
Oscilloscope rental, trans, ins.		500	
winch , walkie-talkies, rope etc.		500	
Phase IV			
Prof. Vermeule travel & subsistence	4 weeks	1000	
Miscl. equipment		500	
Salaries	"	1000	
Phase V			
Dr. Emery travel & subsistence	4 weeks	1000	
Assistant " "	"	1000	
Salaries	"	2500	
Equipment hire, transport, ins.		1000	

Total Phases I through V	\$ 30000
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The above are bare minimum costs for work proposed. No overhead is charged. The total salary figure of \$10,500 is nominal and is intended to cover unnamed technicians as necessary and principals as funds are available.

G. References

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3. Fouqué, "Santorin et ses Eruptions", Maason et Cie, Paris 1879.
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5. Mamet, " Die insula Thera" 1874.
6. Hiller von Gaertringen, F., "Thera" III 1904.
7. Leychester, Lt. "Some Account of the Volcanic Group of Santorin or Thera" Journal of Royal Geographic Society 1848.
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9. Mavor, J.W. Jr. "The Plain of Perissa" unpublished manuscript 1967
10. Mavor, J.W. Jr. "Volcanoes and History" Oceanus VolXIII,1 Nov 1966
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12. Hoskins, H. " Short Ping Sediment Profiler Survey of Thera" 1966.
(In preparation)
13. Emery, K.O. and Cox, D.C. "Beachrock in the Hawaiian Islands" Pacific Science Oct. 1956.
14. Emery, K.O. and George, C.J. , " The Shores of Lebanon".
W.H.O.I. cont. 1385.
15. Emery, K.O. and Neev, D. " Mediterranean Beaches of Israel" Sea Fisheries Research Station Bulletin 28 State of Israel Jan. 1960
16. Emery, K.O. and Bentor, Y.K. " The Continental Shelf of Israel" Geological Survey Bulletin 26 State of Israel Jan. 1960.

April 6, 1967

Dr. James W. Mavor, Jr.
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts 02543

Dear Jim:

Your proposal for the Thera project looks very good. Dr. Rainey has given his approval subject to your obtaining the necessary funds. I don't know what good the magnetometer will do, but there is no harm in trying. If it is o.k. with you and can be arranged within the specified budget, I should like to bring along one of the geophysicists from California who worked with me last summer. I shall need one or two other assistants, but they could be local workmen or as at Heliki last year, one workman and one of Prof. Marinatos' English-speaking students. The month of June would be the best time for me.

About seismographs, we have only an old Geophysical Specialties Co. Model MD-T. The Terra-Scout and other newer ones work much better. A few summers ago we rented a Soiltest Terra-Scout for \$270 per month. More recently, we rented a Seismiktron from Manuel Cebollero (Advanced Systems Laboratories, Inc., 9 Fayette St., Rockville, Md.). This unit is much smaller and more portable and has a built-in transmitter and receiver - no cables! The thumper is a wooden mallet. It also has a built-in computer which rejects all ground noises except the first shock wave. The Seismiktron worked very well when we tried it in Arizona.

I suppose that there will be power where we stay for charging batteries at night. If not, are you planning to take a generator?

I have a battery-powered oscilloscope, Tektronix Model 321 (now stored in Italy along with various other subsidiary components) that I would bring. Perhaps, this would be suitable for Phase III.

With best regards,

Elizabeth K. Ralph

EKR/gm

May 4, 1967

Dr. James Mavor, Jr.
Woods Hole Oceanographic Institute
Woods Hole, Massachusetts 02543

Dear Jim:

It was good to talk to you on the telephone.

I just called Cebollero and he will have a Seismiktron checked out and ready for us by June 1st. The cost will be approximately \$250 per month. If this is too much, please let me know so that I can cancel his preparations.

With best regards,

EKR:pc

Elizabeth K. Ralph

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October 9, 1967

Dr. Froelich Rainey
The University Museum
University of Pennsylvania
33rd and Spruce Sts.
Philadelphia, Pa. 19104

Dear Dr. Rainey,

One of these days we must get together to talk over what happened in Greece this past summer and what can be done to continue a project which, I feel, has such a great potential, scientifically, socially, and economically. I received your letter of September 20 and this writing is in answer.

