

Ham Television

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Can ATV be digitized? Of course it can. Video digitizers are available in the marketplace for just about any home personal computer at a reasonable price. Some computers like the IBM PC (and Clones) have several to choose from at different resolution values. Bill Brown WB8ELK of Findlay, Ohio, and his brother Jeff have been enjoying videotaping Fast Scan TV pictures and then running the taped image through a video digitizer for the Radio Shack TRS80 Color Computer to produce excellent hard copy print-outs! It is fun to do this and capture that memorable long distance Ham-TV QSO for your paper scrapbook.

The television signal itself can be digitized to some 56K with a good displayed image. Unfortunately, this type of gear is too costly for the common ATV shack. Bruce Brown WA9GVK of the Metrovision ATV Club in the Washington, DC, area can give details on what tests the Navy has conducted on Digital TV. In Japan, there are now TV sets available that digitize the TV signal itself. This enables a viewer to watch one program while keeping track of one or two other channels at the same time.

Slow Scan TV of course has been digitized for many years. The days of burning images on P-7 tubes are long gone, and quality images sent on SSTV in color now rival real time TV. Clay Abrams K6AEP in San Jose, CA is already experimenting with a high-resolution digitized system using something much different than CGA or EGA monitor display standards. While the ROBOT 1200C continues to reign the SSTV world with the best pictures for the money, computers and their software are quickly catching up.

ATV in Space

Interest in narrowband TV techniques has renewed here in the USA again, and a few brave Ham-TV souls are playing with reduced bandwidth methods that might end up even on a future Space Shuttle. The present NASA ATV

proposal, written by N9AB, under the auspices of the Motorola ARC, does not allow the majority of Ham-TV Amateurs here in the USA, let alone the world, to work any future Shuttle Flight on the TV mode. Henry B. Ruh KB9FO of the Chicago PATC Group now has an alternative NASA ATV proposal before NASA and League Officials, which describes a narrower bandwidth TV mode that looks more promising than the Motorola proposal. Henry's entire proposal was printed in the March/April 1988 issue of *The SPEC-COM Journal*. See sidebar for a summary of the proposal. Comments have looked encouraging from NASA officials and even NBC Science Reporter Roy Neal K6DUE commented in a return acknowledgement letter to KB9FO on March 24th. . . "I think you have a major plus in your thinking. It is something many hams can handle. You might keep in mind that the great majority of hams are not

interested in ATV. . . But NASA is, and the future of ATV in manned space may be very dramatic. Keep me posted."

Skeleton-Slot Antenna

Included in this month's ATV column is a drawing of a Skeleton Slot dual-beam antenna cut for ATV by W4LUB. It can be mounted vertically or horizontally. Note the 7-inch dimension setting in Fig. 1 between elements and construction all out of PVC pipe for the support mast. Hooking into the beam couldn't be any simpler as shown in Fig. 4. Element lengths for the 10 elements are also depicted. The reflector is made from 1/2" hard drawn copper tubing with sweated elbows. This design was published several years ago in "A5" or SPEC-COM and has been built by many FSTV UHF enthusiasts around the country. The system has good proven gain and sufficient bandwidth to handle the wideband ATV signals. The simple design should not be substituted however, for the better, longer, higher gain DX arrays. Thanks W4LUB and WB4AOH for the submitted information.

Those of you who have the popular Radio Shack TRS80 Color Computer should send us an SASE for our latest Amateur Radio Software catalog. The new revised May catalog has a lot of changes. The biggest change has come in the popular COCORADIO "interfaceless" disk package. Version 8.0 is out and everything—I mean *everything* (SSTV, FAX and all)—is now on just one single disk! (\$49.95). Free updates to those who are registered users (\$3.00 asked for return mailing). Return only your main operating disk, not the SSTV and FAX picture disks.

