



March 19, 1991

Mr. Frank Wright
Supervisory Electronics Engineer
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2025 M Street, NW
Washington, DC 20554

Department of
Atmospheric Science
Fort Collins, Colorado 80523
(303) 491-8360
FAX: (303) 491-8449

Dear Mr. Wright:

During the next 18 months I plan to relocate the CSU 404 MHz wind profiler currently licensed under call sign KC2XAF to several different sites in support of scientific research programs. This is strictly a relocation and will involve a single hardware system. In a meeting with Mr. William Gamble, Deputy Director of NTIA on March 5, 1991 he and I discussed how to proceed to seek authorization for these temporary relocations. In view of the fact that we have an experimental license for the profiler and that these requested relocations are temporary with the profiler returning to its Fort Collins site by Fall 1992, we concluded that it would be sufficient to inform you of the planned relocations by letter.

I have enclosed a table which summarizes the dates and locations of our planned profiler operations for the next 18 months. The CSU wind profiler would of course be operated under the same procedures as it has in the past. I hasten to add that SARSAT ephemeris data are updated in our system on a weekly basis and our system is automatically shut down whenever a SARSAT overpass occurs at a zenith angle less than 60°. Throughout our history of operations (approximately a year and a half) our profiler operations have never interfered with the SARSAT system, however we do routinely contact the SARSAT operations office at least once a month to remain advised of the status of the SARSAT system.

Based upon my discussions with Mr. Gamble, I am assuming that this letter informing you of our intentions to relocate our wind profiler is sufficient notice; if I need to do anything else before proceeding with these deployment plans, please inform me.

As I discussed with Mr. Gamble, the research and educational applications of our wind profiler are very important to broad segment of the atmospheric science community. Our research is funded principally by NASA, DOE and the Office of Naval Research. The wind profiler has also become an important part of our graduate curriculum where we feature training in remote sensing, instrumentation and weather analysis classes.

Sincerely,

A handwritten signature in cursive script, reading "Stephen K. Cox".

Stephen K. Cox
Professor and Department Head

✓ Enclosure

cc: W. Gamble

CSU WIND PROFILER/RASS DEPLOYMENT SCHEDULE

DATE	LOCATION	PURPOSE
3/1 - 9/15/91	CSU, FORT COLLINS, CO	RESEARCH SIGNAL PROCESSING SIGNIFICANT EVENT EDUCATION PROFILER OPERATION/ANALYSIS METEOROLOGICAL APPLICATIONS
11/1 - 12/15/91	PARSONS, KANSAS 38° 18' N 95° 07' W 865 FT. ABV. MSL	FIRE II CIRRUS/CLIMATE STUDY (NASA, NOAA, NSF, DOE, DOD)
1/05 - 3/15/92	RANGELY, CO 40° 05' N 108° 46' W 5290 FT. ABV. MSL OR MEEKER, CO 40° 02' N 107° 55' W 6347 FT. ABV. MSL	WESTERN SLOPE BLOCKING ENVIRONMENTAL QUALITY (DOE, DOD, NSF)
03/15 - 05/15/92	IN TRANSIT TO PORTO SANTO (MADEIRA ISLAND GROUP)	
05/15 - 07/01/92	PORTO SANTO 33°N 16° 30' W (MADEIRA ISLAND GROUP)	FIRE II ATLANTIC STRATUS TRANSITION EXPT. (ASTEX) NASA, ONR, NSF, DOE, NOAA CLOUD/CLIMATE STUDIES
07/01 - 09/15/92	IN TRANSIT TO FORT COLLINS, CO	
09/15/92 -	CSU, FORT COLLINS, CO	RESEARCH SIGNAL PROCESSING SIGNIFICANT EVENT EDUCATION PROFILER OPERATION/ANALYSIS METEOROLOGICAL APPLICATIONS



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Mr. Frank Wright
Federal Communications Commission
Washington, D.C. 20554

Department of
Atmospheric Science
Fort Collins, Colorado 80523
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Dear Mr. Wright:

I am writing to you to seek your assistance in enabling the Department of Atmospheric Science at Colorado State University to continue to use our 404 MHz profiler in our graduate education program and limited special-project research use after 30 September 1993. We are currently licensed under the call sign KC2XAF to operate in an experimental mode until that date.

