

## A FEW COMMENTS ON OMEGA

by Eric Swanson\*

First, I would just like to reiterate Mr. Fletcher's comments concerning the synchronization of OMEGA to the international time base, as specified by the Naval Observatory master clock. This is being done and, in fact, OMEGA has been running better than the 5  $\mu$ secs which Mr. Fletcher mentioned. It is being done mainly for our own convenience. Ironically, it is easier to hold OMEGA to the Observatory clock than not to synchronize it.

The second point I would like to mention is that we have looked at the VLF timing capability recently for NASA using OMEGA, and I have a nice thick report for anyone who has the heart to read it. It shows that many sites can, indeed, come out somewhere between 1 and 10  $\mu$ secs, depending upon how you want to look at it. You back off to something like a typical ten; this is the sort of thing that you can do continuously, and for which, in fact, you do not need an elaborate standard. As you try and go down, of course, you are going to require a better and better clock. It occurs to me that this is two or three orders better than the standard which the fleet is using for timing today, and I cannot help thinking that there is a useful capability here, especially since it can be used on the high seas and since it is a navigation system.

The final point to mention is the intersynchronizing of OMEGA stations to each other and/or to the Naval Observatory for the past four

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\*Naval Electronic Laboratory Center, San Diego, California,  
(714) 225-6365.

or five years. In fact, we typically hold 1  $\mu$ sec or so with respect to each other on an international basis, and have been doing so for years. In attempting to do this, I think we have perhaps made every mistake possible. There is a control problem quite distinct from the time dissemination problem. One must have a good clock and, at the same time, good information. The dynamics, especially with an interrelated system of eight stations, are indeed complex. This is an appeal. We know a little about what we are doing here, and if anyone has looked in any detail at an interrelated control problem, I would welcome their comments. I feel also that some other systems may have similar requirements. If they do, I would again like to coordinate with them.