ATV Special Events

As I typed this column on Easter Sunday April 3rd, our local ATV gang had a ball this evening. We had our regular FSTV NET in conjunction with a bigger FM NET on 146.28/88 MHz. At about 9 PM, Matt N0GIK who works at KWQC-TV Channel 6 (NBC) in Davenport, broke in on one of our 10 computer screen 910 MHz link channels and said, "Hey fellas watch my special show from the Newscenter. The show begins at 10 PM!"

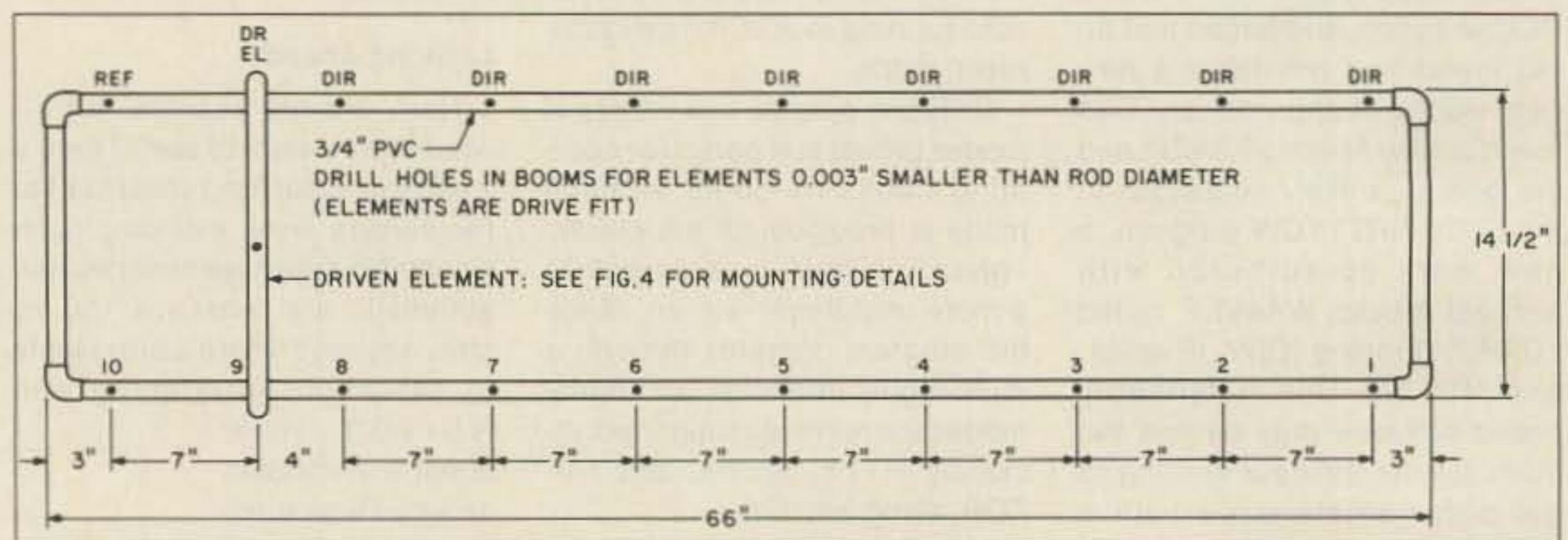


Figure 1. Boom dimensions for the Skeleton-Slot Dual Beam antenna.