We acquired and have been periodically operating our wind profiler since 1989. This wind profiler system has enabled us to train a new generation of students in state-of-the-art remote sensing applications; data from it has also provided valuable insights into the dynamics of the atmosphere. We have and continue to participate in federally sponsored research programs including the NASA-sponsored FIRE experiment, the Office of Naval Research-sponsored ASTEX experiment, and the DOE sponsored ASCOT experiment. Our wind profiler system has been deployed in Fort Collins, Colorado, Parsons, Kansas, on the island of Porto Santo, Madeiras, a territory of the country of Portugal, and Meeker, Colorado. In each of these applications, the CSU wind profiler has provided cornerstone observations for the overall research experiment involving up to 100 scientists from Universities and various federal research laboratories. Numerous MS and PH.D. research programs have utilized the CSU wind profiler system and have led to a core group of professionals working in the area of RF remote sensing.

I believe that the brief paragraph offered above appropriately depicts the importance of maintaining this technology in our higher education system. I am confident that you have reviewed the advantages offered by a 404 MHz system in the context of tropospheric height coverage versus both higher and lower frequency systems. I am aware that 440-450 MHz is being evaluated for future profiler systems, however, the investment of time and resources in our research oriented profiler system is so great that we simply will not be able convert to a new system at 449 MHz. The accessibility and flexibility offered in our current system is unique to its educational and research applications; one cannot simply purchase a replacement system off the shelf. I estimate that it would take us approximately three years to build up another system to the point where we are today with our 404 MHz system; this would mean a three year hiatus in our graduate education wind profiler program. In light of this, the inevitable conclusion is that our very productive wind profiler graduate education and research capability will have to be phased out if we are not allowed to operate because of licensing restrictions. I am asking for your assistance so that we might avert such a travesty.

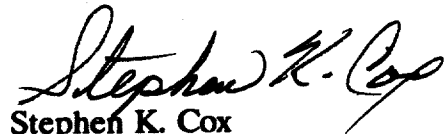
The CSU profiler system was originally of TYCHO vintage, however, we have dramatically modified the original system to the point where it is quite distinct from its TYCHO heritage. The two most important modifications involve improving the antenna pattern to reduce the side lobes and incorporation of an automated shut-down system which utilizes satellite ephemeris data to turn off the transmitter during periods when designated satellites are within a prescribed zenith angle cone (we currently use 60 degrees) of the profiler site. In the first instance, we deduced that the antenna originally provided and installed by TYCHO had considerably stronger side lobes than desired. We have significantly improved these characteristics by modifying the phasing of some of the high power array elements and by carefully tuning all the remaining elements. The satellite turn-off system was developed locally at CSU and has worked without fail for the past two and one-half years. To my knowledge we have had only one interaction with a SARSAT satellite since we commenced operation in 1989, and that was during a set-up, check out period when the satellite interrupt system was not activated. We have taken the necessary steps to insure that this will not happen again by making it very difficult to disable the satellite interrupt system whenever the profiler is operating. In addition we have integrated a WWV receiver into the system so that the system time is automatically updated on a continuous basis insuring that the system clock time/date is consistent with satellite orbital positions.

From my perspective it seems perfectly reasonable to request that the CSU experimental license be extended to allow us to operate our 404.37 MHz profiler at specifically pre-approved locations and during specific time periods in pursuance of educational and research goals. The experimental license which we have had in the past would work very well in this regard, with the added requirement that FCC be informed, IN ADVANCE, of planned operation periods. Of course we would continue to shut down the system transmitter at any time that a SARSAT platform would be scheduled to appear within a prescribed zenith angle of the profiler location. While we feel that the 60 degree cone currently used should be very adequate for this purpose, this cone could be increased right down to the horizon if necessary.

I would appreciate your consideration of our request and will be pleased to furnish you with more information, should that be desired.

Thank you very much.

Sincerely,



Stephen K. Cox
Professor and Department Head

Encl: ✓ Form FCC 405