

United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
SPECIAL TEMPORARY AUTHORIZATION

EXPERIMENTAL
(Nature of Service)

W A 2 X E J
(Call Sign)

XC FX
(Class of station)

S-3057-EX-97
(File number)

NAME University of Michigan

see below
(Location of station)

Special Temporary Authority is hereby granted to operate the radio transmitting apparatus described below:

Frequency (MHz)	Authorized Power (watts)	Emission Designator
4.80	100 (ERP)	100KPON
6.78	100 (ERP)	100KPON
13.38	100 (ERP)	100KPON
21.77	100 (ERP)	100KPON

Purpose of Operation: Measure ocean surface currents.

Locations:

- (1) On beach at south end of Fort Story, VA
- (2) North end of U.S. Navy Fleet Combat Training Center - Dams Neck, VA

Special Conditions:

- (1) This authorization is issued for the express purpose of conducting experimental operations described in the related application and required by Office of Naval Research contract no. N00014-97-1-0375. The use of this radio station in any other manner or for any other purpose will constitute a violation of the privileges herein authorized. Except as subsequently authorized by the Commission, this radio station shall not be operated after the expiration date of the contract designated in the related application and enumerated above.

This special temporary authorization is granted upon the express condition that it may be terminated by the Commission at any time without advance notice or hearing if in its discretion the need for such action arises. Nothing contained herein shall be construed as a finding by the Commission that the authority herein granted is or will be in the public interest beyond the express terms hereof.

This special temporary authorization shall not vest in the grantee any right to operate the station nor any right in the use of the frequencies designated in the authorization beyond the term hereof, nor in any other manner than authorized herein. Neither the authorization nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This authorization is subject to the right of use of control by the Government of the United States conferred by Section 706 of the Communications Act of 1934.

This authorization effective October 1, 1997 and will expire 3:00 A.M. EST. December 1, 1997



S-3057-EX-97



THE UNIVERSITY OF MICHIGAN
COLLEGE OF ENGINEERING
ATMOSPHERIC, OCEANIC AND SPACE SCIENCES

SPACE RESEARCH BUILDING
2455 HAYWARD
ANN ARBOR, MICHIGAN 48109-2143
TELEPHONE: 313 764-3335 FAX: 313 764-4585

Mr. Douglas Young
Federal Communications Commission
Experimental Licensing Branch
2000 M Street, Suite 230
Washington DC 20554

Sept. 18, 1997

Dear Mr. Young,

The University of Michigan, Department of Atmospheric, Oceanic and Space Science, requests temporary permission to operate our four-frequency Doppler radar system to measure ocean surface currents along the shores of Virginia Beach between Ft. Storey (Cape Henry) and Dams Neck VA from October 1 to 31, 1997. Since it is possible that the experiment may be extended to the end of November and to save paper work, we request permission to operate over the period from Oct. 1 to Nov. 30, 1997. This radar system has been operating successfully with no interference at Santa Cruz and Moss Landing CA over the past 16 months under the call sign WA2 XEJ (a copy of the license is attached). We are participating in a multi-agency field experiment (COPE-3) jointly funded by the Office of Naval Research and the Naval Research Laboratory. Our participation is funded by ONR grant N00014-97-1-0375 and Dr. Dennis Trizna at the Office of Naval Research (703-696-2807) is the Scientific Officer.

The objective of this experiment is to observe the dynamics of the outflow from Chesapeake Bay as it moves southward down the Virginia coast. Deployment of HF radars and possible interference has been discussed with the authorities at U. S. Army HQ, Ft. Storey, The Naval Undersea Warfare Center Atlantic Detachment (SESEF), Norfolk and the U. S. Navy's Fleet Combat Training Center Atlantic, Virginia Beach to explore possible interference. Interference has been ruled out and sites for the radar installation have been agreed -- one on the beach at the south end of Ft. Storey and one on the beach at the north end of the Navy's Fleet Combat Training Center base. The two sites have been used in previous experiments (COPE-1) by the University of Miami for deployment of a similar radar under the call sign KS2 XAE (a copy of their license is attached for reference).

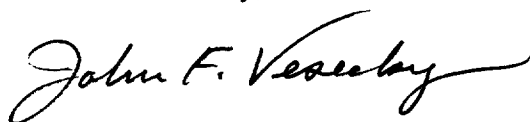
The COPE-3 experiment plan calls for the operation of three HF radar systems at or near the Ft. Storey and Navy FCTC sites. The experimenters from the Universities of Michigan and Miami, California State University-Monterey Bay and the Naval Postgraduate School have worked closely to assure that there will be no mutual interference between the HF radars by choosing appropriately spaced frequencies and time multiplexing where necessary.