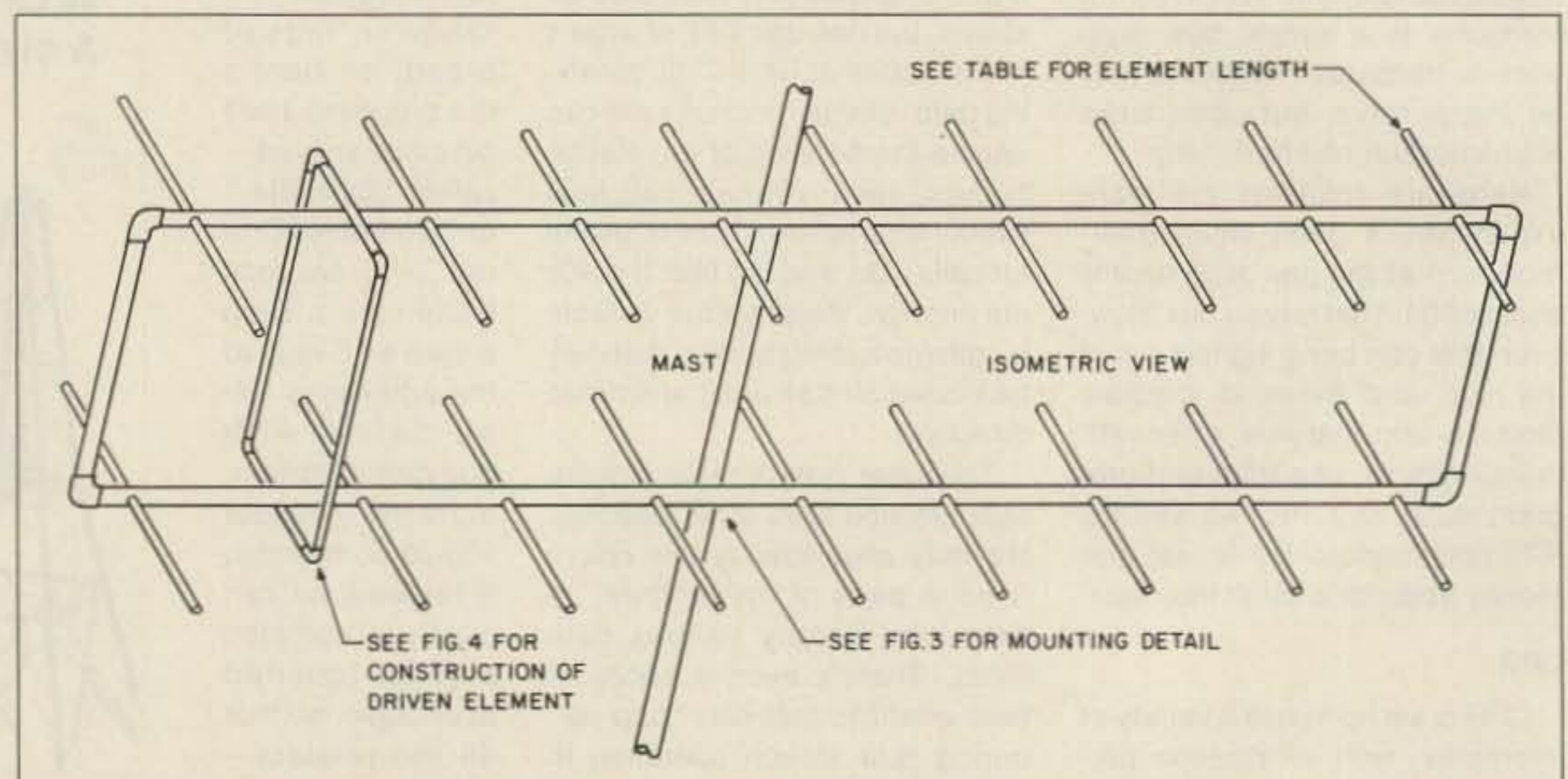


Figure 2. Diagram of Skeleton-Slot Dual Beam antenna.