I assure you that I am interested in the Thera research on a long term basis and am as interested as anyone in maintaining good relations with the Greek Archaeological Service if this will further the scientific effort. In addition, I shall do what I can to aid anyone who wishes to establish or maintain good relations with the Service regardless of his professional field, Institutional affiliation, or nationality.

As I see it in retrospect, the breakdown of communications with Professor Marinatos was unavoidable. Since the difficulties developed, I have made an effort to listen and to determine the facts of the situation without expressing opinions myself. I have written three cordial letters to Marinatos since our return from Greece. One letter I sent registered with return receipt which receipt I received with his signature. I have received no answers to my letters except for the document from the Greek Archaeological Service over Marinatos' signature which cancelled my permission of 1966 to do underwater research, with no reasons given. (I gather that you received a copy). All of my information on the bases of the difficulties is second hand but my file on this becoming quite large and revealing. When I first received the cancellation document, I thought that it was a routine matter and was advised by others to consider it so. It reached me about six weeks after issuance and I know that Marinatos must be cleaning house after replacing John Kontis with whom he had such an intense feud. Now the document has turned up in several places.

Certainly, one important consideration which is probably not widely known and which should be is that I was given a written permission from the Archaeological Society of Athens, sponsor of the Thera dig, to publish in popular communications media, text, photographs, and motion pictures of the results of the excavations. Furthermore, the issue of newspaper release in the U.S. was discussed with Marinatos and I withheld such a release until eleven days after he had made an official press release in the Athens newspapers and sent me a copy with specific permission to go ahead. Marinatos was much in favor of publicizing our results and encouraged me to do so. The resulting great publicity

which emphasized Atlantis and thereby diluted Marinatos' role in the excavation was evidently important in making Marinatos bitter. He has gone to some trouble to deny association of the dig with Atlantis, viz: Eleftheros Kosmos Sept. 16, 1967, "The Findings On Thera Unconnected With Atlantis". Now, I don't believe that I have seen anything in the press which attributes the opinion of a connection between Atlantis and the excavation to Marinatos. Therefore, his gripe must be that he was required to share publicity with others.

I had not heard that Marinatos is likely to stop all foreign archaeological investigations in Greece or that Greek archaeologists other than Marinatos are insensed. Do you have any details on this? It would not surprise me if the Thera difficulties are being used to fan the flames of nationalism.

I am not hopeful about mending my relationship with Marinatos and I believe that I know your reasons for stopping sponsorship of my research by the University Museum. I hope that Emily Vermeule can return to Marinatos' favor. She did a marvelous job of dealing with him in Greece this summer and in the preparations in the spring. Also, she has spent so many years of selfless labor on his behalf.

For the future, I understand that you have offered Marinatos \$25000 per year on a long term basis backed up by the staff and facilities of the University Museum. This sounds like a good start and I wish you success. Has he accepted? I was chagrined that the press in July did not feature the participation of the University Museum commensurate with the accounts released by Emily and me to them. However, this may have been a blessing since you can perhaps convince Marinatos that you had no part in the association with Atlantis or any other part of the publicity which he found objectionable.

I want to be of any assistance which I can in seeing this project through, keeping in mind that there is much more to it than excavation and preservation of antiquities on Thera. I may be on the black list of the Greek Archaeological Service for some time, but I am not of the archaeological establishment with its professional and economic inhibitions yet have some background with this project.

It would be wonderful to see a large part of the archaeological community behind this project. Perhaps that is too much to hope for but at least there is widespread professional and public interest. Last spring, I could interest only three members of the archaeological community in going to Thera and I had to pay for one half of the excavation costs myself. Now they will not let Emily or me return. It makes me unhappy but not bitter.

Sincerely yours,

James W. Mavor, Jr.
James W. Mavor, Jr.

cc: E. Vermeule
R. Kane
E. Ralph
H. Edgerton
P. Fye
J. Lear
G. Bass