The University of Michigan radar system, for which we are requesting permission to operate in this letter, consists of two shore stations separated by about 25 km at the sites described above. These radars transmit with quarter wavelength vertical antennas and receive with eight-element phased-array antennas. For the Chesapeake Bay experiment we request 100KPON emission so that our observations are comparable with those of the Miami radar as shown in the attached license for the Miami radar. The operational characteristics requested are as follows:

Frequency - kHz	Peak Power - Watts	Emission Designator
4800.00	100 (ERP)	100KPON
6780.00	100 (ERP)	100KPON
13,380.00	100 (ERP)	100KPON
21,770.00	100 (ERP)	100KPON

Please advise us as soon as possible about granting a special temporary authorization to operate this radar system in the area and during the time described above. A FAX of the license to the number below would be most helpful. If you have questions, I can be reached at 313-764-5151 (5137 FAX) or by email at jfv@engin.umich.edu.

Yours sincerely,



Prof. John F. Vesecky
Principle Investigator
HF Radar Program

ATTN: Dr. Hans C. Graber, 4600 Rickenbacker Causeway, Miami, FL 33149-1098

United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
SPECIAL TEMPORARY AUTHORIZATION

EXPERIMENTAL
(Nature of Service)

K S 2 X A E
(Call Sign)

XD FX
(Class of station)

S-2595-EX-96
(File number)

NAME University of Miami, Rosenstiel School of Marine and Atmospheric Sci.

(see below)
(Location of station)

Special Temporary Authority is hereby granted to operate the radio transmitting apparatus described below:

Frequency (MHz)	Authorized Power (watts)	Emission Designator
25.4	1000 (ERP)	110KP0N
49.945	1413 (ERP)	440KP0N

Purpose of Operation: Measure ocean surface currents with a dual-frequency Doppler radio system.

Locations:

- (1) Fort Story, VA
- (2) U.S. Navy Fleet Combat Training Center Atlantic, Virginia Beach, VA

This special temporary authorization is granted upon the express condition that it may be terminated by the Commission at any time without advance notice or hearing if in its discretion the need for such action arises. Nothing contained herein shall be construed as a finding by the Commission that the authority herein granted is or will be in the public interest beyond the express terms hereof.

This special temporary authorization shall not vest in the grantee any right to operate the station nor any right in the use of the frequencies designated in the authorization beyond the term hereof, nor in any other manner than authorized herein. Neither the authorization nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This authorization is subject to the right of use of control by the Government of the United States conferred by Section 706 of the Communications Act of 1934.

This authorization effective September 8, 1996 and
will expire 3:00 A.M. EST. October 16, 1996



United States of America
FEDERAL COMMUNICATIONS COMMISSION
EXPERIMENTAL
RADIO STATION CONSTRUCTION PERMIT
AND LICENSE

EXPERIMENTAL
(Nature of Service)

XC FX, MO
(Class of Station)

WA2XEJ
(Call Sign)

5244-EX-PL-96
(File Number)

NAME REGENTS OF THE UNIVERSITY OF MICHIGAN

See Below

(Location of Station)

Subject to the provisions of the Communications Act of 1934, subsequent acts, and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions and requirements set forth in this license, the licensee hereof is hereby authorized to use and operate the radio transmitting facilities hereinafter described for radio communications in accordance with the program of experimentation described by the licensee in its application for license.

Frequency	Class	Emission	Authorized	Tolerance
	Stn	Designator	Power watts	(+/-)

See Attached Page 3

Station Location:

- (1) SANTA CRUZ, (SANTA CRUZ) CA - NL 36-56-56; WL 122-03-56
- (2) CA

Area Of Operation: WITHIN 2 KM OF THE COAST OF CALIFORNIA

Operation: In accordance with Sec. 5.202(b) of the Commission's Rules.

Special Conditions:

See Attached Page 2

This authorization effective March 18, 1997 and
will expire 3:00 A.M. EST April 1, 1999

FEDERAL
COMMUNICATIONS
COMMISSION



Special Conditions:

- (1) In lieu of frequency tolerance, the occupied bandwidth of the emission shall not extend beyond the band limits set forth above.

- (2) This authorization is issued for the express purpose of conducting experimental operations described in the related application and required by OFFICE OF NAVAL RESEARCH Contract No. N00014-95-1-0249. The use of this radio station in any other manner or for any other purpose will constitute a violation of the privileges herein authorized. Except as subsequently authorized by the Commission, this radio station shall not be operated after the expiration date of the contract designated in the related application and enumerated above.