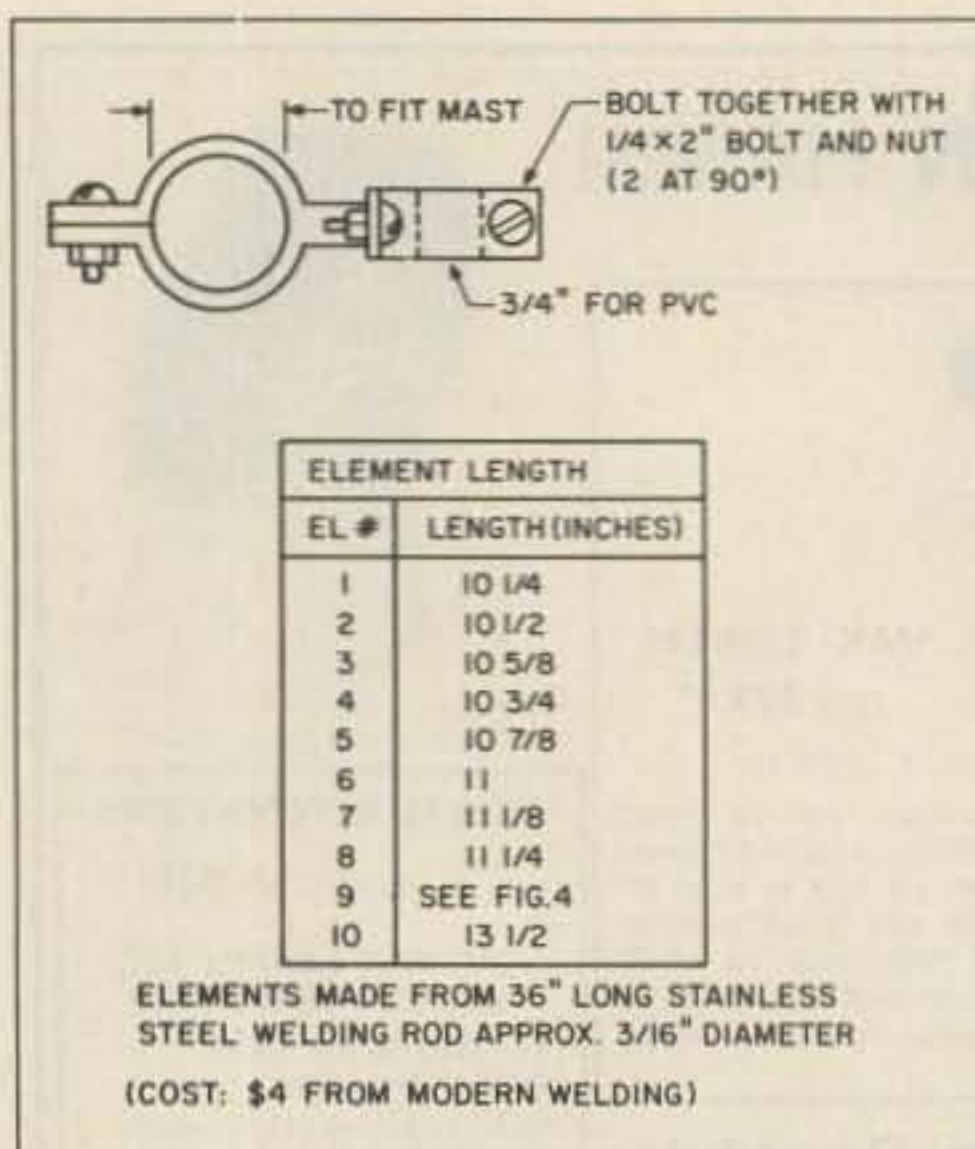


Figure 3. This figure shows the mast/beam connector. Table gives element lengths.

He hooked up to the control room and camera feed, and we got to see all the activity behind the scenes (anchors off camera, weatherman standing in front of chromakeyed background, etc.). All commercials and other station facility IDs were edited out, so we only saw legal material just like anyone would see from a remote camera. It was really neat, and some of us taped the event.