- (3) The station identification requirements of Section 5.152 of the Commission's Rules are waived.

	Frequency	Class	Emission	Authorized	Tolerance
	KHz	Stn	Designator	Power watts	(+/-)
(1)	2130.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	2130.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	2230.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	2230.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	2430.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	2430.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	2650.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	2650.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	2680.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	2680.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	2840.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	2840.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	4800.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	4800.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	4830.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	4830.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	6780.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	6780.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	7380.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	7380.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	7820.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	7820.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	9150.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	9150.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	9180.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	9180.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	10150.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	10150.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	10180.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	10180.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	12050.00000-				
	12230.00000	FX	50KOPON	100W (ERP)	%
(2)	12050.00000-				
	12230.00000	MO	50KOPON	100W (ERP)	%
(1)	13380.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	13380.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	13440.00000-				
	13600.00000	FX	50KOPON	100W (ERP)	%
(2)	13440.00000-				
	13600.00000	MO	50KOPON	100W (ERP)	%
(1)	13800.00000-				
	14000.00000	FX	50KOPON	100W (ERP)	%
(2)	13800.00000-				
	14000.00000	MO	50KOPON	100W (ERP)	%

	Frequency	Class	Emission	Authorized	Tolerance
	KHz	Stn	Designator	Power watts	(+/-)
(1)	14530.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	14530.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	14560.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	14560.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	14590.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	14590.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	16590.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	16590.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	16620.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	16620.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	18120.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	18120.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	18150.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	18150.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	21770.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	21770.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	21800.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	21800.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	22800.00000	FX	50KOPON	100W (ERP)	0.01%
(2)	22800.00000	MO	50KOPON	100W (ERP)	0.01%
(1)	25200.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	25200.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	25230.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	25230.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	25260.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	25260.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	27600.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	27600.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	27630.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	27630.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	27660.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	27660.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	29720.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	29720.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	29750.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	29750.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	29780.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	29780.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	30600.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	30600.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	30630.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	30630.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	30660.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	30660.00000	MO	50KOPON	100W (ERP)	0.002%

	Frequency	Class	Emission	Authorized	Tolerance
		Stn	Designator	Power watts	(+/-)
	KHz				
(1)	31900.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	31900.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	31930.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	31930.00000	MO	50KOPON	100W (ERP)	0.002%
(1)	31960.00000	FX	50KOPON	100W (ERP)	0.002%
(2)	31960.00000	MO	50KOPON	100W (ERP)	0.002%

Space Research Building	2455 Hayward Ann Arbor, MI 48109-2143 313/763-0271 FAX: 313/764-5137	College of Engineering University of Michigan
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FAX MESSAGE**FAX PHONE #(313) 764-5137**

Number of pages, including this cover sheet

Today's Date

9/19/97

To:	
Name	<u>Douglas A. Young</u>
Address	<u>Experimental</u>
	<u>Licensing</u>
	<u>Branch</u>
	<u>1300-C1</u>
Office Phone	<u>202-418-2440</u>
FAX number	<u>202-418-1918</u>

From:	
Name	<u>John F. Veserby</u>
Address	<u>University of Michigan</u>
	<u>AOSS Dept.</u>
	<u>HF Radar Program</u>
	<u>Ann Arbor, Michigan 48109</u>
Office Phone	<u>313-764-5151</u>
FAX number	<u>313-764-5137</u>

Remarks:

Mr. Young
Attached is a temporary licensing request
for operation Oct. 1, 1997 to Nov 30, 1997.
We would appreciate your urgent attention
& a FAX reply if possible.

Many thanks,

John F. Veserby
Prof.

In case of problems during transmission, please call (313) 763-0271



FAX COVER SHEET

Page 1 of 2 pages

DATE: September 23, 1997

FROM: Douglas A. Young 1300 - E1
FEDERAL COMMUNICATIONS COMMISSION
Experimental Licensing Branch
2000 M Street, Suite 230
Washington, DC 20554

PHONE: (202) 418-2440

FAX: (202) 418-1918

TO: Prof. John F. Vesecky

NAME

University of Michigan

COMPANY

(313) 764 - 5151

PHONE

(313) 764 - 5137

FAX

Prof. Vesecky:

Here is a copy of University of Michigan's STA for station WA2XEJ, File Number S-3057-EX-97. The original license will be mailed today.

Doug Young