It is important that all ATV Groups or Clubs plan some sort of special event a couple times per

year just to keep interest up. April 16th we

had our 3rd annual ATV T-HUNT. Our contest is a video TV image signal hunt only, with no RF sniffers allowed, and the winner in each year's contest automatically becomes the hidden rabbit in the next year's event. Those who live in "dead" or inactive ATV areas with amateurs who have gear sitting around have only yourselves

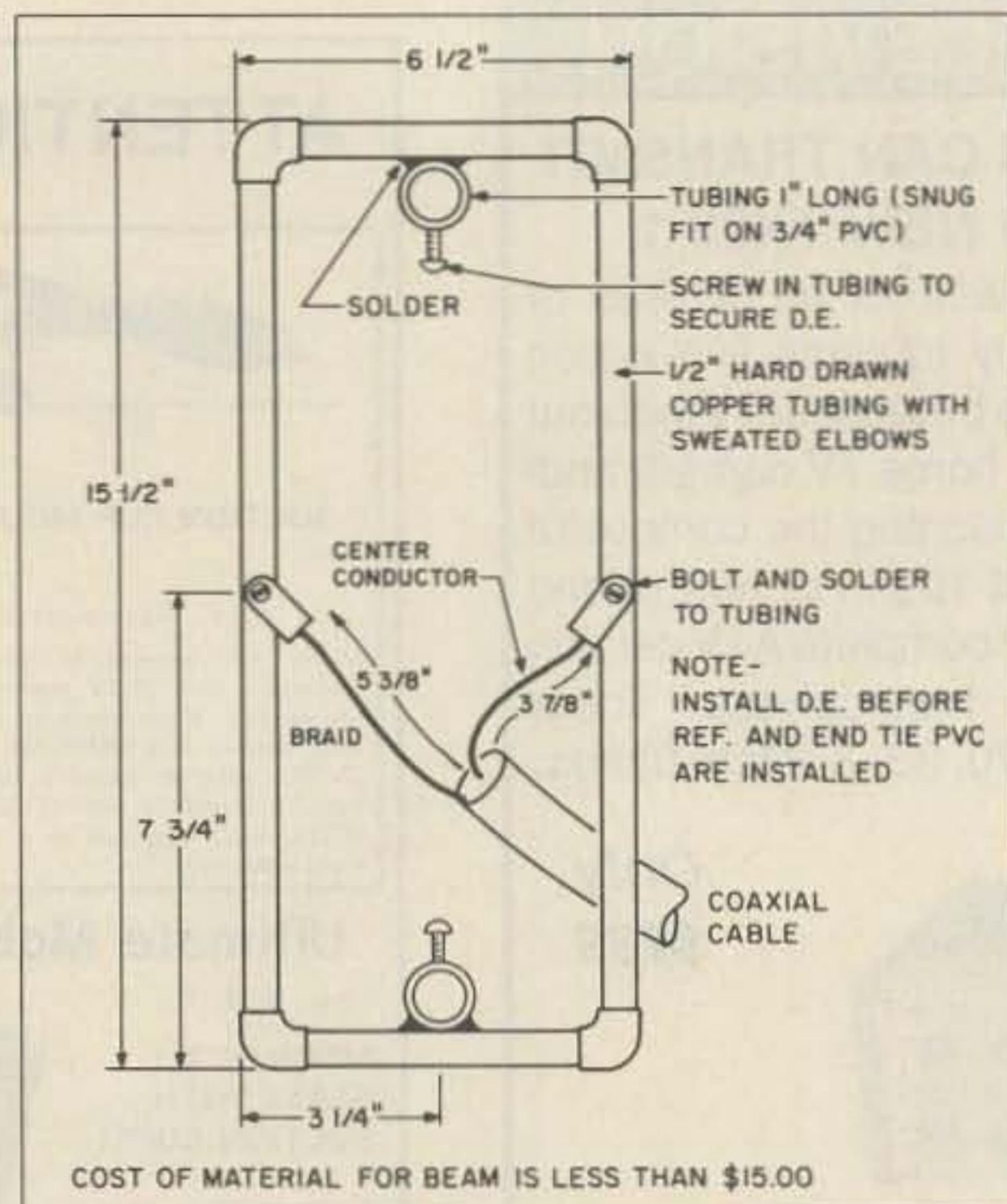


Figure 4. Driven element for the Skeleton-Slot Dual Beam antenna.

to blame for snowy pictures on your screens night after night. With Field Day approaching, what better way to promote the ATV to other hams than to include FSTV and SSTV in the club station?

In addition, building an ATV remote transmitter system (not necessarily a repeater) is a great way to boost activity! We have written

dozens of articles about the benefits and pitfalls of these systems in the past. If you or a group of Amateurs is seriously interested in building up such a system or wants to find out how to build an ATV Repeater, I would suggest that spending \$10 and obtain-Ralph Wilson's newest reprint booklet #101, *ATV Repeaters*. He also has another new booklet out entitled *Microwave Guide* by Mike Veldman WD0CTA #112 (same price). Ralph's address is ESF Copy Services, 4011 Clearview Drive in Cedar Falls, Iowa 50613.

Finally, USATVS Member Ray Stevens W2BYO writes that he is willing to buy one of the neat little Mitsubishi Visitel Phonetel SSTV Converters if others will and get on 20 meters to exchange the quick 5.5 second B/W pictures. The converters were mentioned in the February and March/April issues of *SPEC-COM* and the January 1988 New Product listing in *73 Magazine*. Contact Ray at P.O. Box 235 in Wellsville, NY 14895.

Well that is about it this month Ham-TV fans! I hear that there has been a drop recently in the number of votes for the ATV column in *73* on the Reader Service cards. Please, let's keep this unique and important momentum going for a National ATV column each month in *73*!...WB0QCD

ATV in Space

[The following is a summary of Proposal and Issues for Amateur Television on Future Space Missions to Allow Worldwide Participation by Henry Ruh KB9FO. Forward comments to him at 540 Oakton Street, Des Plaines, IL 60018.]

Objectives

Amateur television on future space missions should foster international interest and participation well beyond the six thousand hams who now enjoy this mode. Reducing the technical requirements and equipment costs for ATV participation would significantly increase the pool of ATV users. Increased international participation would promote technical advancement as well as international goodwill on a greater scale than possible now.

Current Proposals

Several groups, including a

Motorola-sponsored ATV club, have proposed methods for operating ATV from the Space Shuttle and the Space Station. These proposals have various advantages, but their shortcomings should be addressed, as well.

In particular, the Motorola proposal concludes that 439.25 MHz would serve as the best frequency of operation. A full bandwidth ATV system for space operation would require 1500 watts PEP output into a 17 dBi gain antenna. This power requirement would immediately limit the number of participants largely due to amplifier cost. Further, assuming 30% transmitter efficiency, 1500W PEP output would require 4500W input, a power level not allowed by current FCC regulations. The proposed 439.25 MHz frequency would also be subject to interference from FM repeaters, and many countries with only

10 MHz allocation on 70cm (430-440 MHz) would not be able to participate, because the signals would be partially out of band. The only choice for international space ATV communications that is subject to the least interference is 434 MHz. The Motorola proposal does not address ATV transmissions on higher frequency bands such as 902 or 1280 MHz.

By specifying only fully bandwidth NTSC-format video transmissions, the Motorola proposal excludes two thirds of the potential participants, since most other countries use PAL and SECAM video signals. These systems are not compatible due to different scan rates and color subcarrier frequencies. Monochrome transmissions would allow all systems to receive images with unmodified or slightly modified monitors.

Narrowband Techniques

Considering the bandwidth limitations imposed by many countries on 70cm, narrowband TV (NBTV) techniques should be considered. NBTV would require only 2 to 2.5 MHz bandwidth, which is suitable for full motion black and white pictures. Further, NBTV provides an improved noise level, diminishing effective radiated power requirements by 3 to 6 dB.

FM modulation of the video carrier would permit use of readily available FM transceivers to recover the audio information. Users can also generate their own audio subcarrier locally with a low power oscillator for whatever frequency is required for proper reception. This system is fully compatible between NBTV and full bandwidth systems used internationally, whereas the Motorola proposal falls considerably short of the stated objectives.